# USACE CONTRACT NO. DACW33-94-D-0002
# TASK ORDER NO. 020
# TOTAL ENVIRONMENTAL RESTORATION CONTRACT

FINAL
PRE-DESIGN INVESTIGATION REPORT
OU 2 GROUNDWATER NCRA
STRATFORD ARMY ENGINE PLANT
Stratford, Connecticut

VOLUME II
APPENDICES A THROUGH P

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# SECTION 2.0 OF URSGWCFS RI WORKPLAN

The description and history of the SAEP site has been divided into four categories: land use assessment; physical setting; ecological setting; and, site history. Each of these categories is described below.

## 2.1 LAND USE ASSESSMENT

### 2.1.1 SAEP Facility

SAEP is located in Stratford, Connecticut, on the Stratford Point peninsula in the southeast corner of Fairfield County (Figure 1). The plant lies on the borderline of the Bridgeport and Milford Quadrangles. Latitudinal and longitudinal coordinates of SAEP are approximately 41'-10' North and 73'-07' West.

SAEP consists of approximately 124 acres, of which about 76 acres are improved land and 48 acres are riparian rights. (A riparian right is a right of access to, or use of, the shore, bed, or water of land on the bank of a natural watercourse.) The 76 acres of improved land consist of 49 buildings, paved roadway and grounds, and five paved parking lots. Included in the improved land are an estimated 10 acres along the Housatonic River where fill was placed over tidal flats during the early development of SAEP. The 48 acres of riparian rights property consist of intertidal flats of the Housatonic River. An estimated 2 acres of this property comprise a causeway constructed in the 1930s to provide access to the river channel. A site map is provided in Figure 2.

The SAEP property is zoned light industrial. Since 1929, the SAEP site has been used for the development, manufacture, and assembly of aircraft or engines. A discussion of historical operations at SAEP is provided in Section 2.4. Access to SAEP is restricted with a perimeter fence and security guards. Boaters, fishermen, and shell fishers could potentially access unrestricted intertidal flats within SAEP property.

Future land use at the Site has been the subject of intensive study by the SAEP Local Redevelopment Authority (LRA). As reported in "SAEP Redevelopment Plan and Implementation Strategy and Homeless Assistance Submission," the preferred land use plan developed by the LRA includes the development of approximately 800,000 square feet of building space for office, research and development, and "flex space." In addition, 100,000 square feet of museum space and almost 16 acres of park land along the Housatonic River waterfront are proposed (SAEP LRA, 1997). A final decision regarding future use of the Site has not yet been attained.

### 2.1.2 Adjacent Land

SAEP is bounded by a paved parking lot and wetlands to the north; the Housatonic River to the east; an open field, a drainage channel, and small commercial businesses to the south; and hangar buildings, the Sikorsky Memorial Airport, several small businesses, and Frash Pond to the west.

Historically, land in the SAEP vicinity was used for agricultural and residential purposes. At present, local agricultural activities are minimal. The primary agricultural (aquaculture) activity in the area involves growing oysters in shallow waters of the Housatonic River. Oysters are

seeded in areas of the Housatonic River in the spring, collected in the fall, and placed in Long Island Sound to mature. The seed oyster beds are carefully managed by the State of Connecticut Department of Agriculture because of concerns regarding bioaccumulation of contaminants from the Housatonic River.

Land in the vicinity of SAEP is zoned light industrial, business, commercial, or residential. There are several businesses located west of Main Street, across from SAEP, including a small strip mall, several gas stations, and a restaurant.

SAEP is located about 3/4-mile southeast of Johnson Junior High School and Birdseye School.

Recreational facilities in the area include Short Beach Park and nearby public wildlife areas, including Nells Island and the Great Meadow Salt Marsh. SAEP is located about 1/2-mile northwest of Short Beach Park, which had over 80,000 users reported for the year 1991.

### 2.1.3 Local Demographics

The Greater Bridgeport Regional Planning Agency's population census of Stratford was 49,389 people in 1990. Slow population growth has been a trend in Stratford for nearly two decades, and the Connecticut Office of Policy and Management anticipates a continued slow or declining growth rate for Stratford through the end of the century, with a population projection of 48,650 for the year 2000, and 45,800 for the year 2010 (W-C, 1991).

The age of the population in Stratford is older than the state average. The town's median age in 1980 was 38.2, compared to 32 for the State of Connecticut. The Connecticut Office of Policy and Management anticipates the median age of Stratford to be 45.7 by the year 2010. Nearly 23 percent of Stratford's population had reached age 60 by 1980, compared to the state average of 17 percent.

The population of Stratford represents various races and nationalities. More than 8 percent of the 1980 population in Stratford was non-white. This compares closely to a non-white population of 9.9 percent for the State of Connecticut (W-C, 1991).

## 2.2 PHYSICAL SETTING

### 2.2.1 Topography

SAEP is located in the Western Highlands of Connecticut part of the New England Physiographic Province. The local area is part of a coastal belt of dissected hilly country that extends along the coast of Connecticut. The coastal belt is characterized by uplands that range from mean sea level (MSL) to 650 feet above MSL, with an irregular, rocky coastline. Within the coastal belt, hilltops slope southward at a rate of about 50 feet per mile. Topographic features in the area mostly trend in the north-south or northeast-southwest direction, reflecting the structural trends of the local bedrock (Flint, 1968).

SAEP is situated on the Stratford Point peninsula that extends into Long Island Sound. The peninsula is relatively flat with a slight slope toward the sound. Almost all the land at SAEP is less than 10 feet above MSL. The exception to this is a dike that was constructed along the

Housatonic River in 1951 for flood protection. SAEP is within the 100-year flood plain of the Housatonic River; wetland areas surround the plant.

### 2.2.2 Local Climate and Rainfall

The climate of the SAEP area is strongly influenced by a land-sea breeze, which is most pronounced from spring to early autumn. The sea breeze promotes air mixing that results in slightly higher amounts of precipitation and slightly cooler temperatures at SAEP than inland. The prevailing wind is from the southwest at an average speed of about 11 miles per hour.

Precipitation averages about 44 inches per year, with about 16 inches per year of snowfall. Average monthly temperatures range from a low of about 28 degrees Fahrenheit (°F) in January to a high of about 73°F in July. Detailed information on the monthly and annual climatic averages at SAEP is listed in Table 3-8 of the EBS (ABB-ES, 1996).

### 2.2.3 Surface Water Drainage

Surface water bodies in the site vicinity include: Long Island Sound, the Housatonic River, Frash Pond, and the Marine Basin and drainage channel (Figure 1). The coastal and marine surface waters have been classified by CDEP Water Quality Standard regulations as SC/SB (NUS, 1990). The SC indicates that the CDEP recognizes existing water quality problems in the coastal waters; however, the SB classification indicates CDEP's goal of improving the water quality conditions. Frash Pond is not currently classified. According to CDEP, unclassified surface waters default to an A classification, which designates the following water uses: potential drinking, agricultural, or industrial water supply; fish and wildlife habitat; and recreational.

Long Island Sound receives all of the region's drainage, in large part via the Housatonic River. Water discharges from the Housatonic River range from 40 to over 100,000 cubic feet per second (cfs) and average 3,000 cfs (USGS, 1989). Reported tidal levels for the Housatonic River at Stratford are:

| | |
|---|---|
| Low tide level | 0.8 feet MSL |
| Mean tide level | 2.9 feet MSL |
| High tide level | 5.5 feet MSL |

Most of the SAEP surface is paved or covered with buildings. Typical coefficients of runoff for paved surfaces range from 0.8 to 0.9 (i.e., 80 or 90 percent runoff), and runoff from building rooftops is expected to be equal, if not higher. Thus, runoff during storm events is heavy. Most of the precipitation that falls on SAEP is treated and drained to the Housatonic River; two exceptions are small roof areas of B-2 that drain to either Frash Pond or to the airport.

Runoff at SAEP is currently collected by one of a network of six storm drainage systems. Each of the storm drain systems is equipped with a pumping station because of the low elevation of the plant and proximity of the Housatonic River and Long Island Sound. Effluent from the storm drainage system is pumped through the Oil Abatement Treatment Plant (OATP), except in times of heavy precipitation, when some runoff is pumped directly to the Housatonic through individual outfalls.

Based on historical site photographs and plans, the Site once had a low-lying area at the head of the drainage channel that is connected to the Marine Basin (in the vicinity of B-3 and B-6). The drainage channel abuts a portion of the plant's property line (Figure 2).

SAEP is located within the 100-year flood plain of the Housatonic River (CDEP, 1979). The Site is partially protected from flooding by a dike that runs the entire length of the property abutting the Housatonic River; however, the dike is not tied into high ground, which would prevent floodwaters from going around the dike. The Site was flooded in 1951 when the Housatonic River flooded, and again in 1968.

## 2.2.4 Geology and Hydrogeology

### *2.2.4.1 Regional Geology and Hydrogeology*

The bedrock geology underlying SAEP is reported to consist of lower Ordovician age metamorphic schists, phyllites, and paragneisses of the Oronoque Member of the Derby Hill Schist (Fritts, 1965). Flint (1968) identifies these rocks as the Orange Formation. Exposures of bedrock do not occur in the SAEP vicinity. Borings made along the Housatonic River (Flint, 1968) and borings completed on-site (ESE, 1991) reportedly encountered bedrock at depths ranging from about 100 to 150 feet below the land surface.

Recent deposition of alluvium, estuarine, tidal marsh, beach sediments, and man-placed artificial fill occur along the Housatonic River. The surficial unconsolidated sediments reported near SAEP are Stratford Outwash, tidal marsh peat, and artificial fill (Flint, 1968; U.S. Department of Agriculture, 1981). Lordship Outwash sediments are found south of the SAEP (Flint, 1968).

Stratified drift, consisting of sorted sediments deposited in streams formed by the meltwater of glaciers, is the main water-bearing hydrogeologic unit in the site area. The stratified drift forms two depositional facies, known as ice-contact stratified drift and outwash (Flint, 1968). Ice-contact stratified drift is defined as "sediments deposited in streams and other bodies of water against, upon, beneath, or otherwise in immediate contact with melting glacier ice", and is characteristically poorly sorted, and contains irregular beds with large and abrupt changes in grain sizes ranging from clay to boulders. Conversely, outwash is defined as "sediments deposited by streams beyond the glacier, and free of any influence of buried ice", and is generally well sorted sand to fine gravel with lenticular beds.

Borings completed near the mouth of the Housatonic River encountered post-glacial estuarine mud unconformably overlying stratified drift at depths as great as 60 feet below MSL (Flint, 1968). The estuarine sediment is described as a gray mud consisting of silt and clay with organic matter. It has a maximum reported thickness of about 60 feet.

The tidal marsh and swamp deposits in the area consist of decayed plant matter, peat, and mixtures of silt and clay with high amounts of peat. These deposits may be as thick as 15 feet. The SAEP area is influenced by tidal marsh sediments deposited at and upstream from the mouths of tidal inlets (due to rise in sea level since the last glaciation and daily tides) that discharge to the ocean (Flint, 1968). Tidal marsh sediments consist of peat and very organic silt

or clay that form wedge-shaped deposits, which become thicker towards the ocean or mouth of the streams.

Stratford Outwash is found along the fringes of the Housatonic River and consists of well sorted sand with small amounts of gravel. Borings completed for the Washington Bridge (Highway 1, about 2 miles north of SAEP) encountered outwash sand underlying more recent alluvium, tidal marsh and swamp peat, and estuarine sediments to an elevation of about 115 feet below MSL (Flint, 1968). This indicates that the outwash had filled the entire valley of the Housatonic, but after extensive erosion by the river and rise in sea level, only remnants of the deposit remain. In some exposures along the Housatonic River north of the Site, the Stratford Outwash is found overlying ice-contact stratified drift (Flint, 1968).

### *2.2.4.2 Site Geology and Hydrogeology*

The following assessment of the geology and hydrogeology at the SAEP is summarized from the Phase II Report (W-C, 1996) in which generalized geologic cross-sections were developed from previous engineering reports as well as from boring logs prepared as part of Phase I and Phase II Investigations conducted by W-C and presented in the Phase II Report (W-C, 1996). The cross-sections show that the shallow geology is characterized by four distinct units: fill material, estuarine silt, peat, and glacial deposits. These unconsolidated deposits overlie the bedrock unconformably. A description of these units and their distribution across the SAEP follows.

Fill

Fill material is found throughout most of the SAEP. Fill was used for road construction, site grading, and as foundation material for buildings. Fill material consists of fragments of concrete, brick, asphalt, wood, cinders, copper wire, and rebar. Fill in areas along the shoreline is reported to consist of materials hydraulically dredged from the Housatonic River. The composition of the fill is variable, but most of it is described as a granular material that was placed to promote drainage.

Fill also consists of glacial material deposited on the surface from cut-and-fill operations made during facility development between 1940 and 1960. The glacial fill material generally consists of brown medium to fine sand and gravelly sand.

The thickness of the fill is generally about 5 ft, although it may reach a thickness of up to 19 ft. The fill appears to thin somewhat with distance away from the river. This may be a result of more extensive historical filling operations along the river in order to bring the shoreline up to grade with the rest of the Site.

Estuarine Silt

A thick silt deposit underlies the fill at the northern edge of the facility along the Housatonic River. This deposit consists of black organic silt containing occasional shell and sand layers. This material is an estuarine sediment deposited by the Housatonic River and subsequently topped with fill (both artificial and glacial fill) during enlargement of the facility property.

This silt stretches from piezometer PZ-7D (northeastern corner of building B-2) eastward to monitoring well MW-4 (just south of the Causeway) at a depth of approximately 1 to 9 ft below

sea level (8 to 15 feet below ground surface). The thickness of the estuarine silt layer ranges from 2 ft to 30 ft and it extends landward 150 to 250 ft. The silt layer is thickest at location piezometer PZ-5D (30 ft deep at Building B-37) and pinches out at the edges near piezometer PZ-7D (northeast corner of Building B-2) and monitoring well MW-4 (just south of the Causeway).

Peat

A deposit of brown and black peat with some organic silt was encountered in the eastern portion of the SAEP in the vicinity of the former lagoons (impoundment area). It's extent is roughly circular which indicates that it was probably formed by a marsh or swamp. Older USGS quadrangle maps show that this area was formerly a tidal marsh that was subsequently filled. In the former lagoon area, the peat forms a continuous concave layer, approximately 7 ft thick which deepens to the west - northwest. The peat lies directly beneath fill material in this area at depths ranging from 3 to 20 ft bgs. Portions of the upper peat layer may have been excavated prior to fill placement.

Peat material was also encountered at the location of monitoring well WC-8S (at Building B-8) and monitoring well WC-2D (just south of the Causeway) at depths of 5 ft bgs and 30 ft bgs and thicknesses of 2 ft and 5 ft respectively. These two peat deposits are apparently small, isolated pockets and are not a part of the continuous deposit in the lagoon area.

Glacial Sediments

A thick deposit of glacial sediments underlies the fill, estuarine silt, and peat deposits at the Site, and unconformably overlies the bedrock. The total thickness of the glacial sediments is between 148 ft and 156 ft thick, based on boring logs from monitoring wells WC-9D2, WC-20D2 and WC-21D2 (generally off-site to the west of the SAEP) installed during Phase II. The glacial deposits consist of sands, silty sands, and gravelly sands with occasional boulders and varved silt. The glacial deposits can be generally grouped into three layers: 1) a layer of gray to brown, medium to coarse sand with varying amounts of gravel, underlain by 2) light to medium-brown, medium to fine sand and silty sand with occasional clay stringers, followed by 3) another layer of brown to gray sand and gravel immediately above the bedrock.

There are variations in this general sequence, however. For example, in the eastern portion of the Site, a silty sand layer overlies the first layer of sand and gravel and a distinct gravel deposit, approximately 2 to 5 ft thick, is locally extensive in the vicinity of piezometer PZ-13D (near Building B-4), and monitoring wells WC-2D and WC-3S (both near the Causeway).

A glacial varved silt unit had been reported to occur only locally in the vicinity of Building B-65 (Haley and Aldrich, 1987). Varved silt layers were encountered at a depth of 60 ft bgs in monitoring well WC-9D2 and are described as 2 millimeter bands of red clay interlayered with orange sand layers. At other depths in monitoring well WC-9D2 (northwest corner of Building B-2) and in monitoring well WC-20D2 (off-site to the west of Building B-2) red clay stringers were observed. It is unclear as to whether the red clay stringers represent a portion of a larger varved sequence.

Bedrock

A competent amphibole-mica schist bedrock was reported at monitoring well locations LW-5D, LW-9D and LW-10D (in the vicinity of the former lagoons south of the main Plan) at depths of 163 ft, 151.5 ft, and 103 ft below grade, respectively. Bedrock was encountered at three locations during the drilling of Phase II monitoring wells WC-9D2, WC-20D2 and WC-21D2 (generally off-site the west of SAEP); at respective depths of 156 ft, 150 ft and 148 ft below grade. The bedrock is described as a black schist with greenstone.

A nineteenth century report of massive serpentinite consisting of antigorite with accessory magnetite and carbonate was reported at the SAEP (Crowley, 1968). No contemporary confirmation of this report exists.

If the locally N35oE trending trace of the Mixville Fault (Flint, 1968) is extrapolated to the southwest (Rodgers, 1985), across the Housatonic River, it would pass directly under the SAEP. However, there is no confirmation of the existence of this fault southwest of its mapped terminus.

Hydrogeology

During Phase I and Phase II investigations, shallow and intermediate wells were installed at the water table and 30 to 50 ft below the ground surface in the overburden aquifer, respectively. Deep overburden wells were screened just above the bedrock. Data from these monitoring wells, as well as from monitoring wells previously installed at SAEP, established an easterly groundwater flow direction towards the Housatonic River, a northwesterly flow towards Frash Pond, and flow toward the drainage channel in the southern portion of SAEP. There may be a groundwater divide and buried tidal inlets on SAEP, and other buried outlets from Frash Pond may pass under SAEP (Envirosphere, 1984). These types of features appear to be a factor controlling groundwater movement patterns and fate of potential contaminants. Very little flow reversal, as related to tidal influences, were measured. Groundwater contour maps are presented in the Phase II Report (W-C, 1996).

Groundwater flow at the SAEP facility is influenced by three surface water features. The primary influence is that of the intertidal flats. Groundwater flow in the northern half of the facility is in the direction of the intertidal flats at low tide. An average low tide hydraulic gradient was calculated to be 0.0012 for both the shallow and intermediate portions of the aquifer. Because the incoming tide exerts pressure on the water table aquifer, the hydraulic gradients at high tide will be lower than those at low tide.

A second surface water body influencing the groundwater flow at the facility is Frash Pond, located approximately 300 feet from the northwest corner of the facility. Frash Pond appears to be located downgradient of the northwest portion of the SAEP facility. The airport, as well as other off-site properties, are also located upgradient of Frash Pond. Water elevations measured in monitoring wells suggest that groundwater from off-site locations south and west of the SAEP are flowing toward the SAEP. Average groundwater hydraulic gradients in the direction of Frash Pond were calculated to be 0.0012 for the shallow wells and 0.0018 for the intermediate wells in the vicinity of the pond.

The third surface water body influencing the groundwater flow at the facility is the drainage channel located in the southern portion of the SAEP. The presence of groundwater mounds in the shallow portion of the aquifer in this area of the facility is due to the existence of a peat layer that causes a perched water condition above the peat. An average hydraulic gradient in the direction of the drainage channel was calculated to be 0.0073 for the shallow portion of the aquifer above the peat and 0.0018 for the intermediate portion of the aquifer below the peat layer. The area of the facility influenced by groundwater flow to the drainage channel is limited to the lagoon area in the vicinity of the channel.

Hydraulic conductivities calculated from slug tests performed in Phase II investigation monitoring wells indicate that hydraulic conductivities are generally from 12 to 15 feet per day (ft/day) for shallow wells, 0.01 to 2.7 ft/day for intermediate wells and 2.5 to 6.0 ft/day for deep wells.

## 2.3 ECOLOGICAL SETTING

This section of the RIWP describes the ecological resources on and in the vicinity of SAEP. For the purposes of the RI, ecological habitats are present at the following three areas:

- Intertidal Mudflats;
- Marine Basin/Outfall 008 area; and,
- Causeway.

Information on critical habitats and wetland areas in the vicinity is also summarized. Much of the information in this section is summarized from Section 2.0 of the Phase II investigation Work Plan (W-C, 1994) and the Draft Baseline Ecological Risk Assessment for the SAEP (W-C, 1996). These documents should be consulted for more detailed information and discussion of the area.

### 2.3.1 Surface Water Bodies

The SAEP is located on the tidal portion of the Housatonic River less than one mile upstream from the Long Island Sound (Figure 1). As such, the habitats and biota which occur in the site vicinity are largely dictated by diurnal fluctuations in water level, salinity and surface water chemistry, and are influenced by the Sound. The Housatonic River is approximately one quarter mile wide in the site vicinity and conveys most of the region's drainage to the Long Island Sound. Currents in the river proper are variable in this area due to the fluctuating tides.

In the tidal mudflat area adjacent to the Site, local currents flow toward land into the sheltered cove on a flooding tide. In the absence of current on a slack tide, suspended fine sediments settle out of the water column and contribute to the sediment accumulation in the mudflat area. The mudflat is exposed twice daily at low tide when all water recedes from the area except for flow in several rivulets near the outfalls.

Marine Basin is located about 1,000 feet southeast of SAEP on the Housatonic River (Figure 1). It is a shallow, permanently inundated, tidal embayment which receives some drainage from the drainage into which Outfall 008 feeds, but mostly from the Housatonic River.

### 2.3.2 Surface Water Chemistry

Characterization of surface water chemistry in the vicinity of the SAEP site is based on data collected as part of the previous investigations at the Site (W-C, 1993). Generally, surface water pH ranged from 7.4 to 8.5, and was typically approximately 8.1. Similarly, salinity ranged from 11.8 parts per thousand (ppt) to 27 ppt, typical of estuarine waters. Conductivity ranged from 14,500 umhos to 33,000 umhos.

Surface water temperatures at the time of sampling ranged from 10.5 degrees Celsius to 25.0 degrees C. Most values were in the low 20s degrees C. Temperatures were approximately five to ten degrees lower at the tidal flat and intertidal background locations than at the tidal flat outfall locations and at Outfall 008.

### 2.3.3 Intertidal Mudflats

The intertidal mudflats adjacent to the SAEP are a generally level to gently sloping area that is subject to alternating periods of tidal inundation and exposure. Sediments in the mudflats are primarily fine silt and mud transported from the Housatonic River and deposited here. The mudflats are nutrient enriched and support populations of macroinvertebrates which are important food sources for fish and shorebirds. The northwest portion of the mudflats support some emergent vegetation. The following paragraphs describe biota which utilize the Intertidal Mudflat for habitat and feeding.

#### *2.3.3.1 Benthos*

The intertidal mudflats adjacent to the SAEP provide a nutrient rich habitat for a variety of invertebrate forms. Information on indigenous benthic fauna in the vicinity of the SAEP site is based on extensive data collected in December 1994 as part of the Phase II effort and a field reconnaissance performed in May 1995 (W-C, 1996).

A total of 49 different macroinvertebrate taxa occur in the site vicinity. The taxa present are common to estuarine systems, with polychaetes (especially Streblospio benedicti, which was present at all stations) and oligochaetes predominating. As a group, deposit-feeding oligochaetes, and polychaetes were by far the dominant component of all samples. Individually, oligochaete densities ranged from 2 to 67 percent, and polychaetes from 26 to 97 percent of the total number of individuals at all stations sampled.

At most stations, Streblospio benedicti was the dominant polychaete. Its presence alone accounted for 12 to 89 percent of all individuals at the ten mud flat stations. At five locations, the capitellid, Mediomastus ambiseta, exceeded or equaled the Streblospio densities. Amphipods were recovered from most stations. The most common species were Leptocheirus plumulosus and Gammarus palustris. Similarly, molluscs, usually Littorina sp. juveniles (a gastropod), or Gemma gemma (a bivalve), were present in most samples.

In addition to the infaunal invertebrates described above, the site vicinity supports dense beds of oysters. Although Crassostrea virginica, the Eastern oyster, is the primary species of shellfish harvested from the area, other shellfish that are fished for include the hard clam (quahog), bay scallop, soft-shelled clam, blue mussel, and razor clam. Observations were made of benthic

macroinvertebrates inhabiting the rocky intertidal zone around the mudflats which has formed as a result of rip-rap placement. The following species were observed on the rocky intertidal zone: Ovalipes ocellatus (calico crab), Mytilus edulis (blue mussel), Modiolus demissus (ribbed mussel), Mercenaria mercenaria (hard clam), and Squilla empusa (mantis shrimp).

#### 2.3.3.2 *Fish*

A number of fish species are common to the Long Island Sound and Housatonic River in the vicinity of the SAEP. The principal species include: Atlantic herring (Clupeas harengus), American shad (Alosa sapidissima), Atlantic silverside (Menidia menidia), mummichog (Fundulus heteroclitus), American eel (Anguilla rostrata), winter flounder (Pseudopleuronectes americanus), bluefish (Potamus saltatrix), and tautog (Tautoga onitis).

The mudflats adjacent to the SAEP site do not represent an important fish habitat owing largely to the hydrology in this area. At low tide, virtually all of the surface water recedes out of the area for several hours. Hence, at best, this area represents an intermittent feeding habitat for fish such as silversides and other omnivorous species feeding on small crustaceans, worms, and insects.

#### 2.3.3.3 *Avifauna*

There have been approximately 220 bird species observed in the site area (W-C, 1991). Shore birds and waterfowl constitute the majority of bird life in the SAEP vicinity. The wetlands near SAEP are known breeding grounds for transitory birds such as the great egret (Casmerodius albus), snowy egret (Nyctanassa vidacea), black-crowned night heron (Nycticorax nycticorax), glossy ibis (Plegadis falcinellus), and fish crow (Corvus ossifragus).

Two bird species that nest in the general vicinity of the Site are the least tern (Sterna antillarum) and piping plover (Charadrius melodus). Both species would use tidal marshes as feeding areas during the breeding season.

During the field reconnaissance of the Site performed in May 1995 (W-C, 1996), a variety of species were observed from the Site including: great blue heron (Ardea herodias), American black ducks (Anas rubripes), sandpipers or "peeps" (Calidris sp.), herring gull (Larus argentatus), and mute swans (Cygnus olor).

The United States Fish and Wildlife Service (USF&WS) conducted bird surveys in the vicinity of the Site in 1997. Results of these recent surveys will be included in the RI report.

### 2.3.4 Marine Basin/Outfall 008 Area

SAEP Outfall 008 discharges into a drainageway which travels several hundred feet to its confluence with the Marine Basin. The channel of the "008 drainageway" is approximately 10 to 12 feet wide and generally less than 2 feet deep. The downstream portion is tidally influenced. The adjacent land area is generally disturbed and vegetated primarily with Phragmites. While documentation is somewhat limited, the drainageway is generally low quality habitat based on visual observation and sediment chemical and benthic community data.

Marine Basin is a tidal, permanently inundated shallow embayment surrounded primarily by stands of Phragmites. Little, if any, emergent vegetation exists. Benthic macroinvertebrates which colonize the Basin likely represent typical estuarine communities observed in the Intertidal Mudflat.

### 2.3.5 The Causeway

Due to the industrial nature of the SAEP site, there is no terrestrial habitat on the Site with the exception of the limited area on top of the Causeway. Where vegetated, the surface of the Causeway is primarily covered with herbaceous species, limited scrubby vegetation and several trees. Species observed include: clover, ragweed (Ambrosia sp.), jewelweed (Impatiens sp.), smartweed (Polygonum sp.), several tree of heaven (Ailanthus altissima), and willow (Salix sp.). This area is small, one to two acres in size, and does not represent valuable habitat. Since it is isolated from other nondeveloped areas and generally disturbed, it provides limited habitat, at best, to biota. Terrestrial species which may use the Causeway from time to time are likely to include some birds and small rodents which inhabit other disturbed lots in this portion of Stratford.

### 2.3.6 Critical Habitats and Species

Critical habitats in the vicinity of the Site include extensive tracts of salt marshes, saltwater intertidal flats and shores, and coastal sand dunes which provide habitat for a variety of biota. The intertidal mudflats in the vicinity of SAEP are located in a band along the shoreline of the Housatonic River and Long Island Sound. SAEP's riparian rights encompass the intertidal mudflats area. Plant life in the vicinity of SAEP is limited to the tidal marshes.

The tidal marsh plant life consists primarily of soft-stemmed plants such as sedges, rushes, and grasses. Cordgrass (Spartina patens) and common reed (Phragmites) are the dominant species in the marshes. A number of southeastern Piedmont and Coastal Plain plant species reach their northern native range limits in this region.

Tidal marshes provide habitat for mammals such as rodents and insectivores. The primary mammal species include muskrats (Ondatra zibethica), cottontail (Sylvilagus sp.), and raccoons (Procyon lotor). Cordgrass provides an ideal forage and building material for muskrats. Raccoons feed on crustaceans and small rodents.

A detailed description of the federal- and state-listed threatened, endangered, or special concern species that have the potential to occur in the vicinity of SAEP and the status of each is provided in the Preliminary Assessment Screening (W-C, 1991). A list of these species is provided in Table 3-3 of the Preliminary Assessment Screening (additional information from the field reconnaissance and recent U.S. Fish and Wildlife Service survey will be included in the RI report).

No federally listed threatened or endangered plant species have been reported to occur in the vicinity of the SAEP with the exception of the New England Blazing Star (Liatris borealis), which is a candidate for the list. Two federally-listed and an additional 14 state-listed threatened,

endangered or special concern birds have the potential to occur in the vicinity of the SAEP. The two federally-listed species include the piping plover and the Roseate tern.

The piping plover nests in the vicinity of the SAEP; nesting habitat is located on Short Beach, Long Beach, and Milford Point. These areas are extremely important to the continued survival of the piping plover and select areas of these beaches are closed to public activity during the nesting and rearing period. These beach areas utilized as nesting habitat by the piping plover are probably used by the least tern also, which is a state-listed threatened species.

## 2.4 SITE HISTORY

### 2.4.1 Operational History

The SAEP site has been used for development, manufacture, and assembly of aircraft or engines since 1929. The plant history has been categorized into the following periods:

1929 to 1939: Sikorsky Aero Engineering Corporation developed and manufactured sea planes at the Stratford plant.

1939 to 1948: Chance Vought Aircraft located its operations at the Stratford plant in 1939, and the company became known as Vought-Sikorsky Aircraft Division. Sikorsky developed the helicopter and left the plant in 1943 because of overcrowding. Chance Vought developed the "Corsair" for the U.S. Navy, and mass produced Corsairs during World War II. Chance Vought vacated the Stratford plant in 1948.

1948 to 1951: The Stratford plant was idle.

1951 to 1976: The U.S. Air Force procured the Stratford plant in 1951 and named it Air Force Plant No. 43. The Avco Corporation (AVCO) was contracted by the Air Force to operate the plant. AVCO manufactured radial engines for aircraft in the 1950s, and developed and manufactured turbine engines, primarily for aircraft, in the 1960s and 1970s.

1976 to Present: The plant was transferred from the U.S. Air Force to the U.S. Army in 1976. At that time, the plant was re-named the Stratford Army Engine Plant, although it continued under AVCO operations. AVCO was contracted by the Army to develop the AGT-1500 engine to power the Abrams tank. AVCO also developed and manufactured marine and industrial engines. AVCO merged with Textron in December 1985, and subsequently formed the Textron Lycoming Stratford Division. The contract for operation of SAEP was transferred from Textron Lycoming to Allied-Signal in 1994. Allied-Signal continued to develop, manufactured and test turbine engines at SAEP for both military and commercial aircraft and land vehicles until 1997. Since the cessation of Allied-Signal operations, the focus of activities at SAEP has been completion of an environmental assessment of the Site and the potential for re-development.

1986 or 1987: Historical state order issued to AVCO Lycoming regarding RCRA groundwater monitoring in the lagoon area.

### 2.4.2 Waste Disposal

The primary types of industrial waste generated at SAEP prior to the 1950s are reported to have been waste oils, fuels, solvents, and paints (W-C, 1991). Since 1951, most of the wastes generated at SAEP have resulted from engine production operations such as plating, metal working, and finishing, as well as cleaning operations. Wastes were also generated as a result of engine and engine component testing, research and development, raw materials testing, vehicle and other maintenance, and on-site waste treatment.

### 2.4.3 Environmental Regulatory Compliance

The EBS (ABB-ES, 1996) contains a review of SAEP's environmental compliance history and permit status, its current compliance status, and future compliance issues. Specifically, the EBS assesses SAEP in relation to: Resource Conservation and Recovery Act (RCRA); CERCLA; Emergency Planning and Community Right-to-Know (SARA Title III); Clean Water Act; Clean Air Act (CAA); Toxic Substances Control Act (TSCA); Safe Drinking Water Act; Federal Insecticide, Fungicide and Rodenticide Act; endangered species; radioactive materials; and, National Environmental Policy Act (NEPA). The EBS noted that SAEP has experienced some violations in the past, but, as of December 1996, was in compliance with environmental regulations (ABB-ES, 1996).

The EBS identified the following recorded deficiencies in hazardous waste management practices at SAEP.

- Manifest warning letters for deficiencies in completion of hazardous waste manifests. Deficiencies included missing analytical results, transporter name or identification (ID) number, manifest document numbers, waste ID numbers, and waste quantities; un-specified container type; incorrect USEPA generator ID number; point of departure from the United States not specified for international shipments; failure to sign and date manifest; illegible manifest; and failure to respond to manifest warning letter. To the best of SAEP's knowledge, all prior warning letters were resolved.
- Warning letters issued by CDEP for failure to submit hazardous waste biennial reports on a timely basis or submission of an unacceptable report. SAEP subsequently submitted acceptable reports.
- Several orders issued by CDEP to bring SAEP into compliance with RCRA hazardous waste management regulations. For example, updating the site contingency plan, waste analysis plan, and preparedness and prevention plan.
- Order issued by CDEP to make modifications to OATP in order to bring Outfall 007 into compliance with the National Pollutant Discharge Elimination System (NPDES) permit by "proper treatment of oily wastewaters." SAEP reportedly complied with this order.
- Records indicate that frequent and severe violations of NPDES permit limitations (i.e., effluent concentrations more than five times the permit limit) occurred prior to the mid-1980s. In a Consent Decree dated April 10, 1984, SAEP agreed to use "best reasonable efforts" to achieve compliance with the permit and to complete upgrading

of the Chemical Wastewater Treatment Plant (CWTP). Violations have occurred since that time less frequently and with less severity. Since November 1994, the only violation has been associated with the failure to meet aquatic toxicity criteria. Upon retesting of the sample, the parameter in question was found to be in compliance.

- Inspection reports indicate occasional violations of CAA requirements such as: fumes escaping from vapor degreasers; failure to notify CDEP of modifications to or additions of processes that could increase emissions; and, excess emissions of chromic acid.
- In response to findings that SAEP failed to maintain adequate inspection and maintenance records for 20 polychlorinated biphenyls (PCBs) transformers in accordance with TSCA, SAEP agreed to subsequently ensure that transformers would be inspected and that records of inspections and maintenance history of the transformers would be maintained.
- SAEP does not appear to be in compliance with the requirement of NEPA that environmental evaluations be conducted prior to beginning construction projects since 1970.

The EBS also identified several spills of hazardous materials that resulted in discharges to surface water in the SAEP site vicinity.

October 29, 1981: Approximately 20 gallons of fluorescent metal penetrant, a dye used for nondestructive inspection of metal parts, was spilled into a storm drain and discharge from Outfall 007.

July 29, 1979: Approximately 75 gallons of oil sludge from the OATP bypassed clogged skimmers and discharged from Outfall 007. SAEP was notified of the problem by the U.S. Coast Guard, which was searching for the source of an oil slick on the Housatonic River. (SAEP was apparently the sole source.)

May 8, 1978: Twenty-five to 30 pounds of chromic acid was spilled, and most flushed into a storm drain. About 50,000 gallons of diluted acid was intercepted in the drain and pumped into a holding tank. Remaining pools of the diluted acid were pumped to the CWTP. Acid that was not intercepted or contained was discharged to the Housatonic River from Outfall 007. Chromium concentrations of effluent from Outfall 007 were measured at 30 milligrams per liter (mg/l) on May 8, 1978, 2.5 mg/l on May 10, 1978, and were not detectable by May 11, 1978.

August 1978: CDEP was advised by SAEP that a yellow plume with a pH of 2.9 and 64 parts per million (ppm) of hexavalent chromium was extending approximately 200 yards from Outfall 007 into the Housatonic River (CDM, 1992).

No records of enforcement actions or fines relating to these releases were found or reported in the EBS.

# AJS ENVIRONMENTAL REPORT – JUNE 1998
# CHROMIUM PLATING FACILITY DECONTAMINATION

AJS Environmental, Inc., (AJS) is pleased to provide the report for installation of 30 soil borings and laboratory analysis of soil samples completed at Allied Signal Engines on June 17 and June 18, 1998.

On 17 June 1998 AJS Environmental, Inc. an environmental remedial engineering/consulting firm and ADH Environmental Sampling Services an environmental Geoprobe firm arrived at Allied Signal Engines located in Stratford, CT to install soil borings in the former plating room. The project began after review of the required safety procedures and site history. Work consisted of coring of the concrete floor with a diamond core bit and collection of soil samples utilizing Geoprobe technologies. A grid sampling location was established using a 20 foot interval between each core hole. **Figure 1** is a site plan indicating the soil boring locations.

The concrete floor varied in thickness from three(3) to seven (7) inches. Soil samples were collected continuously to a depth of eight (8) feet. Groundwater was encountered at approximately 7 feet. **Appendix A** contains the soil boring logs.

To define chromium impacted soils, each core location was sampled and at a depth of 0 to 1 feet beneath the floor. To define the vertical extent of contamination, various samples were chosen and analyzed from the water table depth (7'). Each sample was analyzed for total chromium and pH. The results are below in Table 1 and contained in their entirety in **Appendix B**.

**TABLE 1**
**Soil Analytical Results in Parts Per Million (PPM)**

| Location | Chromium Result | pH Result | TCLP Standard |
|---|---|---|---|
| C-1 S-1 | 2,460 | 5.9 | 5 |
| C-1 S-2 | 2,218 | 6.2 | 5 |
| C-2 S-1 | 196 | 7.5 | |
| C-2 S-2 | 51 | 6.1 | 5 |
| C-3 S-1 | 70.4 | 8.1 | 5 |
| C-3 S-2 | 114 | 5.3 | 5 |
| C-4 S-1 | 362 | 6.0 | 5 |
| C-4 S-2 | 4.44 | 6.0 | 5 |
| C-5 S-1 | 135 | 6.9 | 5 |
| C-5 S-2 | 56 | 5.8 | 5 |
| C-6 S-1 | 25 | 6.4 | 5 |
| C-7 S-1 | 22.4 | 8.1 | 5 |
| C-8 S-1 | 3.43 | 6.2 | 5 |

# TABLE 1 (Continued)

## Soil Analytical Results in Parts Per Million (PPM)

| | | | |
|---|---|---|---|
| C-9 S-1 | 118 | 6.2 | 5 |
| C-9 S-2 | 106 | 6.1 | 5 |
| C-10 S-1 | 176 | 7.3 | 5 |
| C-10 S-2 | 6.6 | 6.9 | 5 |
| C-11 S-1 | 8.31 | 8.1 | 5 |
| C-11 S-2 | 5 | 7.4 | 5 |
| C-12 S-1 | 17.1 | 8.5 | 5 |
| C-13 S-1 | 90 | 7.1 | 5 |
| C-13 S-2 | 7.40 | 6.5 | 5 |
| C-14 S-1 | 6.93 | 6.4 | 5 |
| C-14 S-2 | 4.82 | 6.5 | 5 |
| C-15 S-1 | 12.1 | 8.1 | 5 |
| C-16 S-1 | 59 | 8.3 | 5 |
| C-17 S-1 | 33 | 6.5 | 5 |
| C-18 S-1 | 360 | 6.7 | 5 |
| C-18 S-2 | 576 | 5.7 | 5 |
| C-19 S-1 | 16 | 9.7 | 5 |
| C-20 S-1 | 6 | 9.7 | 5 |
| C-20 S-2 | 12 | 7.0 | 5 |
| C-21 S-1 | 26.4 | 7.9 | 5 |
| C-22 S-1 | 24 | 7.7 | 5 |
| C-23 S-1 | 14.2 | 9.9 | 5 |
| C-23 S-2 | 7.61 | 8.1 | 5 |
| C-24 S-1 | 42.4 | 8.0 | 5 |
| C-25 S-1 | 1,245 | 6.9 | 5 |
| C-26 S-1 | 781 | 6.8 | 5 |
| C-26 S-2 | 121 | 6.3 | 5 |
| C-27 S-1 | 1,917 | 5.2 | 5 |
| C-27 S-2 | 180 | 6.9 | 5 |
| C-28 S-1 | 12.7 | 7.0 | 5 |
| C-28 S-2 | 33.1 | 8.4 | 5 |
| C-29 S-1 | 29.3 | 6.3 | 5 |
| C-29 S-2 | 45.4 | 6.9 | 5 |
| C-30 S-1 | 76.3 | 8.0 | 5 |
| C-30 S-2 | 160 | 6.5 | 5 |

Due to the elevated levels of chromium encountered additional soil samples were analyzed for TCLP chromium, Reactive Cyanide and Total Cyanide. These results are below in Table 2 and in their entirety in **Appendix B**.

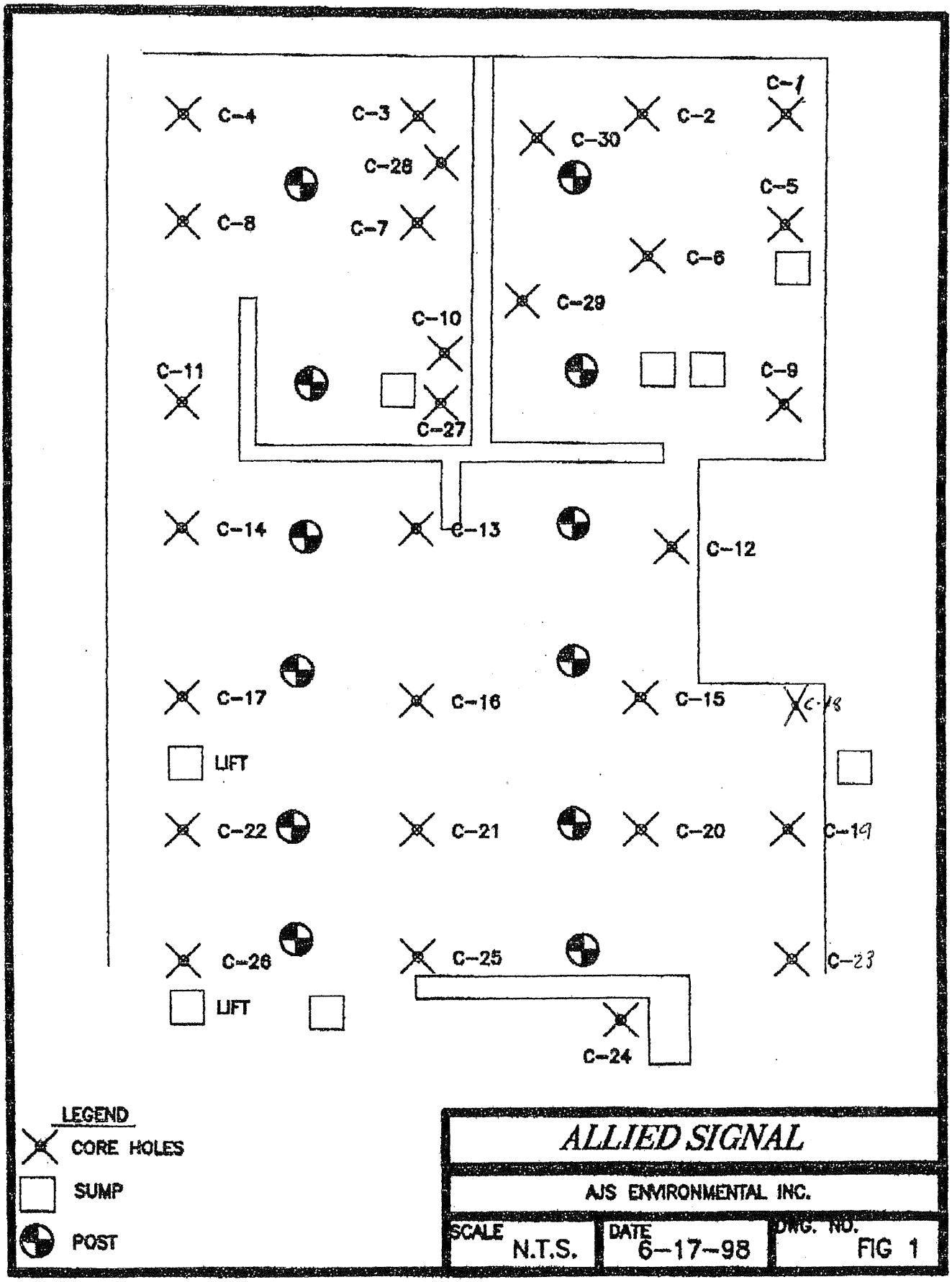
# TABLE 2

**Soil Analytical Results in Parts Per Million (PPM)**

| Location | TCLP Chromium | Total Cyanide | Reactive Cyanide |
|---|---|---|---|
| C-1/S-1 | 9.30 | ND | ND |
| C-11/S-2 | ND | ND | ND |
| C-13/S-2 | ND | ND | ND |
| C-18/S-2 | 0.50 | 0.579 | ND |
| C-23/S-2 | ND | ND | ND |
| C-27/S-2 | 0.21 | ND | ND |

As noted in the analytical above there is an exceedance in of TCLP Chromium (>5 ppm) in C-1/S-1 and Total Cyanide was encountered in C-18.

As noted in the boring logs the soil varies from sand to silt as you move away from the lower core hole numbers. This was expected due to information provided by Allied Signal concerning soil borings conducted throughout the property.


C-1
C-2
C-3
C-4
C-5
C-6
C-7
C-8
C-9
C-10
C-11
C-12
C-13
C-14
C-15
C-16
C-17
C-18
C-19
C-20
C-21
C-22
C-23
C-24
C-25
C-26
C-27
C-28
C-29
C-30
LIFT
LIFT
LEGEND
CORE HOLES
SUMP
POST
ALLIED SIGNAL
AJS ENVIRONMENTAL INC.
SCALE N.T.S.
DATE 6-17-98
DWG. NO. FIG 1

# SOIL BORING LOGS

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: 04-2 | | | |
| Boring No.: PZ-99-01 | | | |
| Client: SAEP | Project No. 47254 | Protection: MOD. D | |
| Contractor: NFE | Date Started: 8-20-99 | Completed: 8-20-99 | |
| Method: HSA | Casing Size: Sampled w/ 3 1/4" HSA | PI Meter: 580 BOVM | |
| Ground Elev.: 8 | Soil Drilled: 52' | Total Depth: 52' | |
| Logged by: T. Lonergan | Checked by: | ▽ Below Ground: ~6' | |
| Screen: (ft.) | Riser: (ft.) Diam: (ID) Material: | Page 1 of: 2 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | CLP/SCREENING | PENETRATION/RECOVERY | PID (ppm) BZ Spoon | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | DRILLED IN BUILDING W/ SODIUM LIGHTS - THEREFORE SOIL COLORS WERE NOT ABLE TO BE CORRECTLY IDENTIFIED | | |
| ~~5~~ | S-1 | 3' 5' | ✓ | 2/1.5 | 0 | FINE SAND - V. WELL SORTED, NON-PLASTIC, LOOSE IN HAND, MED. DENSE IN SITH, DRY STRATIFIED ALLUVIUM - COLLECTED OFF SITE METALS ONLY | SP | 4 7 9 11 |
| | S-2 | 5' 7' | | 2/1.5 | 0 | AS ABOVE BUT SATURATED AT 6' | SP | 5 7 8 9 |
| 10 | S-3 S-4 | 10' 12' | ✓ | 2/1.0 | 0 | MED. SAND W/ LITTLE FINE SAND, LOOSE, STRATIFIED, SATURATED. COLLECTED OFF SITE ANALYTICALS HERE PLUS MS, PLUS MSD, PLUS NED SPLIT - NEEDED VOLUME, THEREFORE MANY SPOONS WHICH WERE COLLECTED FROM 10' TO 14' | SP | 3 3 2 3 |
| | S-5 S-6 S-7 S-8 | 14' | ✓ | | | | | |
| 15 | S-9 | 15' 17' | ✓ | 2/0.7 | 0 | AS ABOVE - CLEAN WELL SORTED SAND, MEDIUM W/ LITTLE FINE SAND - COLLECT SUDAN HERE | SP | 3 2 4 4 |
| 20 | S-10 | 20' 22' | ✓ | 2/1.0 | 0 | AS ABOVE BUT BECOMING BETTER GRADED, FINE TO MED., NON-PLASTIC, LOOSE, ALLUVIUM SUDAN SAMPLE HERE | SP | 2 3 4 4 |
| 25 | | | | | | | | |

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: 64-2 | | | |
| Client: SAEP | Project No. 47254 | Boring No.: PZ-99-01 | |
| Contractor: NFE | Date Started: 8-20-99 | Protection: MOD. D. | Completed: 8-20-99 |
| Method: HSA | Casing Size: SAMPLED WITH 3¼" HSA | PI Meter: 580 B OVM | |
| Ground Elev.: | Soil Drilled: 52' | Total Depth: 52' | |
| Logged by: T. Langley | Checked by: | ▽ Below Ground: ~6' | |
| Screen: (ft.) | Riser: (ft.) | Diam: (ID) | Material: |
| | | | Page 2 of: 2 |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | CLP/SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 25 | S-11<br>S-12<br>S-13 | 25'<br>27.5' | ✓ | 2/0.5 | 0 | FINE SAND - V. well sorted, Non-plastic, loose, saturated, stratified alluvium. Collect off-site VOC, bench-scale and Sudan samples here | SP | 2<br>3<br>3<br>6 |
| 30 | S-14 | 30'<br>32' | ✓ | 2/1 | 334 | FINE SAND, TR. coarse sand/gravel, well sorted, non-plastic, dense to very dense, stratified - TR. silt, Sudan sample here | SP/SM | 25<br>36<br>40<br>38 |
| 35 | S-15 | 35'<br>37' | ✓ | 2/1 | 239 | OLIVE BRN.?, V.F. SAND & SILT, V. well sorted, non-plastic, med. dense, sat., stratified alluvium - Sudan sample | SM | 2<br>7<br>9<br>22 |
| 40 | S-16 | 40'<br>42' | ✓ | 2/1.1 | 0 | OLIVE BRN. ? V.F. SAND & SILT - AS ABOVE - Sudan test | SM | 3<br>5<br>7<br>8 |
| 45 | S-17 | 45'<br>47' | ✓ | 2/1.1 | 4 | AS ABOVE BUT W/ LESSER % OF SILT - MOSTLY A V. FINE, well sorted SAND - Sudan test | SM/SP | 4<br>14<br>36<br>34 |
| 50 | S-18 | 50'<br>52' | ✓ | 2/1 | 1 | AS ABOVE | SM/SP | 6<br>6<br>9<br>9 |

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: OU-2 | | | |
| Boring No.: PZ-99-02 | | | |
| Client: SAEP | Project No. 47254 | Protection: MOD. D | |
| Contractor: NFE | Date Started: 8-18-99 | Completed: | |
| Method: HSA | Casing Size: 6 5/8" ID | PI Meter: 580B OVM | |
| Ground Elev.: | Soil Drilled: 52' | Total Depth: 52' | |
| Logged by: T. LONGLEY | Checked by: | Below Ground: ~5.5' | |
| Screen: (ft.) | Riser: (ft.) | Diam: (ID) | Material: |

Page 1 of: 2

Bkg. = BACKGROUND PID READINGS

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | CLP/SCREENING PZM | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 5 | S-1 | 3' 5' | ✓ | 2/1.6 | 0 | GRAY BRN. SILT, L. FINE SAND TO 0.3', V. WELL SORTED, NON-PLASTIC MED. DENSE, DRY STRAT. SM OVER LT. YELLOW BRN. SAND, FINE-TO-MED. V. WELL SORTED, LOOSE, DRY - METALS Sample | SM / SP | 2 4 8 9 2 |
| | S-2 | 5' 7' | ✓ NO | 2/1.3 | 0 | TAN TO YELLOWISH BRN. SAND, FINE TO MED. V. WELL SORTED, NON-PLASTIC, LOOSE, SATURATED AT 5.5', STRATIFIED ALLUVIUM | SP | 4 4 7 |
| | | | | | | ADDING WATER TO PREVENT/COUNTER RUNNING SANDS | | |
| 10 | S-3 | 10' 12' | | 2/2 | 0.4 | AS ABOVE TO 0.3' THEN WELL GRADED F. TO C. SAND, TR. GRAVEL TO 1.5', THEN REPEAT OF ABOVE - NON-PLASTIC, LOOSE, SATURATED, STRATIFIED ALLUVIUM | SP / SW / SP | 2 2 5 6 |
| 15 | S-4 | 15' 17' | | 2/1.5 | Bkg. | AS ABOVE TO 0.6' THEN BLACK TO DARK & REDDISH BRN. GRAVELLY SECTION, LITTLE GRAVEL & SAND, WELL GRADED, NON-PLASTIC, DENSE, "CEMENTED" AROUND GRAVEL PIECES, SATURATED, "TILL-LIKE" (See PZ-99-03@S-8), Then bright yellow-red WELL GRADED SAND TO BOTTOM | SP / GM / SW | 7 11 21 12 |
| 20 | S-5 | 20' 22' | | 2/1.5 | Bkg. | GRAY BRN. W/ REPETITIVE BLACK BANDS OF SAND V. WELL SORTED, NON-PLASTIC, MED. DENSE, SAT. STRATIFIED, ALLUVIUM - BLACK BANDS either ORGANIC OR DARK MINERALS UP TO 1/2" THICK W/ BROWN SANDS 1" TO 4" THICK | SP | 4 5 12 24 |
| 25 | | | | | | | | |

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: SAEP | Project No. 47254 | Study Area: OU-2 | |
| Contractor: NFE | Date Started: 8-18-99 | Boring No.: PZ-99-02 | |
| Method: HSA | Casing Size: 6 5/8" ID | Protection: MOD. D | |
| Ground Elev.: | Soil Drilled: 52' | Completed: | |
| Logged by: T. LONGLEY | Checked by: | PI Meter: 580B OVM | |
| Screen: (ft.) Riser: (ft.) Diam: (ID) Material: | | Total Depth: 52' | |
| | | ▽ Below Ground: ~5.5' | |
| | | Page 2 of: 2 | |

(*) MULTIPLE SPOONS TO COLLECT ENOUGH SOIL TO FILL ANALYTICAL CONTAINERS - DRIVEN THROUGH SAME DEPTH INTERVALS

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | CLP/SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 25 | S-6 & S-7 @ | 25' 27' | ✓ | 2/1.3 | 160 | LT. BRN. SAND, FINE TO MED., V. WELL SORTED NON-PLASTIC, MED. DENSE, STRATIFIED ALLUVIUM COLLECT VOC W/ SYRINGE INTO PRE-PRESERVED MEOH VIAL. COLLECT OFF-SITE & DMP HERE | SP | 10 14 16 15 |
| 30 | S-8 TO S-12 @ | 30' 32' | ✓ | 2/2 | 44 TO 1600 | AS ABOVE W/ TR. TO LITTLE SILT IN ONE 2' SECTION - GOT 44 TO 1600 ppm PID AT SILT SECTION - OUT-OF-RANGE READINGS FOR PID IN THIS SECTION - GOT PID DIRTY - COLLECT OFF-SITE & BENCH-SCALE SAMPLES HERE | SP | 5 7 9 10 |
| 35 | S-13 | 35' 37' | ✓ | 2/1.5 | NO PID | GRAY BRN. W/ BRIGHT RUSTY BRN. SILT & V.F. SAND, V. WELL SORTED, NON-PLASTIC, MED. DENSE TO SOFT, SATURATED, THINLY LAMINATED ALLUVIUM - RUSTY BANDS 1/4" or LESS THICK TO V. THINLY LAMINATED, ONLY SUDAN TEST HERE | SM | 4 6 8 9 |
| 40 | S-14 | 40' 42' | ✓ | 2/1.5 | NO PID | TAN TO OLIVE BRN. V.F. SAND, W/ LITTLE SILT, V. WELL SORTED, NON-PLASTIC, LOOSE TO MED. DENSE SATURATED, V. THINLY LAMINATED ALLUVIUM MOSTLY V.F. SANDS - COLLECTED ONLY SUDAN HERE | SM TO ML | 1 2 5 18 |
| 45 | S-15 | 46' 47' | | 2/1.5 | NO PID | AS ABOVE TO 46.5' THEN REPETITIVE V.F. SAND LENSES OF ABOVE & RUSTY SAND; SO. HAVE TAN TO OLIVE BRN. TO 47'. ALL V.F. SANDS TR. SILT; V. WELL SORTED NON-PLASTIC | SP | 4 6 9 10 |
| 50 | (*) S-16 S-17 S-18 | 50' 52' | ✓ | 2/1.5 | NO PID | AS ABOVE BUT REDDISH COLORATION IS VERTICALLY ARRANGED RATHER THAN HORIZONTAL. OLIVE BRN. TO REDDISH BRN. V.F. SANDS, TR. SILT, V. WELL ~~SORTED, NON-PLASTIC, LOOSE TO MED. DENSE~~ SAT. ALLUVIUM | SP | 3 5 5 6 |

OFF SITE PLUS NED QC SAMPLES HERE

B.O.B. @ 52'

Harding Lawson Associates

9608025S L7

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: OU-2 | | | |
| Boring No.: PZ-99-03 | | | |
| Client: SAEP | Project No. 47254 | Protection: MOD. D | |
| Contractor: NFE | Date Started: 8-17-99 | Completed: 8-17-99 | |
| Method: 3¼" HSA | Casing Size: 3¼" | PI Meter: TE 580 B OVM | |
| Ground Elev.: | Soil Drilled: 42' | Total Depth: 42' | |
| Logged by: T. LOWLEY | Checked by: | Below Ground: 5' | |
| Screen: 5 (ft.) | Riser: 4 (ft.) | Diam: 1" (ID) | Material: SCH 40 PVC |

Page 1 of: 2

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | CLP/SCREENING | PENETRATION/RECOVERY | PID (ppm) or Spoon | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | COLLECT 4 SPOONS AT 5'-7' | | |
| | | | | | | COLLECT 2 SPOONS AT 7'-9' | | |
| | | | | | | COMPOSITED 5' TO 9' FOR ~~ANALYTICALS~~ BENCH SCALE TESTING SOILS | | |
| 5 | | 5' | | | | | | |
| | S-1 THRU S-4 | 7' | | 2/1.5 | 5 | BRN. TO REDDISH BRN. F. TO MED. SAND, WELL SORTED, NON-PLASTIC, CLEAN, MED. DENSE, WET, STRATIFIED ALLUVIUM - TR. SILT. | SP | 4 7 10 10 |
| | S-5 & S-6 | 9' | | 2/1.5 | 6 | AS ABOVE BUT SATURATED - WELL SORTED FINE-TO-MED. SAND, LOOSE, TR. C. SAND & F. GRAVEL, ALLUVIUM | SP | 6 5 5 5 |
| 10 | | | | 2/2 | | | | |
| | S-7 | 10' 12' | ✓ CLP | | 7 | TAN SAND, WELL SORTED, F. TO MED., NON-PLASTIC, LOOSE, SATURATED, STRATIFIED, TR. SILT. ALLUVIUM - COLLECT OFF-SITE SAMPLES HERE VOC W/ SYRINGE | SP | 3 3 7 11 |
| 15 | S-8 | 15' 17' | | 2/1.5 | 10 | SAND AS ABOVE TO 16" W/ PID = 10 ppm JUST ABOVE SILTY ZONE; THEN, 16" TO 17' IS BLACK & YELLOWISH BRN. SILT TO GRAVEL, W/ LITTLE F. GRAVEL, LITTLE SILT, LITTLE WELL SORTED SAND, NON-PLASTIC, V. DENSE, ALLUVIUM TO TILL - PID of 2 ppm IN DENSE UNIT | GM/SM | 8 15 24 40 |
| 20 | S-9 | 20' 22' | ✓ | 2/2 | 5 | "DIRTY" BROWN TO 21' (AS ABOVE) - GRAVELLY SAND BUT TR. SILT, LOOSE, THEN LT. YELLOWISH BRN. SAND, V. WELL SORTED, NON-PLASTIC, DENSE, SATURATED, STRATIFIED ALLUVIUM | SP | 7 14 30 39 |
| | | | | | | COLLECT OFF-SITE SAMPLES HERE | | |
| 25 | | | | | | | | |

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: | OU-2 | | |
| Boring No.: | PZ-99-03 | | |
| Client: | SAEP | Project No. | 47254 |
| Protection: | MOD. D | | |
| Contractor: | NFE | Date Started: | 8-17-99 |
| Completed: | 8-17-99 | | |
| Method: | HSA | Casing Size: | 3¼" |
| PI Meter: | 580B OVM | | |
| Ground Elev.: | | Soil Drilled: | 42' |
| Total Depth: | 42' | | |
| Logged by: | T. LONGLEY | Checked by: | |
| Below Ground: | 5' | | |
| Screen: | 5 (ft.) | Riser: 4 (ft.) | Diam: 1 (ID) |
| Material: | Sch 40 PVC | | |
| Page | 2 of: 2 | | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | CLP/SCREENING | PENETRATION/RECOVERY | PID (ppm) ON Specon | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 25 | S-10 | 25'<br>27' | | 2/2 | 29 | LT. GRAYISH BRN. SAND, VERY WELL SORTED, NON-PLASTIC, DENSE, SATURATED, STRATIFIED ALLUVIUM CLEAN FINE SANDS W/ MICA FLAKES, TR. SILT | SP | 5<br>17<br>29<br>46 |
| 30 | S-11 | 30'<br>32' | | 2/2 | 14 | AS ABOVE TO 31.5' BUT W/ COARSE ZONE @ 30' TO 31.5' THEN Δ TO BRN. V.F. SAND & SILT, W/ ~50% V.F. SAND, ~50% SILT, NON-PLASTIC, MED. DENSE TO DENSE, SAT., STRATIFIED ALLUVIUM<br>COLLECT OFF-SITE SAMPLES HERE | SM | 4<br>10<br>20<br>26 |
| 35 | S-12 | 35'<br>37' | | 2/2 | 16 | GRAY BRN. F. SAND W/ TR. SILT, TR. GRAVEL THEN (AT 36') REDDISH BRN. SAND, TR. SILT, V. WELL SORTED, NON-PLASTIC, LOOSE, SATURATED, STRATIFIED ALLUVIUM - PID of 16 PPM IN RED SECTION, 7 PPM ABOVE HERE | SP | 3<br>4<br>6<br>7 |
| 40 | S-13 | 40'<br>42' | | 2/1.6 | @ 33 | REDDISH BRN. SAND AS ABOVE TO 41.2' THEN LT. GRAY BRN. SILT, WELL SORTED, SLIGHTLY PLASTIC, SOFT, SATURATED, V. THIN LENSES ALLUVIUM | ML | 1<br>3<br>5<br>5 |
| | | | | | | B.O.B. @ 42' @ PID IS 7 PPM IN SILT<br>33 PPM JUST ABOVE SILT | | |
| 45 | | | | | | | | |

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: Chrome | | | |
| Boring No.: SP-99-01 | | | |
| Client: SAEP / Allied Signal | Project No. 2842-00 | Protection: D Modified | |
| Contractor: HLA | Date Started: 1/6/99 | Completed: 1/6/99 | |
| Method: Terraprobe | Casing Size: 1¼ inch | PI Meter: N/A | |
| Ground Elev.: | Soil Drilled: 10 feet | Total Depth: 10 feet | |
| Logged by: G. Rustad | Checked by: | Below Ground: ~7.2 feet | |
| Screen: NA (ft.) | Riser: NA (ft.) Diam: NA (ID) Material: NA | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0-4 | | | | Greenish Brown, cmf SAND, layer ~ 6" thick and 4" from top of sample with little silt. mf SAND below, dry, dense | SP | |
| 2 | SP9901 000xx | | N/A | 2.8' | N/A | Note: Top 3" is concrete and 2" of underlying bedding (gravel) | | |
| 3 | | | | | | | | |
| 4 | | | | | | Top 0.5' See Above description - increasing amounts of gravel. | SW-GW | |
| 5 | SP9901 004xx | 4-8 | N/A | 2.5' | N/A | Bottom 2.0' - DK. brown cmf SAND and Gravel. Subangular cmf Gravel, dry, dense, some moisture at 8'. Will probe deeper to find watertable | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | Probed to 10' bgs for water | | |
| 10 | | | | | | B.O.B. 10' bgs | | |

See FDR for WP-99-01



HARDING LAWSON ASSOCIATES

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: Chrome | | | |
| Boring No.: SP-99-02 | | | |
| Client: Allied Signal/SAEP | Project No. 2842-00 | Protection: Modified D | |
| Contractor: HLA | Date Started: 1/6/99 | Completed: 1-6-99 | |
| Method: Terraprobe | Casing Size: 1 1/4 inch | PI Meter: N/A | |
| Ground Elev.: | Soil Drilled: 4.5 feet | Total Depth: 4.5 feet | |
| Logged by: G. Rustad | Checked by: | Below Ground: | |
| Screen: N/A (ft.) | Riser: N/A (ft.) | Diam: N/A (ID) | Material: N/A |
| | | | Page 1 of: 1 |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY (feet) | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 1–10 | SP9902 000xx | 0-2 | N/A | 0.2 | N/A | Brownish gray, med to coarse Sandy GRAVEL, Subangular, dry, very dense. Next to foundation, may be crushed concrete or bedding material<br>Note: Top 6"-8" is concrete and underlying fill (looks to be Subangular gravel fill.<br><br>Refusal @ 4.5 feet bgs | GW | |

See FDR for WP-99-02 (Not completed)



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# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal/SAEP | Project No. 2342-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 1-6-99 | Boring No.: SP-99-03 | |
| Method: TERRAPROBE | Casing Size: 1 inch | Protection: MODIFIED D | |
| Ground Elev.: | Soil Drilled: 7 feet | Completed: 1-6-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: N/A (ft.) Riser: N/A (ft.) Diam: N/A (ID) Material: N/A | | Total Depth: 7 feet | |
| | | Below Ground: ~6.5 feet | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | 3-4" Concrete | | |
| 1 | SP9903 000XX | 0-2 | N/A | 1.8' | N/A | Brown to dk. brown mf SAND, trace silt in bottom 1 foot. Little angular gravel in a zone ~ 3" thick in middle of sample. Subangular gravel. Dry to damp, Dense | SP | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | Drive to 5' bgs | | |
| 5 | SP9903 005XX | 5-7 | N/A | 0.9' | N/A | Grayish brown, medium to coarse SAND, trace fine, rounded gravel, wet, dense. | SP | |
| 6 | | | | | | | | |
| 7 | | | | | | B.O.B. 7' bgs | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal / SAEP | Project No. 2842-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 1-6-99 | Boring No.: SP-99-04 | |
| Method: Terraprobe | Casing Size: 1 inch | Protection: Modified D | |
| Ground Elev.: | Soil Drilled: 7 feet | Completed: 1-6-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: NA (ft.) | Riser: NA (ft.) Diam: NA (ID) Material: NA | Total Depth: 7 feet | |
| | | Below Ground: ~6-7 feet | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY (feet) | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 1 | SP9904 000XX | 0-2 | N/A | 1.5' | N/A | 4" Concrete and Reddish brick type material<br>2" of Reddish SAND on top<br>Below is Greenish brown, cmf SAND, trace to little silt, damp, dense poorly graded | SP | |
| 2 | | | | | | | | |
| 3 | | | | | | Probe to 5' bgs | | |
| 4 | | | | | | | | |
| 5 | SP9904 005XX | 5-7 | N/A | 1.3' | N/A | Grayish brown, medium to coarse SAND, subrounded, poorly graded, wet, dense | SP | |
| 6 | | | | | | | | |
| 7 | | | | | | B.O.B. @ 7' bgs | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal / SAEP | Project No. 02842-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 1-11-99 | Boring No.: SP-99-05 | |
| Method: Terraprobe | Casing Size: 1¼inch | Protection: Mod D/C | |
| Ground Elev.: | Soil Drilled: 7 feet (logged) | Completed: 1-11-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: – (ft.) | Riser: – (ft.) | Diam: – (ID) | Material: – |
| | | Total Depth: 30 feet | |
| | | ▽ Below Ground: | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 5" Concrete | | |
| 1 | SP9905 000XX | 0-2' | N/A | 1.4' | N/A | Top 0.8'-Ex. Brown, mf SAND, little Silt, poorly graded, dry, medium dense | SP-SM | |
| 2 | | | | | | @ 1.5' bgs - Brown, mf SAND and SILT, dry, medium dense. | SM ML | |
| 3 | | | | | | Probe to 5' for sample | | |
| 4 | | | | | | | | |
| 5 | SP9905 005XX | 5-7' | N/A | 1.5' | N/A | Brown, med. to coarse SAND, trace to little rounded gravel, wet, dense. | SP-SW | |
| 6 | | | | | | | | |
| 7 | | | | | | B.O.B. @ 7' bgs | | |
| 8 | | | | | | Will probe to 30' bgs to collect a g.w. sample from 26'-30'. See FDR for WP-99-03 | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |



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# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal / SAEP | Project No. 2842-00 | Study Area: Chrome | |
| Contractor: | Date Started: 1-8-99 | Boring No.: SP-99-07 | |
| Method: Terraprobe | Casing Size: 1¼" | Protection: Level C / Level D | |
| Ground Elev.: | Soil Drilled: 7 feet | Completed: 1-8-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: 5 (ft.) | Riser: 3.5 (ft.) | Diam: 1" (ID) | Material: PVC |
| | | Total Depth: 7 feet | |
| | | ▽ Below Ground: 5.61 feet | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 5" Concrete Floor | | |
| 1 | SP9907 000XX | 0-2' | N/A | 1.8' | N/A | Brown cmf SAND, poorly graded. Dry to damp, dense | SP | |
| 2 | | | | | | Approx ~ 4" layer of fine Sand and silt @ 6" below top of sample | | |
| 3 | | | | | | | | |
| 4 | | | | | | Probe to 5' bgs | | |
| 5 | | | | | | | | |
| 6 | SP9907 005XX XD | 5'-7' | N/A | 1.8' | N/A | Brown, medium to coarse SAND with little gravel, subangular gravel. | SP | |
| 7 | | | | | | B.O.B @ 7' bgs | | |
| 8 | | | | | | Probe deeper to set MWCR-99-01 | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

6'-8' Hach Kit Test  Total Cr = 0.3mg/L
Hex Cr = 0 mg/L

Set well to straddle water table



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# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: SAEP | Project No. 02842-00 | Study Area: Chrome Plating Area | Boring No.: SP 9908 |
| Contractor: HLA | Date Started: 2/7/99 | Protection: | Completed: 2/7/99 |
| Method: Geoprobe | Casing Size: 2" | | PI Meter: |
| Ground Elev.: | Soil Drilled: Geoprobe | | Total Depth: 7' |
| Logged by: JC | Checked by: | | ▽ Below Ground: 7' |
| Screen: NA (ft.) | Riser: NA (ft.) | Diam: NA (ID) | Material: NA |

Page 1 of: 1

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | SP-99-08 0-2 | 0-2 | NA | 18" | NA | TAN Brown silty FINE-Med SAND, loose, Moist NON-Plastic, Micaceous Appx 15-20% SILT | SW | |
| | SP-99-08 5-7 | 5-7 | NA | 18" | NA | TAN Brown SILTY Med-Coarse SAND, Very loose, Moist-wet NON Plastic, Micaceous Appx 10-15% SILT | SW | |

9312005S L7

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# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal SAEP | Project No. 2842-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 1-9-99 | Boring No.: SP-99-09 | |
| Method: Terraprobe | Casing Size: 1 1/4 inch | Protection: Level C/Level D | |
| Ground Elev.: | Soil Drilled: 7 feet | Completed: 1-9-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: 5 (ft.) | Riser: 3.5 (ft.) | Diam: 1 " (ID) | Material: PVC |
| | | Total Depth: 7 feet | |
| | | ▽ Below Ground: 5.57 feet | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 1 | SP9909 000XX MS MD | 0-4' | N/A | 3.1' | N/A | 6" Concrete<br>Brown, cmf SAND, trace silt and gravel dry, dense<br>~ 0.4" layer of brown sand and silt at 6" below bottom of concrete | SP | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | Probe to 5' ↓ | | |
| 5 | SP9909 005XX | 5-7' | N/A | | N/A | Brown, medium to coarse SAND, trace subangular gravel at bottom of sample, wet, dense, poorly graded | SP | |
| 6 | | | | | | B.O.B @ 7' | | |
| 7 | | | | | | Probe deeper to set MWCR-99-02 | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

6'-8' Hach Kit Test  Total Cr = 0.15 mg/L
Hex Cr = 0 mg/L

Set well to straddle water table - Water ~ 5.5'

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| | | Study Area: | — |
| | | Boring No.: | SP-99-11 |
| Client: Allied Signal/SAEP | Project No. 2842-00 | Protection: | Modified D |
| Contractor: HLA | Date Started: 1/5/99 | Completed: | 1/6/99 |
| Method: GeoProbe | Casing Size: 1 inch | PI Meter: | N/A |
| Ground Elev.: | Soil Drilled: 8 feet | Total Depth: | 8 feet |
| Logged by: G. Rustad | Checked by: | Below Ground: | |
| Screen: N/A (ft.) | Riser: N/A (ft.) Diam: N/A (ID) Material: N/A | Page | 1 of: 1 |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY (feet) | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 1–2 | SP9911 000XX | 0-2 | N/A | 1.2' | N/A | Brown, mf SAND, trace to no silt dry, dense - No discoloration | SP | |
| 2–6 | | | | | | Drive Probe to 6' bgs | | |
| 6–8 | SP9911 006XX | 6-8 | N/A | 1.8' | N/A | See above Description clamp | SP | |
| 8–10 | | | | | | | | |



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# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal / SAEP | Project No. 2842-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 1-12-99 | Boring No.: SP-99-12 | |
| Method: GeoProbe | Casing Size: 1 inch | Protection: Mod. D | |
| Ground Elev.: | Soil Drilled: 7 feet | Completed: 1-12-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: — (ft.) | Riser: — (ft.) | Diam: — (ID) | Material: — |
| | | Total Depth: 7 feet | |
| | | ▽ Below Ground: ~ 5.5 feet | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 1 | SP9912 00XX | 0-2 | N/A | 1.4' | N/A | 6" Concrete<br>Brown, Some orangish color, mf SAND, trace to little silt, poorly graded, dry, dense | SM | |
| 2 | | | | | | Hand Probe to 5' bgs | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | SP9912 05XX | 5-7 | N/A | 1.3' | N/A | @ 5' - Brown, medium to coarse SAND and fine to med. gravel, well graded, wet, subrounded gravel. dense | SW-GW | |
| 6 | | | | | | | | |
| 7 | | | | | | B.O.B. @ 7' bgs | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |



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# SOIL BORING LOG

| | | | |
|---|---|---|---|
| | | Study Area: Chrome | |
| | | Boring No.: SP-99-12I | |
| Client: Allied Signal / SAEP | Project No. 02842-00 | Protection: Mod. D | |
| Contractor: HLA | Date Started: 2-9-99 | Completed: 2-9-99 | |
| Method: Terraprobe | Casing Size: 1.25 INCH | PI Meter: M00109 | |
| Ground Elev.: | Soil Drilled: 21 FEET | Total Depth: 21 FEET | |
| Logged by: G. Rustad | Checked by: | ▽ Below Ground: ~5.5 feet bgs | |
| Screen: (ft.) Riser: (ft.) Diam: (ID) Material: | | Page 1 of: 2 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH (FT) | ON-SITE SCREENING | RECOVERY (FOOT) | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 4" Asphalt | | |
| 2 | | 0-2 | N/A | 0.9' | 0.0 | @0-2': DK. grayish brown, cmf SAND with little gravel, angular gravel, poorly graded, dry, medium dense | SP | |
| 4 | | | | | | | | |
| 6 | | 5-7 | N/A | 1.7' | 0.0 | @5' - Olive brown mf SAND, trace to little silt, dry, poorly graded | SP- | |
| 8 | | | | | | @6' - Brown, cm SAND and fine to medium gravel, subangular, poorly graded, wet, med. dense | SW | |
| 10 | | 10-12' | N/A | 0.1' | N/A | MINIMAL Recovery - coarse SAND and cmf GRAVEL, Well graded, subangular gravel, saturated, med. dense | GW | |
| 12 | | | | | | | | |
| 14 | | | | | | | | |
| 16 | | 15'-17' | N/A | 0.6' | 6.1 | 15'-17' - mf SAND, trc. coarse sand poorly graded, saturated, med. dense | SP | |
| 18 | | 17'-19' | N/A | 0.4' | N/A | 17'-19'. Coarse SAND and cmf GRAVEL subrounded, well graded. Gravel up to ~1 inch in diameter. SATURATED med. dense. change in driving speed @ 17' bgs. | GW | |
| 20 | | | | | | | | |

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal/SAEP | Project No. 02842-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 2-9-99 | Boring No.: SP-99-12I | |
| Method: Terraprobe | Casing Size: 1.25 INCH | Protection: MOD D | |
| Ground Elev.: | Soil Drilled: 21 FEET | Completed: 2-9-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: M00109 | |
| Screen: (ft.) | Riser: (ft.) Diam: (ID) Material: | Total Depth: 21 FEET | |
| | | ▽ Below Ground: ~5.5 FEET | |
| | | Page 2 of: | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH (FT) bgs | ON-SITE SCREENING | RECOVERY (FT) | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 22 | | 20'-22 | N/A | 1.5 | 5.6 | 20'-25' - Hard zone, cmf SAND with trc. gravel, brown, ~50% fine Sand, subangular gravel, saturated dense | SP | |
| | | | | | | B.O.B. @ 21 FEET | | |
| 24 | | | | | | | | |
| 26 | | | | | | | | |
| 28 | | | | | | | | |
| 30 | | | | | | | | |
| 32 | | | | | | | | |
| 34 | | | | | | | | |
| 36 | | | | | | | | |
| 38 | | | | | | | | |
| 40 | | | | | | | | |



HARDING LAWSON ASSOCIATES

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: Chrome | | | |
| Boring No.: SP-99-13 | | | |
| Client: AlliedSignal/SAEP | Project No. 02842-00 | Protection: MOD D | |
| Contractor: HLA | Date Started: 1-12-99 | Completed: 1-12-99 | |
| Method: Geoprobe | Casing Size: 1 inch | PI Meter: N/A | |
| Ground Elev.: | Soil Drilled: 7 feet | Total Depth: 7 feet | |
| Logged by: G. Rustad | Checked by: | ▽ Below Ground: | |
| Screen: – (ft.) | Riser: – (ft.) | Diam: – (ID) | Material: – |
| | | | Page 1 of: 1 |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 6" Concrete cored | | |
| 1 | SP9913 OOXX | 0-2' | N/A | 1.0' | N/A | Brown to grayish brown, mf sand and silt, poorly graded, dry, medium dense | SM-ML | |
| 2 | | | | | | Probe to 5' bgs | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | SP9913 OOSXX | 5-7' | N/A | 1.3' | N/A | @5' - Brown, medium to coarse SAND and cmf GRAVEL, sub-angular, well graded, wet, very dense | SW-GW | |
| 7 | | | | | | B.O.B. @ 7 feet | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |



HARDING LAWSON ASSOCIATES

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: SAEP | Project No. 02842-00 | Study Area: Chrome Plating Area | |
| Contractor: HLA | Date Started: 2/7/99 | Boring No.: SP 99-14 | |
| Method: Geoprobe | Casing Size: 2" | Protection: | |
| Ground Elev.: | Soil Drilled: Hand probe | Completed: 2/7/99 | |
| Logged by: JC | Checked by: | PI Meter: | |
| Screen: NA (ft.) | Riser: NA (ft.) | Diam: NA (ID) | Material: NA |
| | | Total Depth: 7' | |
| | | Below Ground: 7' | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | SP-99-14 0-2 | 0-2 | NA | 18" | NA | Brown SILTY Fine SAND loose, moist, non-plastic. Appx 15 20% SILT | SW | |
| | SP-99-14 SB S-7 | 5-7 | NA | 18" | NA | Brown SILTY medium coarse SAND, Very loose, wet Non-Plastic Appx 10% SILT | SW | |

9312005S L7

HARDING LAWSON ASSOCIATES

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: Chrome | | | |
| Boring No.: SP-99-17 | | | |
| Client: Allied Signal / SAEP | Project No. 2842-00 | Protection: Level D Mod. | |
| Contractor: HLA | Date Started: 1-7-99 | Completed: 1-7-99 | |
| Method: Terraprobe | Casing Size: 1¼ inch | PI Meter: N/A | |
| Ground Elev.: | Soil Drilled: 7 feet | Total Depth: 9 feet | |
| Logged by: G. Rustad | Checked by: | Below Ground: ~5.3 feet | |
| Screen: N/A (ft.) | Riser: N/A (ft.) | Diam: N/A (ID) | Material: N/A |
| | | | Page 1 of: 1 |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 1 | SP9917 000XX | 0-2 | | 1.0' | | 4" layer of concrete<br>Brown, cmf SAND and angular gravel (little), well graded, Yellow color on larger gravel pieces. Dry to damp. dense. | SW | |
| 2 | | | | | | | | |
| 3 | | | | | | Refusal at 3' bgs<br>Move up (away from building 2') | | |
| 4 | | | | | | | | |
| 5 | SP9917 005XX | 5-7 | | 0.8' | | Brown, medium to coarse SAND with trace subangular gravel. Poorly graded, damp to moist, very dense | SP | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | Drive to 9' to sample GW<br>*Formation "feels" soft @ 8' bgs | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

See FDR for WP-99-07



HARDING LAWSON ASSOCIATES

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| | | | Study Area: Chrome |
| | | | Boring No.: SP-99-18 |
| Client: Allied Signal / SAEP | | Project No. 2842-00 | Protection: MODIFIED D |
| Contractor: HLA | Date Started: 1-7-99 | | Completed: 1-7-99 |
| Method: Terraprobe | Casing Size: 1¼ inch | | PI Meter: N/A |
| Ground Elev.: | Soil Drilled: 7 feet | | Total Depth: 7 feet |
| Logged by: G. Rustad | Checked by: | | ▽ Below Ground: |
| Screen: – (ft.) | Riser: – (ft.) | Diam: – (ID) / Material: – | Page 1 of: 1 |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 4" Concrete Drilled | | |
| 1 | SP9918 COCXX | 0-2 | | 1.3' | | Brown, cmf SAND, poorly graded, damp, dense. | SP | |
| 2 | | | | | | 3" Zone of grayish brown fine sand ~ 4" from top. | | |
| 3 | | | | | | Probe to 5' bgs | | |
| 4 | | | | | | | | |
| 5 | SP9918 COSXX | 5-7 | | 1.0 | | Brown, medium to coarse SAND, subrounded, poorly graded, wet, dense | SP | |
| 6 | | | | | | | | |
| 7 | | | | | | B.O.B. @ 7 feet bgs | | |
| 8 | | | | | | GA ~~Probe to feet bgs for setting monitoring well.~~ | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

See FDR for MWCR-99-05 (Not completed)



HARDING LAWSON ASSOCIATES

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal/SAEP | Project No. 2842-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 1-7-99 | Boring No.: SP-99-19 | |
| Method: Terraprobe | Casing Size: 1¼ inch | Protection: Level D Mod. | |
| Ground Elev.: | Soil Drilled: 7 feet | Completed: 1-7-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: – (ft.) | Riser: – (ft.) | Diam: – (ID) | Material: – |
| | | Total Depth: 7 feet | |
| | | ▽ Below Ground: ~6.5' | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 4" Concrete | | |
| 1 | SP9919 000XX | 0-2 | N/A | 1.6' | N/A | Brown, cmf SAND, trace silt, poorly graded, damp, dense. Approx. 3" zone of fine grayish SAND @ ~6" bgs. | SP | |
| 2 | | | | | | | | |
| 3 | | | | | | Probe to 5' bgs | | |
| 4 | | | | | | | | |
| 5 | SP9919 005XX | 5-7 | N/A | 1.6' | N/A | Greenish brown, cmf SAND, poorly graded, wet to saturated @ tip, less dense. | SP | |
| 6 | | | | | | | | |
| 7 | | | | | | B.O.B. @ 7' bgs | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |



HARDING LAWSON ASSOCIATES

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal / SAEP | Project No. 2842-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 1-7-99 | Boring No.: SP-99-20 | |
| Method: Terraprobe | Casing Size: 1¼ inch | Protection: Level D Mod. | |
| Ground Elev.: | Soil Drilled: 7 feet | Completed: 1-7-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: – (ft.) | Riser: – (ft.) | Diam: – (ID) | Material: – |
| | | Total Depth: 9 feet | |
| | | ▽ Below Ground: | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 1 | SP9920 000 xx | 0-2' | N/A | 1.3' | N/A | 4" Asphalt drilled<br>Brown cmf SAND, poorly graded trace silt, damp, dense | SP | |
| 2 | | | | | | Approx. 2" zone of grayish brown fine sand, moist, about 3" from top of sample. | | |
| 3 | | | | | | | | |
| 4 | | | | | | Probe to 5' bgs | | |
| 5 | | | | | | | | |
| 6 | SP9920 005 xx | 5-7' | N/A | 1.0' | N/A | Brown, medium to coarse SAND, subrounded, poorly graded, wet dense | SP | |
| 7 | | | | | | B.O.B. @ 7' bgs | | |
| 8 | | | | | | Probed to 9' on 1-8-99 to collect G.W. sample | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

See FOR for WP-99-09

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal / SAEP | Project No. 2842-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 1-10-99 | Boring No.: SP-PILOT-01A | |
| Method: Terraprobe | Casing Size: 1¼ inch | Protection: C / MOD D | |
| Ground Elev.: | Soil Drilled: 7 feet | Completed: 1-10-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: – (ft.) | Riser: – (ft.) | Diam: – (ID) | Material: – |
| | | Total Depth: 7 feet | |
| | | ▽ Below Ground: ~5.5' bgs | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 3" Concrete | | |
| 1 | SPPILOT01A000 XX | 0-2' | N/A | 1.6' | N/A | Brown, mf SAND with some silt, poorly graded, dry, moderately dense | SM | |
| 2 | | | | | | | | |
| 3 | | | | | | Probe to 5' bgs | | |
| 4 | | | | | | | | |
| 5 | | | | | | Top 0.5' - See Above Description, except clean SAND (no silt) | SP | |
| 6 | SPPILOT01A005 XX | 5'-7' | N/A | 1.5' | N/A | Bottom 1.0' - Grayish brown med. to coarse SAND with some fine gravel, wet, dense, subrounded | SP-SW | |
| 7 | | | | | | B.O.B. @ 7' bgs | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |



HARDING LAWSON ASSOCIATES

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal | SAEP | Project No. 2842-00 | Study Area: Chrome |
| Contractor: HLA | Date Started: 1-10-99 | | Boring No.: SP-PILOT-02A |
| Method: Terraprobe | Casing Size: 1¼ inch | | Protection: C / D MOD |
| Ground Elev.: | Soil Drilled: 7 feet | | Completed: 1-10-99 |
| Logged by: G. Rustad | Checked by: | | PI Meter: N/A |
| Screen: – (ft.) | Riser: – (ft.) | Diam: – (ID) Material: – | Total Depth: 7 feet |
| | | | Below Ground: |
| | | | Page 1 of: 1 |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 1 | SPPILOT 02A0000xx | 0-2' | N/A | 1.4' | N/A | 5" Concrete<br>Top 5" - Brown, mf SAND, trc Silt poorly graded, dry,<br>Bottom 1 foot - Brown mf SAND and SILT, dry, dense<br>↓<br>Probe to 5' bgs | SP<br>SM-ML | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | SPPILOT 02A005xx | 5-7' | N/A | 1.6' | N/A | Top 6" - Brown cmf SAND w/ little medium to fine gravel, damp,<br>Bottom 1.2' - coarse SAND and cmf subangular gravel, well graded, wet, very dense | SW<br>SW-GW | |
| 6 | | | | | | | | |
| 7 | | | | | | B.O.B. @ 7' bgs | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |



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# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: Chrome | | | |
| Boring No.: SP-PILOT-03A | | | |
| Client: Allied Signal / SAEP | Project No. 2842-00 | Protection: C/MOD D | |
| Contractor: HLA | Date Started: 1-10-99 | Completed: 1-10-99 | |
| Method: Terra probe | Casing Size: 1.5 inches | PI Meter: N/A | |
| Ground Elev.: | Soil Drilled: 7 feet | Total Depth: 7 feet | |
| Logged by: G. Rustad | Checked by: | ▽ Below Ground: ~5.5 feet | |
| Screen: — (ft.) Riser: — (ft.) Diam: — (ID) Material: — | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| 1 | SPPILOT 03A000 XX XD MS MD | 0-3' | N/A | 2.1' | N/A | 5" Concrete - broken at base<br>Brown mf SAND, little silt, poorly graded, damp, dense | SM | |
| 2 | | | | | | | | |
| 3 | | | | | | Refusal @ 3' bgs<br>Move hole to between 03A and 03B & try Again for 5'-7' sample. | | |
| 4 | | | | | | | | |
| 5 | SPPILOT 03A005 XX | 5-7' | N/A | 1.7' | N/A | @ 5' - Brown mf SAND, poorly graded, wet, dense | SP | |
| 6 | | | | | | @ 5.5' - grayish brown, coarse SAND and cmf GRAVEL, wet, dense, subrounded gravel | SW-GW | |
| 7 | | | | | | B.O.B. @ 7' bgs | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |



HARDING LAWSON ASSOCIATES

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Study Area: Chrome | | | |
| Boring No.: SP-PILOT-04A | | | |
| Client: Allied Signal / SAEP | Project No. 2842-00 | Protection: C / MOD. D | |
| Contractor: HLA | Date Started: 1-10-99 | Completed: 1-10-99 | |
| Method: Terraprobe | Casing Size: 1½ inch | PI Meter: N/A | |
| Ground Elev.: | Soil Drilled: 8 feet | Total Depth: 8 feet | |
| Logged by: G. Rustad | Checked by: | Below Ground: ~5.5' | |
| Screen: — (ft.) Riser: — (ft.) Diam: — (ID) Material: — | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 5" Concrete | | |
| 1 | SPPILOT 04A000 XX | 0-4' | N/A | 3.8' | N/A | Brown, mf SAND with little silt, dry, poorly graded | SM | |
| 2 | | | | | | @ 2' increased silt (~40%) | SM | |
| 3 | | | | | | @ 3.5' - trace to no silt, mf SAND | SP | |
| 4 | | | | | | @ 4.0' - See Above Description | | |
| 5 | SPPILOT 04A004 XX | 4-8' | N/A | | N/A | | | |
| | SPPILOT 04A004 GS | | | | | @ 5.5' - medium to coarse SAND and GRAVEL, dk. grayish brown, well graded, <trc. silt, wet, very dense | SW-GW | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | B.O.B. @ 8' bgs | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal / SAED | Project No. 02842-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 1-10-99 | Boring No.: SP-PILOT-05A | |
| Method: Terraprobe | Casing Size: 1½ inch | Protection: C / MOD D | |
| Ground Elev.: | Soil Drilled: 7 feet | Completed: 1-10-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: – (ft.) | Riser: – (ft.) | Diam: – (ID) | Material: – |
| | | Total Depth: 7 feet | |
| | | ▽ Below Ground: | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 5" Concrete drilled | | |
| 1 | SPPILOT 05A000 XX | 0-2' | N/A | 1.2' | N/A | Brown, mf SAND with little silt, poorly graded, dry, dense. | SM | |
| 2 | | | | | | Probe to 5' bgs | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | SPPILOT 05A005 XX | | | | | @ 5' - med. to coarse Brown SAND, little fine gravel, no silt, wet, dense | SP | |
| 6 | | | | | | @ 5.5' - coarse SAND and cmf gravel, subangular, wet, very dense, well graded | SW-GW | |
| 7 | | | | | | B.O.B. @ 7' bgs | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |



HARDING LAWSON ASSOCIATES

# SOIL BORING LOG

| | | | |
|---|---|---|---|
| Client: Allied Signal/SAEP | Project No. 2842-00 | Study Area: Chrome | |
| Contractor: HLA | Date Started: 1-9-99 | Boring No.: PZ-PILOT-06 | |
| Method: Terraprobe | Casing Size: 1½ inch | Protection: Mod. Level D | |
| Ground Elev.: | Soil Drilled: 16 feet | Completed: 1-9-99 | |
| Logged by: G. Rustad | Checked by: | PI Meter: N/A | |
| Screen: 5 (ft.) Riser: 8 (ft.) Diam: 1" (ID) Material: PVC | | Total Depth: 16 feet | |
| | | ▽ Below Ground: ≈ 5.5 feet | |
| | | Page 1 of: 1 | |

| DEPTH (FT) | SAMPLE NUMBER | SAMPLE DEPTH | ON-SITE SCREENING | RECOVERY | PID (ppm) | SOIL/ROCK/DISCHARGE WATER DESCRIPTION | SOIL CLASS | WELL DATA |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 5 inches concrete | | |
| 2 | PZ06GS 000XX | 0-4' | N/A | 3.3' | N/A | Brown, mf SAND, trace to no silt, poorly graded, dry, dense | SP | |
| 4 | | | | | | Top 2.0' See Above description | | |
| 6 | PZ06GS 004XX | 4-8' | N/A | 3.8' | N/A | Bottom - Brown coarse to med. SAND with ~~trace to~~ little to some subangular gravel, wet, dense. | SP-SW | ▽ = 5.5' |
| 8 | | 8-10' | N/A | 1.4' | N/A | Top 0.3' - See above description for "Bottom" | | |
| | N/A | | | | | Bottom 1.1' - cmf SAND, poorly graded, trace to no gravel, wet, dense. | SP | |
| 10 | PZ06GS 010XX | 10-12' | | | | 10'-12' - Grayish brown, cmf SAND, with little fine Gravel, Subrounded, poorly graded, wet | SP | |
| 12 | | | | | | | | |
| 14 | PZ06GS 014XX | 14-16' | N/A | 1.4' | N/A | @14'-16': Grayish brown, cmf SAND with medium angular gravel, little silt (mud), saturated, dense, organic smell. | SW | |
| 16 | | | | | | B.O.B. @ 16 bgs | | |
| 18 | | | | | | Well PZ-PILOT-06 to be set in this boring (from 13' - 8' screen) | | |
| 20 | | | | | | | | |



HARDING LAWSON ASSOCIATES

# FIELD SAMPLE DATA RECORDS

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2342-00 | DATE: 1/6/99

WELL ID: WP-99-01 | ACTIVITY TIME START: 1040 END: 1200 | BOTTLE TIME: 1130

SAMPLE ISIS ID: WP990100[illegible]XX

[ ] QC SAMPLES COLLECTED | DUPLICATE ID: N/A | MS ID: N/A | MSD ID: N/A

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | N/A FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | N/A FT | PROTECTIVE CASING / WELL DIFFERENCE | N/A FT |
| DEPTH TO WATER | ~~7.2~~ 6.0 FT (TOR) | SCREEN LENGTH | 2 FT | WELL DIAMETER | 1 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: 2.8 FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: 3 GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1 gallon | 2 gallons | 3 gal | | |
| TEMPERATURE (degreesC) | 23.0 | 21.3 | 22.8 | | |
| pH (units) | 7.40 | 7.61 | 7.64 | | |
| TURBIDITY (ntu) | 3 | 0 | 4 | | |
| SPEC. COND. (uhmos/cm) | .314 | .344 | .312 | | |
| DISSOLVED OXYGEN (mg/L) | 1.50 | 2.59 | 2.44 | | |
| REDOX POTENTIAL | -162.8 | -156.4 | -107.5 | | |

SAMPLE OBSERVATIONS:
- [X] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: [X] [ ] [ ] [X] [ ] [ ] [ ] [ ] [ ]

SAMPLING: [X] PERISTALTIC PUMP; [ ] SUBMERSIBLE PUMP; [ ] BLADDER PUMP; [X] PVC/SILICON TUBING; [ ] TEFLON/SILICON TUBING; [ ] WATTERA; [ ] IN LINE FILTER; [ ] PRESS/VAC FILTER; [ ] _____

DECON FLUIDS USED: [ ] METHANOL; [X] LIQUINOX; [ ] POTABLE WATER; [X] DEIONIZED WATER; [ ] HEXANE; [X] NITRIC ACID; [ ] _____

WATER LEVEL EQUIPMENT USED: [X] ELECTRIC COND. PROBE; [ ] FLOAT ACTIVATED; [ ] KECK INTERFACE PROBE; [ ] _____

NUMBER OF FILTERS USED: 0

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [X] Ferrous Iron | | N | N | 25mL | [ ] | ____/____/____/____ |
| [X] Hex. Chrome | | | | | [ ] | ____/____/____/____ |
| [ ] Total Cr | | | | | [ ] | ____/____/____/____ |
| [ ] Metals (Ca, Cu, Ni, Zn) | | | | | [ ] | ____/____/____/____ |
| [ ] CN | | | | | [ ] | ____/____/____/____ |
| [ ] Sulfate | | | | | [ ] | ____/____/____/____ |
| [ ] Alkalinity | | | | | [ ] | ____/____/____/____ |
| [ ] | | | | | [ ] | ____/____/____/____ |
| [ ] | | | | | [ ] | ____/____/____/____ |
| [ ] | | | | | [ ] | ____/____/____/____ |
| [ ] | | | | | [ ] | ____/____/____/____ |
| [ ] | | | | | [ ] | ____/____/____/____ |
| [ ] | | | | | [ ] | ____/____/____/____ |
| [ ] | | | | | [ ] | ____/____/____/____ |

NOTES: Ferrous Iron result = 0.4mg/L (performed w/Hach Kit)

Additional turbidity in metals sample due to failed battery. Sample collected from 8'-10' bgs

SIGNATURE: Gina L. Pustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted].



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAED Chrome Plating | JOB NUMBER: 2847-00 | DATE: 1/24/99

WELL ID: WP-99-01 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

Geoprobe G.W Sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

5 gallons 16-20

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 21-25 | 5 gallons | | | |
| TEMPERATURE (degreesC) | 24.7 | 23.7 | | | |
| pH (units) | 6.93 | 6.67 | | | |
| TURBIDITY (ntu) | 31 | 2 | | | |
| SPEC. COND. (uhmos/cm) | 3.52 | 2.15 | | | |
| DISSOLVED OXYGEN (mg/L) | 4.24 | 16.5 | | | |
| REDOX POTENTIAL | 48.1 | 10.9 | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| | | SUBMERSIBLE PUMP |
| ☒ | ☒ | BLADDER PUMP |
| | | PVC/SILICON TUBING |
| | | TEFLON/SILICON TUBING |
| | | WATTERA |
| | | IN LINE FILTER |
| | | PRESS/VAC FILTER |
| | | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 3

# FIELD DATA RECORD - GROUNDWATER SAMPLING*

PROJECT: SAEP Chrome Plating | JOB NUMBER: 2842-00 | DATE: 1-22-99

WELL ID: WP-99-02 | ACTIVITY TIME: START ____ END ____ | BOTTLE TIME: ____

SAMPLE ISIS ID: ____

☐ QC SAMPLES COLLECTED | DUPLICATE ID: ____ | MS ID: ____ | MSD ID: ____

*GeoProbe GW Sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = ____ GAL/VOL | TOTAL VOLUME PURGED ____ GAL

AMBIENT AIR ____ PPM | WELL MOUTH ____ PPM

## PURGE DATA

| | 67'-71' | 57'-61' | 57'-61' | 47'-51' | 47'-51' |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2 | 2 | 4.5 gal | 3 gal | 6 gal |
| TEMPERATURE (degreesC) | 17.2 | 16.3 | 16.7 | 15.9 | 16.4 |
| pH (units) | 6.33 | 6.49 | 6.47 | 6.61 | 6.73 |
| TURBIDITY (ntu) | 170 | 999 | 12 | 51.6 | 9 |
| SPEC. COND. (MS umhos/cm) | 16.5 | 15.0 | 14.8 | 12.7 | 12.3 |
| DISSOLVED OXYGEN (mg/L) | 2.97 | 1.83 | 2.65 | 1.17 | 1.67 |
| REDOX POTENTIAL | 104.2 | 68.4 | 76.3 | 121.9 | 214.8 |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED ____
☐ CLOUDY ____
☐ TURBID ____
☐ ODOR ____
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ ☐ ☒ ☐ ☐ ☐ ☐ ☐

SAMPLING: ☒ PERISTALTIC PUMP; ☐ SUBMERSIBLE PUMP; ☐ BLADDER PUMP; ☒ PVC/SILICON TUBING; ☐ TEFLON/SILICON TUBING; ☐ WATTERA; ☐ IN LINE FILTER; ☐ PRESS/VAC FILTER; ____

DECON FLUIDS USED: ☐ METHANOL; ☒ LIQUINOX; ☒ POTABLE WATER; ☒ DEIONIZED WATER; ☐ HEXANE; ☐ NITRIC ACID; ____

WATER LEVEL EQUIPMENT USED: ☒ ELECTRIC COND. PROBE; ☐ FLOAT ACTIVATED; ☐ KECK INTERFACE PROBE; ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|
| ☐ | | | | ☐ | ____/____/____/____ |

All samples submitted for off-site analyses, and onsite analyses by HACH test kits (Total CR, Hex CR, Ferrous Fe)

NOTES: 67'-71' GW Sample filter use Field. 6 gallons H2O Purge from 67-71

SIGNATURE: ____

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING *

Q1

PROJECT: SITEP Chromic Plating | JOB NUMBER: 2842-00 | DATE: 1-22-99

WELL ID: WP-99-02 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

* GeoProbe GW sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | 37'-41' | 37'-41'** | 30'-34' | 30'-34' | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gal | 7 gal | 3 gal | 6 gal | |
| TEMPERATURE (degreesC) | 15.8 | 15.8 | 15.4 | 15.6 | |
| pH (units) | 7.08 | 7.11 | 7.30 | 7.28 | |
| TURBIDITY (ntu) | 70 | 40 | 41 | 90 | |
| SPEC. COND. ~~(umhos/cm)~~ mS/cm | 10.3 | 10.3 | 6.49 | 6.44 | |
| DISSOLVED OXYGEN (mg/L) | 3.69 | 4.81 (4.81) | 3.75 | 3.76 | |
| REDOX POTENTIAL | 194.3 | 79.6 | 38.7 | 60.8 | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

All samples submitted for off-site analyses.
All samples submitted for onsite HACH test kit analyses (Total CR, Hex CR, Ferrous Fe)

NOTES: ** WP990241XX was filtered in the field.

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING *

PROJECT: SAEP Chrome Plating
JOB NUMBER: 2842-00
DATE: 1-21-99
WELL ID: WP-99-02
ACTIVITY TIME: START ____ END ____
BOTTLE TIME: ____
SAMPLE ISIS ID: ____

☐ QC SAMPLES COLLECTED
DUPLICATE ID: ____
MS ID: ____
MSD ID: ____

* GeoProbrobe GW Sampling

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: ____ FT (TOR)
HISTORICAL WELL DEPTH: ____ FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): ____ FT
PROTECTIVE CASING / WELL DIFFERENCE: ____ FT
DEPTH TO WATER: ____ FT (TOR)
SCREEN LENGTH: ____ FT
WELL DIAMETER: ____ IN
WELL MATERIAL: ____
HEIGHT OF WATER COLUMN: ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = ____ GAL/VOL
TOTAL VOLUME PURGED: ____ GAL
AMBIENT AIR: ____ PPM
WELL MOUTH: ____ PPM

## PURGE DATA

| | 24'-28' | 24'-28' | 16'-20' | 8'-12' | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1 gallon | 5 gallon | 3 gal | 3 ga | |
| TEMPERATURE (degreesC) | 18.4 | 17.6 | 18.0 | 15.9 | |
| pH (units) | 7.06 | 6.92 | 6.39 | 6.46 | |
| TURBIDITY (ntu) | 999 | 339 | 5 | -10 | |
| SPEC. COND. (~~uhmos~~ mS/cm) | 3.00 | 2.97 | .907 | .877 | |
| DISSOLVED OXYGEN (mg/L) | 2.50 | 3.40 | 1.57 | 1.49 | |
| REDOX POTENTIAL | 146.6 | 131.6 | 154.5 | 76.5 | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED ____
☐ CLOUDY ____
☐ TURBID ____
☐ ODOR ____
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

SAMPLING
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
☐ ____

DECON FLUIDS USED
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ ____

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
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| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

All samples submitted for offsite, and onsite analyses by Hach test Kits (Total CR, Hex CR, Ferrou Fe)

NOTES
- Negative Readings on Turbity were Recognized + Belived To be A batt Problem
PVC 1/27/99

SIGNATURE: [signature]
RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-11-99

WELL ID: WP-99-03 | ACTIVITY TIME START: 1310 END: 1630 | BOTTLE TIME: 1415

SAMPLE ISIS ID: WP9903026XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 30 FT (~~TOR~~ bgs) | HISTORICAL WELL DEPTH | – FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | – FT | PROTECTIVE CASING / WELL DIFFERENCE | – FT |
| DEPTH TO WATER | 5.5 FT (~~TOR~~ bgs) | SCREEN LENGTH | 4 FT | WELL DIAMETER | 1 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: – FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = – GAL/VOL | TOTAL VOLUME PURGED: – GAL

AMBIENT AIR: – PPM | WELL MOUTH: – PPM

## PURGE DATA

| | ① (26'-30') | ② (21'-25') | ③ (16'-20') | ④ (11-15') | ⑤ (5-9') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gal | 4 gal | 4 gal | 3 gal | 3 gal |
| TEMPERATURE (degreesC) | 19.9 | 20.3 | 20.9 | 21.5 | 20.7 |
| pH (units) | 8.14 | 6.64 | 6.44 | 6.85 | 8.58 |
| TURBIDITY (ntu) | 91 | 55 | 0 | 5 | 0 |
| SPEC. COND. (~~umhos~~ mS/cm) | 3.35 | 1.25 | 0.823 | 0.550 | 0.488 |
| DISSOLVED OXYGEN (mg/L) | 1.61 | 1.85 | 1.83 | 1.78 | 1.69 |
| REDOX POTENTIAL mV | 106 | -257 | -77 | -88 | -19 |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 2,3
- ☒ COLORED Yellow 1,4,5
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| | ☒ | PERISTALTIC PUMP |
| | | SUBMERSIBLE PUMP |
| | | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| | | TEFLON/SILICON TUBING |
| | | WATTERA |
| | | IN LINE FILTER |
| | | PRESS/VAC FILTER |
| ☒ | ☒ | Stainless Rod |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☒ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

Analytical collected 26'-30' bgs

NOTES: Hach Kit Test: (26'-30'): Total Cr = 8mg/L, Hex Cr > 1.5mg/L, Ferrous = 0mg/L
(21'-25'): Total Cr = 0.1mg/L, Hex Cr = 0.1mg/L, Ferrous = 0mg/L
(16'-20'): Total Cr = 0 mg/L, Hex Cr = 0.15mg/L, Ferrous = 0mg/L
(11-15): Total Cr = 9mg/L, Hex Cr = >1.5mg/L, Ferrous = 0mg/L
(5-9) Total = 7mg/L
Hex = >1.5mg/L (6.5mg/L D)
Ferrous = 0mg/L

SIGNATURE: (8mg/L D) M. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF ____

# FIELD DATA RECORD - GROUNDWATER SAMPLING *

PROJECT: SAEP Chrome Plating | JOB NUMBER: 2842-00 | DATE: 1-24-99

WELL ID: WP-99-03 | ACTIVITY | BOTTLE

TIME: START ____ END ____ | TIME ____

SAMPLE ISIS ID: ____

☐ QC SAMPLES COLLECTED | DUPLICATE ID: ____ | MS ID: ____ | MSD ID: ____

* GeoProbe GW Sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = ____ GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED ____ GAL

AMBIENT AIR ____ PPM | WELL MOUTH ____ PPM

## PURGE DATA

45-49 ~~46-50~~ 36-40 30-34

| | | | | | | |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 gallons | 5 gallon | 3 gallon | | | |
| TEMPERATURE (degreesC) | 20.8 | 21.3 | 21.6 | | | |
| pH (units) | 6.35 | 6.83 | 7.13 | | | |
| TURBIDITY (ntu) | 43 | 3 | 3 | | | |
| SPEC. COND. (uhmos/cm) | ~~7.73~~ | 5.35 | 4.10 | | | |
| DISSOLVED OXYGEN (mg/L) | 2.08 | 2.30 | 3.56 | | | |
| REDOX POTENTIAL | 153.6 | 34.2 | 47.2 | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED ____
- ☐ CLOUDY ____
- ☐ TURBID ____
- ☐ ODOR ____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☒ | SUBMERSIBLE PUMP |
| ☒ | ☒ | BLADDER PUMP |
| ☐ | ☐ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | ____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ ____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |

NOTES

SIGNATURE: ____

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 3

# FIELD DATA RECORD - GROUNDWATER SAMPLING *

PROJECT: SAEP Chrome Plating | JOB NUMBER: 28473-00 | DATE: 1-22-99

WELL ID: WP-99-04 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

* GeoProbe GW Sampler

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | 62'-66' | 62-66' | 50'-54' | 50'-54' | 40'-44' |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3gal | 5gal | 3gal | 5.5gal | 2 gal |
| TEMPERATURE (degreesC) | 15.7 | 15.2 | 16.6 | 15.6 | 15.7 |
| pH (units) | 6.08 | 6.25 | 6.41 | 6.38 | 6.75 |
| TURBIDITY (ntu) | 999 | -7 | 999 | 0 | 64 |
| SPEC. COND. (MS/cm) | 15.9 | 16.0 | 13.7 | 13.6 | 12.1 |
| DISSOLVED OXYGEN (mg/L) | .82 | 2.19 | 1.47 | 2.24 | 2.97 |
| REDOX POTENTIAL | 149.2 | 137.4 | 81.9 | 70.7 | -2.5 |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

All samples submitted for on-site HACH test kit analyses (Total CR, Hex CR, Ferrous Fe)

## NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING *

PROJECT: SAEP Chrome Plating | JOB NUMBER: 2842.00 | DATE: 1-22-99

WELL ID: WP-99-04 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

* GeoProbe GW Sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL — TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM — WELL MOUTH: PPM

## PURGE DATA

| | 40'-44' | 30'-34' | 30'-34'* | 22'-26'** | 16'-20' |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3.5 | 1 gal | 5 gal | 1.5 gal | 1.5 gal |
| TEMPERATURE (degreesC) PW | ~~4.89~~ 16.8 | 15.0 | 15.5 | 16.1 | 15.3 |
| pH (units) | 6.89 | 7.24 | 7.26 | 6.53 | 6.76 |
| TURBIDITY (ntu) | >1 | 989 | 563 | 52 | 999 |
| SPEC. COND. (uhmos/cm) | ~~3~~ 11.6 | 7.80 | 6.72 | 5.03 | 2.38 |
| DISSOLVED OXYGEN (mg/L) PW | ~~1.1~~ 2.75 | 2.43 | 4.11 | 2.54 | 2.96 |
| REDOX POTENTIAL PW | ~~-338~~ 20.0 | -64.8 | -58.6 | 102.3 | 79.3 |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ☐ CLOUDY ☐ TURBID ☐ ODOR ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ PERISTALTIC PUMP ☐ SUBMERSIBLE PUMP ☐ BLADDER PUMP ☒ PVC/SILICON TUBING ☐ TEFLON/SILICON TUBING ☐ WATTERA

SAMPLING: ☒ PERISTALTIC PUMP ☐ SUBMERSIBLE PUMP ☐ BLADDER PUMP ☒ PVC/SILICON TUBING ☐ TEFLON/SILICON TUBING ☐ WATTERA ☒ IN LINE FILTER ☐ PRESS/VAC FILTER ☐ _____

DECON FLUIDS USED: ☐ METHANOL ☒ LIQUINOX ☒ POTABLE WATER ☒ DEIONIZED WATER ☐ HEXANE ☐ NITRIC ACID ☐ _____

WATER LEVEL EQUIPMENT USED: ☐ ELECTRIC COND PROBE ☐ FLOAT ACTIVATED ☐ KECK INTERFACE PROBE ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|

All samples submitted for onsite HACH test kit analyses (Total Cr, Hex Cr, Ferrous Fe)

NOTES * 30-34 HACH Kit Sample collected w/ Filter
** 22-26 Collected After 4 gallons Removed; visibly yellow in color.

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING*

PROJECT: SAEP Chrom. Plating | JOB NUMBER: 284200 | DATE: 1-22-99

WELL ID: WP-99-04 | ACTIVITY | BOTTLE

TIME: START ____ END ____ | TIME ____

SAMPLE ISIS ID: ____

☐ QC SAMPLES COLLECTED | DUPLICATE ID: ____ | MS ID: ____ | MSD ID: ____

*GeoProbe GW Sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = ____ GAL/VOL | TOTAL VOLUME PURGED ____ GAL

~~6'-10'~~ 6'-10' AMBIENT AIR ____ PPM | WELL MOUTH ____ PPM

## PURGE DATA

* 16'-20' ~~10-14~~ RP ~~10-14~~ R.P.

| | | | | | | |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 2.5 gal | 5 gal | | | |
| TEMPERATURE (degreesC) | 16.2 | 14.2 | 13.6 | | | |
| pH (units) | 6.75 | 6.83 | 6.72 | | | |
| TURBIDITY (ntu) | 120 | 25 | 24 | | | |
| SPEC. COND. (unmos/cm) | 2.01 | .537 | .483 | | | |
| DISSOLVED OXYGEN (mg/L) | 3.12 | 4.07 | 3.69 | | | |
| REDOX POTENTIAL | 87.1 | 56.3 | 52.5 | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED ____
- ☐ CLOUDY ____
- ☐ TURBID ____
- ☐ ODOR ____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING ☐

SAMPLING ☐
- PERISTALTIC PUMP
- SUBMERSIBLE PUMP
- BLADDER PUMP
- PVC/SILICON TUBING
- TEFLON/SILICON TUBING
- WATTERA
- IN LINE FILTER
- PRESS/VAC FILTER
- ____

DECON FLUIDS USED ☐
- METHANOL
- LIQUINOX
- POTABLE WATER
- DEIONIZED WATER
- HEXANE
- NITRIC ACID
- ____

WATER LEVEL EQUIPMENT USED ☐
- ELECTRIC COND. PROBE
- FLOAT ACTIVATED
- KECK INTERFACE PROBE
- ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

All samples submitted for onsite HACH test Kit analyses (Total CR., Hex CR, Ferrous Fe)

## NOTES

* 16-20' Hach Kit SAMPLE filtered After 5 gal Purged, visibly yellow in color
* 10-14' SAMPLE mised Due To over Pull

SIGNATURE: ____

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 2

# FIELD DATA RECORD - GROUNDWATER SAMPLING*

PROJECT: SAEP Chrome Plating | JOB NUMBER: 2842-00 | DATE: 1-23-99

WELL ID: WP-99-05 | ACTIVITY TIME: START ____ END ____ | BOTTLE TIME: ____

SAMPLE ISIS ID: ____

☐ QC SAMPLES COLLECTED — DUPLICATE ID: ____ MS ID: ____ MSD ID: ____

*GeoProbe GW Sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | 56'-60' | 56'-60' | 46'-50' | 46'-50' | 36-40' |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1 gallon | 5 gallon | 3 gallon | 5 gals | 2 Gallons |
| TEMPERATURE (degreesC) | 15.8 | 16.3 | 16.1 | ~~56~~ 15.7 | 15.4 |
| pH (units) | 6.27 | 6.42 | 6.65 | 6.72 | 6.67 |
| TURBIDITY (ntu) | >1000 | 10 | ~10 | ~10 | 4 |
| SPEC. COND. (uhmos/cm) | 14.3 | 14.6 | 12.9 | 12.8 | 6.57 |
| DISSOLVED OXYGEN (mg/L) | 2.69 | 3.10 | 3.17 | 2.97 | 2.38 |
| REDOX POTENTIAL | 168.6 | 143.1 | 54.2 | 56.4 | 30.6 |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ____ ☐ CLOUDY ____ ☐ TURBID ____ ☐ ODOR ____ ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| | | ____ |

DECON FLUIDS USED
☐ METHANOL
☒ LIQUINOX
☒ POTABLE WATER
☒ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
____

WATER LEVEL EQUIPMENT USED
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
____

NUMBER OF FILTERS USED: Ø

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

All samples analyzed onsite by Hach Test Kits (Total CR, Hex CR, Ferrous Fe)

## NOTES

SIGNATURE: R. Pendleton

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES



# FIELD DATA RECORD - GROUNDWATER SAMPLING*

PROJECT: SAEP CHROM PLATING | JOB NUMBER: 2842.00 | DATE: 1-23-99

WELL ID: WP-99-05 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

*GeoProbe GW Sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | 36-40' | 26-30' | 16-20' | 6'-10' |
|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 gallons | 2 gallons | 6 gallons | 4 gallons |
| TEMPERATURE (degreesC) | 16.0 | 15.9 | 15.6 | 12.7 |
| pH (units) | 6.86 | 6.96 | 7.54 | 7.00 |
| TURBIDITY (ntu) | -10.0 | -10 | 20 | -10 |
| SPEC. COND. (unmos/cm) | 0.49 | 3.34 | .852 | 0.130 |
| DISSOLVED OXYGEN (mg/L) | 3.55 | 5.03 | 2.62 | 2.40 |
| REDOX POTENTIAL | 19.9 | -11.9 | 48.9 | 80 |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☒ | ☒ | ~~SUBMERSIBLE PUMP~~ R.P. |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED: Ø

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

All samples analyzed onsite by Hach Test Kit (Total CR, Hex CR, Ferrous Fe)

## NOTES

SIGNATURE: R. Pendleton

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING*

PROJECT: SAEP Chrome Plating | JOB NUMBER: 2842-00 | DATE: 1-23-99

WELL ID: WP-99-06 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

* GeoProbe GW sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | 62'-66' | 52'-56' | 42'-46' | 32'-36' | 26'-30' |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 gals. | 3 gals | 3 gals. | 3 gals. | 4 gals |
| TEMPERATURE (degreesC) | 14.9 | 15.8 | 15.9 | 16.0 | 15.2 |
| pH (units) | 6.86 | 6.58 | 6.70 | 6.98 | 7.26 |
| TURBIDITY (ntu) | ~10 | ~10 | ~10 | ~10 | 15 |
| SPEC. COND. (uhmos/cm) | 15.6 | 14.8 | 12.2 | 5.8 | 4.4 |
| DISSOLVED OXYGEN (mg/L) | 2.4 | 3.03 | 4.07 | 1.41 | 4.15 |
| REDOX POTENTIAL mV | 159.8 | 189.3 | 109.3 | 0.8 | 5.1 |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| | ☒ PERISTALTIC PUMP | ☐ METHANOL | ☒ ELECTRIC COND. PROBE |
| | ☐ SUBMERSIBLE PUMP | ☒ LIQUINOX | ☐ FLOAT ACTIVATED |
| | ☐ BLADDER PUMP | ☒ POTABLE WATER | ☐ KECK INTERFACE PROBE |
| ☒ | ☒ PVC/SILICON TUBING | ☒ DEIONIZED WATER | ☐ _____ |
| | ☐ TEFLON/SILICON TUBING | ☐ HEXANE | |
| | ☐ WATTERA | ☐ NITRIC ACID | NUMBER OF FILTERS USED: 0 |
| | ☐ IN LINE FILTER | ☐ _____ | |
| | ☐ PRESS/VAC FILTER | | |
| | ☐ _____ | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

All samples analyzed onsite by HACH test kit (Total CR, Hex Cr, Ferrous Fe)

## NOTES

SIGNATURE: R. Pendleton

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING*

PROJECT: SAEP Chrome Plating | JOB NUMBER: 2842-00 | DATE: 1-23-99

WELL ID: WP-99-06 | ACTIVITY | BOTTLE

TIME: START | END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

*GeoProbe GW Sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

16'-20'
~~20-24'~~ 8'-12'

## PURGE DATA

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4.5 gal | 3 gal | | | |
| TEMPERATURE (degreesC) | 15.6 | 14.5 | | | |
| pH (units) | 6.92 | 6.95 | | | |
| TURBIDITY (ntu) | -10 | -10 | | | |
| SPEC. COND. (uhmos/cm) | .093 | 0693 | | | |
| DISSOLVED OXYGEN (mg/L) | 3.42 | 3.04 | | | |
| REDOX POTENTIAL | 46.1 | 29.7 | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| ☒ | ☒ PERISTALTIC PUMP | ☐ METHANOL | ☒ ELECTRIC COND. PROBE |
| ☐ | ☐ SUBMERSIBLE PUMP | ☒ LIQUINOX | ☐ FLOAT ACTIVATED |
| ☐ | ☐ BLADDER PUMP | ☒ POTABLE WATER | ☐ KECK INTERFACE PROBE |
| ☒ | ☒ PVC/SILICON TUBING | ☒ DEIONIZED WATER | ☐ _____ |
| ☐ | ☐ TEFLON/SILICON TUBING | ☐ HEXANE | |
| ☐ | ☐ WATTERA | ☐ NITRIC ACID | |
| ☐ | ☐ IN LINE FILTER | ☐ _____ | |
| ☐ | ☐ PRESS/VAC FILTER | | |
| ☐ | ☐ _____ | | |

NUMBER OF FILTERS USED: Ø

## ANALYTICAL PARAMETERS

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|
| ☐ | | | | ☐ | |

All samples submitted for onsite analysis by Hach test Kit (Total CR, Hex CR, Ferrous)

## NOTES

SIGNATURE: R. Pendleton

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating | JOB NUMBER: 2842-00 | DATE: 1/24/99

WELL ID: WP-99-06 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

Geoprobe G.W. Sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

20-24

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gallons | | | | |
| TEMPERATURE (degreesC) | 19.8 | | | | |
| pH (units) | 12.67 | | | | |
| TURBIDITY (ntu) | 0 | | | | |
| SPEC. COND. (uhmos/cm) | 1.23 | | | | |
| DISSOLVED OXYGEN (mg/L) | 1.30 | | | | |
| REDOX POTENTIAL | 107.8 | | | | |

SAMPLE OBSERVATIONS:

- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| | | SUBMERSIBLE PUMP |
| ☒ | ☒ | BLADDER PUMP |
| | | PVC/SILICON TUBING |
| | | TEFLON/SILICON TUBING |
| | | WATTERA |
| | | IN LINE FILTER |
| | | PRESS/VAC FILTER |
| | | _____ |

DECON FLUIDS USED

- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED

- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
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| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-7-99

WELL ID: WP-99-0607 (GW) | ACTIVITY | BOTTLE

TIME: START 0830 END 1000 | TIME 0930

SAMPLE ISIS ID: WP990607XX

[X] QC SAMPLES COLLECTED — DUPLICATE ID: WP990607XD; MS ID: WP990607MS; MSD ID: WP990607MD

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 9 FT (~~TOR~~ bgs) | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | 5.3 FT (~~TOR~~ bgs) | SCREEN LENGTH | 2 FT | WELL DIAMETER | 1 IN | WELL MATERIAL | Stainless Rod |

HEIGHT OF WATER COLUMN: 3.7 FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: 2 GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| PURGE VOLUME (gallons) | ½ gal. | 1 gal. | 2 gal. | | |
|---|---|---|---|---|---|
| TEMPERATURE (degreesC) | 11.4 | 11.7 | 11.2 | | |
| pH (units) | 5.5 | 5.66 | 5.70 | | |
| TURBIDITY (ntu) | 470 | <10 | <10 | | |
| SPEC. COND. (uhmos/cm) | 0.487 | 0.418 | 0.409 | | |
| DISSOLVED OXYGEN (mg/L) | 6.10 | 5.60 | 5.73 | | |
| REDOX POTENTIAL | 221 | 217 | 253 | | |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [X] COLORED Yellow
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [X] | [X] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | _____ |

DECON FLUIDS USED
- [ ] METHANOL
- [X] LIQUINOX
- [X] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [X] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [X] Hex. Chrome | | | | | [X] | |
| [X] Total Cr | | | | | [X] | |
| [X] metals (Cd, Cu, Ni, Zn) | | | | | [X] | |
| [X] CN | | | | | [X] | |
| [X] Sulfate | | | | | [X] | |
| [X] Alkalinity | | | | | [X] | |
| [ ] | | | | | [ ] | |
| [ ] | | | | | [ ] | |
| [ ] | | | | | [ ] | |
| [ ] | | | | | [ ] | |
| [ ] | | | | | [ ] | |
| [ ] | | | | | [ ] | |
| [ ] | | | | | [ ] | |
| [ ] | | | | | [ ] | |

NOTES: Ferrous Iron Result = <0.05 mg/L

Sample collected from 7'-9' bgs

SIGNATURE: Linda L. Rutledge

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE: 2-9-99

WELL ID: WP-99-08 | ACTIVITY | TIME START: 0730 END | BOTTLE TIME: 1040, 1200, 1300

SAMPLE ISIS ID: WP990805OXX, 030XX, 012XX

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | ① (66'-70') | ② (61'-65') | ③ (56'-60') | ④ (51'-55') | ⑤ (46'-50')* |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 6 gal | 3 gal | 3 gal | 4 gal | 3 gal |
| TEMPERATURE (degreesC) | 18.3 | 18.8 | 18.8 | 19.2 | 19.2 |
| pH (units) | 6.24 | 6.47 | 6.56 | 6.69 | 6.72 |
| TURBIDITY (ntu) | 26 | 12 | 7 | 198 | 82 |
| SPEC. COND. (unmos/cm) | 13.6 | 13.2 | 12.5 | 11.0 | 10.4 |
| DISSOLVED OXYGEN (mg/L) | 3.89 | 4.96 | 5.35 | 4.76 | 3.90 |
| REDOX POTENTIAL | 218 | 144 | 153 | 121 | 86 |

SAMPLE OBSERVATIONS:
- [X] CLEAR 1, 2, 3, 5
- [ ] COLORED
- [X] CLOUDY 4
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [X] | [X] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | _____ |

DECON FLUIDS USED:
- [ ] METHANOL
- [X] LIQUINOX
- [X] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED:
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED: _____

## ANALYTICAL PARAMETERS

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|
| | | | | | |

PID readings: ④ = 3.0 ppm
⑤ = 41.6 ppm
(No data before ④)

NOTES* Analytical samples collected from:
46' - 50' → VOCs, SVOCs, Cr, Cd, Cu, Ni, Zn, Hex Cr, Sulfate, CN

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE:

WELL ID: WP-99-08 | ACTIVITY | BOTTLE

TIME: START 0730 END | TIME:

SAMPLE ISIS ID: WP990805OXX, 030XX, 012XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = GAL/VOL ☐ 1.5 GAL/FT (6 IN) | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | (6) (41'-45') | (7) (36'-40') | (8) (31'-35') | (9) (26'-30') | (10) (21'-25') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 3 gal | 4 gal | 3 gal | 2 gal |
| TEMPERATURE (degreesC) | 19.4 | 19.7 | 19.7 | 19.9 | 19.3 |
| pH (units) | 6.86 | 6.98 | 6.45 | 6.29 | 6.01 |
| TURBIDITY (ntu) | 70 | 82 | 204 | 37 | 393 |
| SPEC. COND. (unmos/cm) | 9.4 | 6.74 | 6.09 | 5.53 | 2.47 |
| DISSOLVED OXYGEN (mg/L) | 3.69 | 5.20 | 3.85 | 3.48 | 5.02 |
| REDOX POTENTIAL | 94 | 178 | 156 | 143 | 130 |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☒ COLORED (Yellow) 6, 7, 8, 9, 10
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING:
- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER
- ☐ _____

DECON FLUIDS USED:
- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED:
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED: _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

PID readings: (6) = 150.7 ppm
(9) = 1626 ppm (Overrange)
(8) = 2742 ppm (Overrange)
(9) = 2179 ppm (Overrange)
(10) = 595 ppm

## NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 2-9-99

WELL ID: WP-99-08 | ACTIVITY | BOTTLE

TIME: START | END | TIME

SAMPLE ISIS ID: WP9908 050XX, 030XX, 012XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | (11) (15'-19') | (12) (8'-12') | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 3 gal | | | |
| TEMPERATURE (degreesC) | 20.2 | 21.2 | | | |
| pH (units) | 6.20 | 6.11 | | | |
| TURBIDITY (ntu) | 95 | 87 | | | |
| SPEC. COND. (unmos/cm) | 1.14 | 0.549 | | | |
| DISSOLVED OXYGEN (mg/L) | 3.21 | 2.77 | | | |
| REDOX POTENTIAL | 92 | 51 | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| | X | PERISTALTIC PUMP |
| | | SUBMERSIBLE PUMP |
| X | | BLADDER PUMP |
| | X | PVC/SILICON TUBING |
| | | TEFLON/SILICON TUBING |
| | | WATTERA |
| | | IN LINE FILTER |
| | | PRESS/VAC FILTER |
| | | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- X LIQUINOX
- X POTABLE WATER
- X DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- X ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

PID Readings: (11) = 163.3 ppm
(12) = 1.4 ppm

## NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE: 1-8-99

WELL ID: WP-99-09 | ACTIVITY | BOTTLE

TIME: START 0940 END 1030 | TIME: 1015

SAMPLE ISIS ID: WP990900 7 XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: – | MS ID: – | MSD ID: –

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 9 FT (~~BGS~~/TOR) | HISTORICAL WELL DEPTH | – FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | – FT | PROTECTIVE CASING / WELL DIFFERENCE | – FT |
| DEPTH TO WATER | 6.2 FT (~~BGS~~/TOR) | SCREEN LENGTH | 2 FT | WELL DIAMETER | – IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: 2.8 FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = – GAL/VOL

TOTAL VOLUME PURGED: 2 GAL

AMBIENT AIR: – PPM | WELL MOUTH: – PPM

## PURGE DATA

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | ½ gal | 1 gal | 2 gal | | |
| TEMPERATURE (degreesC) | 12.1 | 14.1 | 14.0 | | |
| pH (units) | 7.61 | 7.40 | 7.40 | | |
| TURBIDITY (ntu) | 1000+ | 20 | 10 | | |
| SPEC. COND. (uhmos/cm) | 0.669 | 0.710 | 0.710 | | |
| DISSOLVED OXYGEN (mg/L) | 3.22 | 3.46 | 3.67 | | |
| REDOX POTENTIAL | 70.6 | 71.6 | 81.4 | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☒ COLORED greenish/gray
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☒ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED: 0

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

NOTES: Ferrous Iron Result = <0.05 mg/L

SIGNATURE: Gina L. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-27-99

WELL ID: WP-99-09 | ACTIVITY TIME START: 1035 END: 1345 | BOTTLE TIME: 1240

SAMPLE ISIS ID: WP99090129XX

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH (Max) | 60 FT (~~TOR~~ bgs) | HISTORICAL WELL DEPTH | — FT (TOC) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.25 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (56'-60') | ② (46'-50') | ③ (36'-40') | ④ (30'-34') | ⑤ (25'-29')* |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gal | 4 gal | 3 gal | 2 gal | 4 gal |
| TEMPERATURE (degreesC) | 16.7 | 16.8 | 16.7 | 15.6 | 15.9 |
| pH (units) | 6.20 | 6.48 | 6.77 | 7.05 | 7.02 |
| TURBIDITY (ntu) | 3 | 2 | 1 | 1 | 70 |
| SPEC. COND. (uhmos/cm) | 15.2 | 12.3 | 11.2 | 7.27 | 4.68 |
| DISSOLVED OXYGEN (mg/L) | 2.11 | 1.81 | 2.38 | 5.45 | 3.92 |
| REDOX POTENTIAL | 89 | 39 | -10 | -3 | -5 |

SAMPLE OBSERVATIONS:
- [X] CLEAR 1, 2, 3, 4, 7
- [ ] COLORED
- [X] CLOUDY 5, 6
- [ ] TURBID
- [X] ODOR Solvent 5, 6, 7
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED | |
|---|---|---|---|---|---|---|
| [X] | [X] | PERISTALTIC PUMP | [ ] | METHANOL | [X] | ELECTRIC COND. PROBE |
| [ ] | [ ] | SUBMERSIBLE PUMP | [X] | LIQUINOX | [ ] | FLOAT ACTIVATED |
| [ ] | [ ] | BLADDER PUMP | [X] | POTABLE WATER | [ ] | KECK INTERFACE PROBE |
| [X] | [X] | PVC/SILICON TUBING | [X] | DEIONIZED WATER | [ ] | |
| [ ] | [ ] | TEFLON/SILICON TUBING | [ ] | HEXANE | | |
| [ ] | [ ] | WATTERA | [ ] | NITRIC ACID | | |
| [ ] | [ ] | IN LINE FILTER | [ ] | | | |
| [ ] | [ ] | PRESS/VAC FILTER | | | | |
| [ ] | [ ] | | | | | |

NUMBER OF FILTERS USED: 1

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
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| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |

NOTES* Analytical sample collected from 25'-29' interval - VOCs, SVOCs also collected.

SIGNATURE: H. Ruotad

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-27-99

WELL ID: WP-99-09 | ACTIVITY TIME START: 1035 END: 1345 | BOTTLE TIME: 1240

SAMPLE ISIS ID: WP99029XX

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH (Max bgs / ~~FT (TOR)~~) | 60 | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.25 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | (6) (20'-24') | (9) (15'-19') | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gal | 5 gal | | | |
| TEMPERATURE (degreesC) | 15.3 | 16.7 | | | |
| pH (units) | 6.93 | 7.07 | | | |
| TURBIDITY (ntu) | 25 | 0 | | | |
| SPEC. COND. (uhmos/cm) | 3.58 | 1.18 | | | |
| DISSOLVED OXYGEN (mg/L) | 4.10 | 1.39 | | | |
| REDOX POTENTIAL | -12 | -87.6 | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☐ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: A. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: 6AEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-25-99

WELL ID: WP-99-10 | ACTIVITY | BOTTLE

TIME: START 1330 END | TIME: —

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 50 FT (TOR) | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4 FT | WELL DIAMETER | 1.25 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = — GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (46'-50') | ② (36'-40') | ③ (30'-34') | ④ (25'-29') | ⑤ (20'-24') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 3 gal | 3 gal | 2 gal | 2 gal |
| TEMPERATURE (degreesC) | 14.9 | 17.5 | 17.3 | 17.0 | 17.1 |
| pH (units) | 6.60 | 6.75 | 6.78 | 7.32 | 7.23 |
| TURBIDITY (ntu) | 0 | 14 | 15 | 7 | 53 |
| SPEC. COND. (uhmos/cm) | 12.7 | 9.7 | 7.65 | 3.92 | 3.06 |
| DISSOLVED OXYGEN (mg/L) | 3.36 | 3.19 | 2.75 | 3.07 | 3.18 |
| REDOX POTENTIAL | 105.1 | -37 | -72 | -65 | -35 |

SAMPLE OBSERVATIONS:
- [X] CLEAR 1, 2, 3, 6, 7
- [X] COLORED Yellow 4, 5
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED | |
|---|---|---|---|---|---|---|
| | X | PERISTALTIC PUMP | | METHANOL | X | ELECTRIC COND. PROBE |
| | | SUBMERSIBLE PUMP | X | LIQUINOX | | FLOAT ACTIVATED |
| | | BLADDER PUMP | X | POTABLE WATER | | KECK INTERFACE PROBE |
| X | X | PVC/SILICON TUBING | X | DEIONIZED WATER | | |
| | | TEFLON/SILICON TUBING | | HEXANE | | |
| | | WATTERA | | NITRIC ACID | | |
| | | IN LINE FILTER | | | | |
| | | PRESS/VAC FILTER | | | | |

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | ⑥ 15'-19' | ⑦ 8'-12' |
|---|---|---|
| Temp. | 17.4 | 16.1 |
| pH | 6.26 | 6.75 |
| Turb. | 107 | 7 |
| S.C. | 0.91 | 0.870 |
| D.O. | 1.94 | 2.63 |
| ORP | -39 | -63 |

No Analytical sample collected.

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|
| | | | | ☐ | / / / |

## NOTES

SIGNATURE: N. Rustad

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-8-99

WELL ID: WP-99-11 | ACTIVITY | BOTTLE

TIME: START 1100 END 1140 | TIME: 1125

SAMPLE ISIS ID: WP99110078X

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 9.10 FT ~~(TOR)~~ BGS | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | 6.3 FT (TOR) | SCREEN LENGTH | 2 FT | WELL DIAMETER | — IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: 2.80 FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: ~~2~~ GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| PURGE VOLUME (gallons) | Initial | 1 gal | 2 gal | | |
|---|---|---|---|---|---|
| TEMPERATURE (degreesC) | 13.0 | 15.0 | 15.0 | | |
| pH (units) | 6.70 | 6.50 | 6.45 | | |
| TURBIDITY (ntu) | 990 | 10 | 1 | | |
| SPEC. COND. (uhmos/cm) | 0.99 | 1.0 | 0.91 | | |
| DISSOLVED OXYGEN (mg/L) | 4.2 | 4.9 | 2.96 | | |
| REDOX POTENTIAL | 98.1 | 109.7 | 117.9 | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☒ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES: Ferrous Iron result = <0.05 mg/L

Note: 2ND Sampling Conducted on 1-12-99 to 30' bgs.

SIGNATURE: H. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02342-00 | DATE: 1-12-99

WELL ID: WP-99-11 | ACTIVITY | BOTTLE TIME: 0930

TIME: START 0800 END 1115

SAMPLE ISIS ID: WP991102 4XX

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 30 FT ~~(TOR)~~ BGS | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT |
| PROTECTIVE CASING / WELL DIFFERENCE | — FT | DEPTH TO WATER | 5.5 FT ~~(TOR)~~ BGS | SCREEN LENGTH | 4 FT |
| WELL DIAMETER | 1 IN | WELL MATERIAL | Stainless | HEIGHT OF WATER COLUMN | — FT |

☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) x = — GAL/VOL

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (24'-28') | ② (20'-24') | ③ 16'-15' | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 2 gal | 3 gal | | |
| TEMPERATURE (degreesC) | 17.4 | 17.5 | 16.6 | | |
| pH (units) | 7.10 | 6.23 | 6.32 | | |
| TURBIDITY (ntu) | 115 | 88 | 22 | | |
| SPEC. COND. (uhmos/cm) | 3.26 | 0.982 | 0.92 | | |
| DISSOLVED OXYGEN (mg/L) | 3.99 | 1.64 | 1.23 | | |
| REDOX POTENTIAL | 162.9 | -177 | -179 | | |

SAMPLE OBSERVATIONS:
- [X] CLEAR 3
- [X] COLORED Yellow/green 1,2
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [X] | [X] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | _____ |

DECON FLUIDS USED
- [ ] METHANOL
- [X] LIQUINOX
- [X] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [X] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

NOTES: Hach Kit: (24'-28') Total Cr = 50 mg/L, Hex Cr >1.5 (40 mg/L D), Ferrous Iron = 0 mg/L
(20'-24') Total Cr = 2.5 mg/L, Hex Cr = 0.3 mg/L, Ferrous Iron = 0 mg/L
(16'-15') Total Cr < 2.5 mg/L Hex Cr = 0 mg/L Ferrous Iron = 0 mg/L

SIGNATURE: D. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING*

PROJECT: SAEP Chrome Plating | JOB NUMBER: 2842-00 | DATE: 1-21-99

WELL ID: WP-99-11 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

*GeoProbe GW Sampling

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | 47'-51' | 47'-51' | 47'-51' | 47'-51' | 36'-40' |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1gal | 2gal | 3.5 | 6.0gal | 1.5 |
| TEMPERATURE (degreesC) | 17.5 | 17.5 | 17.3 | 17.4 | 16.4 |
| pH (units) | 7.13 | 7.01 | 6.94 | 6.90 | 6.89 |
| TURBIDITY (ntu) | 999 | 999 | 198 | -10.0 | -10.0 |
| SPEC. COND. (uhmos/cm) | 12.4 | 13.0 | 23.0 | 12.9 | 10.1 |
| DISSOLVED OXYGEN (mg/L) | -0.25 | 1.77 | 1.91 | 2.81 | 1.66 |
| REDOX POTENTIAL | -44.9 | -5.0 | 0.3 | 40.2 | 53.1 |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☐ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☒ | ☐ | BLADDER PUMP |
| ☐ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED: Ø

## ANALYTICAL PARAMETERS

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|

WP991151XX submitted for offsite analyses
Water from this sample appeared clear
All samples submitted for onsite HACH test kit analyses (Total CR, Hex CR, Ferrous Fe)

NOTES: Negative Readings w/ NTU's believed to Be Batt Related PVC 1/21/99

SIGNATURE:

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING *

PROJECT: SAEP Chrome Plating
JOB NUMBER: 2842-00
DATE: 1-21-99
WELL ID: WP-99-11
ACTIVITY TIME: START END
BOTTLE TIME:
SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

*GeoProbe GW Sampling

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

| | | 2.5 gal | 30'-34' | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 36'-40' | 30'-34' | 3.5 | | |
| TEMPERATURE (degreesC) | 17.0 | 16.2 | 16.8 | | |
| pH (units) | 6.87 | 7.20 | 7.22 | | |
| TURBIDITY (ntu) | +9.0 | 21 | -10.0 | | |
| SPEC. COND. (uhmos/cm) | 10.0 | 6.50 | 6.42 | | |
| DISSOLVED OXYGEN (mg/L) | 2.44 | 1.86 | | | |
| REDOX POTENTIAL | 39.2 | 48.1 | 61.1 | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ ☐ ☐ ☒ ☐ ☐ ☐ ☐
SAMPLING: ☒ PERISTALTIC PUMP; ☐ SUBMERSIBLE PUMP; ☐ BLADDER PUMP; ☒ PVC/SILICON TUBING; ☐ TEFLON/SILICON TUBING; ☐ WATTERA; ☐ IN LINE FILTER; ☐ PRESS/VAC FILTER

DECON FLUIDS USED: ☐ METHANOL; ☒ LIQUINOX; ☒ POTABLE WATER; ☒ DEIONIZED WATER; ☐ HEXANE; ☐ NITRIC ACID

WATER LEVEL EQUIPMENT USED: ☒ ELECTRIC COND. PROBE; ☐ FLOAT ACTIVATED; ☐ KECK INTERFACE PROBE

NUMBER OF FILTERS USED: Ø

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| WP991134XX submitted for off-site analyses. | | | | | | |
| WP991134XD | " | " | " | (Duplicate) | | |
| WP991134MS | " | " | " | (Matrix Spike) | | |
| WP991134MD | " | " | " | (MS Dup.) | | |

Water from these samples was visibly (yellow) contaminated.

NOTES: Negative Readings on NTU Readings Reconized & belived to be batt Related PVC 1/21/99

SIGNATURE: [signature]

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-7-99

WELL ID: WP-99-12 | ACTIVITY | BOTTLE TIME: 1415

TIME START: 1300 END: 1440

SAMPLE ISIS ID: WP9912007XX

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 9.2 FT (TOR) | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT |
| PROTECTIVE CASING / WELL DIFFERENCE | — FT | DEPTH TO WATER | 5.7 FT (TOR) | SCREEN LENGTH | 2 FT |
| WELL DIAMETER | — IN | WELL MATERIAL | Stainless | HEIGHT OF WATER COLUMN | 3.5 FT |

x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | ½ gal | 1 gal | 2 gal | | |
| TEMPERATURE (degreesC) | 17.6 | 18.8 | 18.3 | | |
| pH (units) | 6.12 | 6.66 | 6.77 | | |
| TURBIDITY (ntu) | 409 | 10 | 10 | | |
| SPEC. COND. (uhmos/cm) | 0.426 | 0.420 | 0.420 | | |
| DISSOLVED OXYGEN (mg/L) | 3.62 | 3.20 | 3.15 | | |
| REDOX POTENTIAL | 197.8 | 183.6 | 185.4 | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | |
|---|---|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP | ☐ | METHANOL |
| ☐ | ☐ | SUBMERSIBLE PUMP | ☒ | LIQUINOX |
| ☐ | ☐ | BLADDER PUMP | ☒ | POTABLE WATER |
| ☒ | ☒ | PVC/SILICON TUBING | ☒ | DEIONIZED WATER |
| ☐ | ☐ | TEFLON/SILICON TUBING | ☐ | HEXANE |
| ☐ | ☐ | WATTERA | ☒ | NITRIC ACID |
| ☐ | ☐ | IN LINE FILTER | ☐ | _____ |
| ☐ | ☐ | PRESS/VAC FILTER | | |
| ☐ | ☐ | _____ | | |

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED: _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

NOTES: Ferrous Iron Result = 0.1 mg/L

Note = Second Sampling conducted on 1-12-99

SIGNATURE: Gina L. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE: 1-12-99

WELL ID: WP-99-12 | ACTIVITY TIME START: 1130 END: 1345 | BOTTLE TIME: 1300

SAMPLE ISIS ID: WP9912024XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 30 FT (TOR) | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4 FT | WELL DIAMETER | 1 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | (1) (24-28) | (2) (20-24) | (3) (15-19) | (4) (10-14) | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.5 gal | 2.5 gal | 2.5 gal | No Results | |
| TEMPERATURE (degreesC) | 17.7 | 18.9 | 18.1 | | |
| pH (units) | 7.84 | 7.79 | 7.00 | | |
| TURBIDITY (ntu) | 38 | 35 | 34 | | |
| SPEC. COND. (uhmos/cm) | 2.27 | 1.54 | 0.906 | | |
| DISSOLVED OXYGEN (mg/L) | 2.43 | 1.32 | 2.30 | | |
| REDOX POTENTIAL | -12.7 | -55.2 | -57.7 | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 1-3
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED:
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☒ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED:
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED: _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

Analytical sample from 24' - 28'

NOTES: Hach Test (24-28) Total Cr = 0 mg/L, Hex Cr = 0 mg/L, Ferrous Iron = 0.2 mg/L
(20-24) Total Cr = 0 mg/L, Hex Cr = 0 mg/L, Ferrous Iron = 0.2 mg/L
(15-19) Total Cr = 0 mg/L, Hex Cr = 0 mg/L, Ferrous Iron = 0.8 mg/L

SIGNATURE: Gina L. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE: 2-3-99

WELL ID: WP-99-12 | ACTIVITY TIME START: 1457 END: 1630 | BOTTLE TIME: —

SAMPLE ISIS ID: —

☐ QC SAMPLES COLLECTED | DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH (MAX) | 50 FT ~~TOR~~ bgs | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.0 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (46'-50') | ② (36'-40') | ③ (30'-34') | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gal | 3 gal | 3 gal | | |
| TEMPERATURE (degreesC) | 18.4 | 19.0 | 19.2 | | |
| pH (units) | 6.30 | 6.68 | 6.76 | | |
| TURBIDITY (ntu) | 2 | Ø | Ø | | |
| SPEC. COND. (unmos/cm) | 9.09 | 6.70 | 7.36 | | |
| DISSOLVED OXYGEN (mg/L) | 3.04 | 4.83 | 4.71 | | |
| REDOX POTENTIAL | 69 | 67 | 76 | | |

SAMPLE OBSERVATIONS:

- [x] CLEAR 1, 2, 3
- [ ] COLORED _____
- [ ] CLOUDY _____
- [ ] TURBID _____
- [ ] ODOR _____
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED | |
|---|---|---|---|---|---|---|
| [x] | [x] | PERISTALTIC PUMP | [ ] | METHANOL | [x] | ELECTRIC COND. PROBE |
| [ ] | [ ] | SUBMERSIBLE PUMP | [x] | LIQUINOX | [ ] | FLOAT ACTIVATED |
| [ ] | [ ] | BLADDER PUMP | [x] | POTABLE WATER | [ ] | KECK INTERFACE PROBE |
| [x] | [x] | PVC/SILICON TUBING | [x] | DEIONIZED WATER | [ ] | _____ |
| [ ] | [ ] | TEFLON/SILICON TUBING | [ ] | HEXANE | | |
| [ ] | [ ] | WATTERA | [ ] | NITRIC ACID | | |
| [ ] | [ ] | IN LINE FILTER | [ ] | _____ | NUMBER OF FILTERS USED _____ | |
| [ ] | [ ] | PRESS/VAC FILTER | | | | |
| [ ] | [ ] | _____ | | | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |

NOTES: Tight zone from 23'-35' bgs.

SIGNATURE: A. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842.00 | DATE: 1-8-99

WELL ID: WP-99-13 | ACTIVITY | BOTTLE

TIME: START 0845 END 0940 | BOTTLE TIME: 0930

SAMPLE ISIS ID: WP991300?XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 9 FT (TOR) | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | 6.2 FT (BGS) (TOR) | SCREEN LENGTH | 2 FT | WELL DIAMETER | — IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: 2.8 FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: 2 GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| PURGE VOLUME (gallons) | ½ gal | 1 gal | 2 gal | | |
|---|---|---|---|---|---|
| TEMPERATURE (degreesC)* | 36.5 | 35.7 | 44.1 | | |
| pH (units) | 6.21 | 6.70 | 6.82 | | |
| TURBIDITY (ntu) | 1000+ | 17 | 8 | | |
| SPEC. COND. (uhmos/cm) | 0.191 | 0.127 | 0.127 | | |
| DISSOLVED OXYGEN (mg/L) | 1.66 | 1.84 | 1.96 | | |
| REDOX POTENTIAL | -240 | -88 | 3 | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | |
|---|---|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP | ☐ | METHANOL |
| ☐ | ☐ | SUBMERSIBLE PUMP | ☒ | LIQUINOX |
| ☐ | ☐ | BLADDER PUMP | ☒ | POTABLE WATER |
| ☒ | ☒ | PVC/SILICON TUBING | ☒ | DEIONIZED WATER |
| ☐ | ☐ | TEFLON/SILICON TUBING | ☐ | HEXANE |
| ☐ | ☐ | WATTERA | ☒ | NITRIC ACID |
| ☐ | ☐ | IN LINE FILTER | ☐ | _____ |
| ☐ | ☐ | PRESS/VAC FILTER | | |
| ☐ | ☐ | _____ | | |

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

NOTES: Ferrous Iron result = < 0.05 mg/L

* Broken steam line near location

SIGNATURE: Gina L. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-8-99

WELL ID: WP-99-14 | ACTIVITY TIME START: 1150 END: 1225 | BOTTLE TIME: 1210

SAMPLE ISIS ID: WP9914007XX

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 9.5 FT (~~TOR~~ BGS) | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | 2 FT | WELL DIAMETER | — IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: 2.30 FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: 2 GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| PURGE VOLUME (gallons) | Initial | 1 gal | 2 gal | | |
|---|---|---|---|---|---|
| TEMPERATURE (degreesC) | 11.4 | 12.4 | 13.0 | | |
| pH (units) | 6.99 | 6.56 | 6.40 | | |
| TURBIDITY (ntu) | 1000+ | 24 | 0 | | |
| SPEC. COND. (uhmos/cm) | 0.239 | 0.238 | 0.240 | | |
| DISSOLVED OXYGEN (mg/L) | 3.70 | 2.85 | 2.70 | | |
| REDOX POTENTIAL | 18.4 | 80.4 | 101.1 | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☒ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

NOTES: Ferrous Iron = 0mg/L

SIGNATURE: Nina L. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-11-99

WELL ID: WP-99-15 | ACTIVITY: 1-10-99 1-11-99 | BOTTLE TIME: 1010

TIME START: 1630 END: 1030

SAMPLE ISIS ID: WP9915026XX

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH (MAX) | 30' FT ~~(TOR)~~ BGS | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT |
| PROTECTIVE CASING / WELL DIFFERENCE | — FT | DEPTH TO WATER | ~5.5 FT ~~(TOR)~~ BGS | SCREEN LENGTH | 4.0 FT |
| WELL DIAMETER | 1.25 IN | WELL MATERIAL | Stainless | | |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

(26'-30')

| | | | | | | |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gal | | | | | |
| TEMPERATURE (degreesC) | 18.1 | | | | | |
| pH (units) | 5.30 | | | | | |
| TURBIDITY (ntu) | 263 | | | | | |
| SPEC. COND. (uhmos/cm) | 4.35 | | | | | |
| DISSOLVED OXYGEN (mg/L) | 3.03 | | | | | |
| REDOX POTENTIAL | 271 | | | | | |

SAMPLE OBSERVATIONS:

- ☐ CLEAR
- ☒ COLORED Yellow-green
- ☐ CLOUDY
- ☒ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | |
|---|---|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP | ☐ | METHANOL |
| ☐ | ☐ | SUBMERSIBLE PUMP | ☒ | LIQUINOX |
| ☐ | ☐ | BLADDER PUMP | ☒ | POTABLE WATER |
| ☒ | ☒ | PVC/SILICON TUBING | ☒ | DEIONIZED WATER |
| ☐ | ☐ | TEFLON/SILICON TUBING | ☐ | HEXANE |
| ☐ | ☐ | WATTERA | ☒ | NITRIC ACID |
| ☐ | ☐ | IN LINE FILTER | ☐ | _____ |
| ☐ | ☐ | PRESS/VAC FILTER | | |
| ☐ | ☐ | _____ | | |

WATER LEVEL EQUIPMENT USED

- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | Hach Kit: (7-9) ~~Total~~ Hex Cr = 17mg/L, Hex = 1.5mg/L | | | | TIME 1645 | |
| ☐ | (9-11) ~~Total~~ Hex Cr = 4mg/L | | | | 1715 | |
| ☐ | (11-15) Hex Cr = 3mg/L | | | | 1745 | |
| ☐ | (16-20) Hex Cr = 8mg/L | | | | 1800 | |
| ☐ | (21-25) Hex Cr = 150mg/L | | | | 0915 | |
| ☐ | (26-30) Hex Cr = 360mg/L | | | | 1000 | |
| ☐ | | | | | | |
| ☐ | | | | | | |
| ☐ | | | | | | |
| ☐ | | | | | | |
| ☐ | | | | | | |
| ☐ | | | | | | |
| ☐ | | | | | | |
| ☐ | | | | | | |
| ☐ | | | | | | |
| ☐ | | | | | | |

NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES



# FIELD DATA RECORD - GROUNDWATER SAMPLING*

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 2892-00 | DATE: 1-20-99

WELL ID: WP-99-15 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

*GeoProbe Water Sampling

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 60 FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT |
| PROTECTIVE CASING / WELL DIFFERENCE | FT | DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | 4 FT |
| WELL DIAMETER (I.D.) | 0.5 IN | WELL MATERIAL | Stainless | HEIGHT OF WATER COLUMN | FT |

☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) x = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | (56'-60') | (56'-60') | (56'-60') | (46-56') | (46-56') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1 gal | 4 gal | 5 gallons | 1 G. | 2.5 gal |
| TEMPERATURE (degreesC) | 16.9 | 17.1 | 17.5 | 16.1 | 16.5 |
| pH (units) | 6.34 | 6.33 | 6.39 | 6.64 | 6.65 |
| TURBIDITY (ntu) | 393 | 5 | 3 | 999 | 6 |
| SPEC. COND. (uhmos/cm) | 15.0 | 15.0 | 14.9 | 12.7 | 12.5 |
| DISSOLVED OXYGEN (mg/L) | 2.6 | 2.0 | 1.77 | 1.85 | 3.47 |
| REDOX POTENTIAL | 128 | 90.8 | 68.0 | 19.0 | 34.7 |

SAMPLE OBSERVATIONS:
- ☒ CLEAR (56'-60')
- ☒ COLORED Yellow
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| ☒ | ☒ PERISTALTIC PUMP | ☐ METHANOL | ☒ ELECTRIC COND. PROBE |
| ☐ | ☐ SUBMERSIBLE PUMP | ☒ LIQUINOX | ☐ FLOAT ACTIVATED |
| ☒ | ☐ BLADDER PUMP | ☒ POTABLE WATER | ☐ KECK INTERFACE PROBE |
| | ☒ PVC/SILICON TUBING | ☒ DEIONIZED WATER | ☐ _____ |
| | ☐ TEFLON/SILICON TUBING | ☐ HEXANE | |
| | ☐ WATTERA | ☐ NITRIC ACID | |
| | ☐ IN LINE FILTER | ☐ _____ | NUMBER OF FILTERS USED _____ |
| | ☐ PRESS/VAC FILTER | | |
| | ☐ _____ | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

NOTES: 56'-60' sample WP991560XX submitted to Averill Labs for analysis of Cr, Hex Cr, Ni, Cu, Zn, $SO_4$, Cyanide

All samples unfiltered.

SIGNATURE: D. Roderick Pemberton

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 2842-00 | DATE: 1-20-99

WELL ID: WP-99-15 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR) | HISTORICAL WELL DEPTH: FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): FT | PROTECTIVE CASING / WELL DIFFERENCE: FT

DEPTH TO WATER: FT (TOR) | SCREEN LENGTH: FT | WELL DIAMETER: IN | WELL MATERIAL:

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | 40'-44' | 40'-44' | 36'-40' | 36'-40' | 30'-34' |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1.5 gal | 3 gal | 1 gal | 3 gal | |
| TEMPERATURE (degreesC) | 16.5 | 16.5 | 17.0 | 17.1 | 17.0 |
| pH (units) | 6.75 | 6.69 | 6.59 | 6.17 | 6.13 |
| TURBIDITY (ntu) | 89 | 12.7 | 24 | 12.0 | 8.0 |
| SPEC. COND. ~~(umes/cm)~~ MS/CM | 7.77 | 7.71 | 5.46 | 5.41 | 4.66 |
| DISSOLVED OXYGEN (mg/L) | 5.5 | 5.82 | 3.08 | 2.72 | 1.92 |
| REDOX POTENTIAL | 111.6 | 163.8 | 229.2 | 252.6 | 259.7 |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ PERISTALTIC PUMP; ☐ SUBMERSIBLE PUMP; ☐ BLADDER PUMP; ☒ PVC/SILICON TUBING; ☐ TEFLON/SILICON TUBING

SAMPLING: ☒ PERISTALTIC PUMP; ☐ SUBMERSIBLE PUMP; ☐ BLADDER PUMP; ☒ PVC/SILICON TUBING; ☐ TEFLON/SILICON TUBING; ☐ WATTERA; ☐ IN LINE FILTER; ☐ PRESS/VAC FILTER; ☐ _____

DECON FLUIDS USED: ☐ METHANOL; ☒ LIQUINOX; ☒ POTABLE WATER; ☒ DEIONIZED WATER; ☐ HEXANE; ☐ NITRIC ACID; ☐ _____

WATER LEVEL EQUIPMENT USED: ☒ ELECTRIC COND. PROBE; ☐ FLOAT ACTIVATED; ☐ KECK INTERFACE PROBE; ☐ _____

NUMBER OF FILTERS USED: _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ 30'-34' 4 gal vol | HACH Test Kit Results (mg/L) | | | | ☐ | |
| ☐ 17.1°C Temp | Depth | Total CR | Hex CR | Dis for Hex | Fe ☐ | |
| ☐ 6.14 PH | 30'-34' | — | 950 | 1000 | 0 ☐ | |
| ☐ 3 NTU | 36'-40' | 590 | 900 | 1000 | 0 ☐ | |
| ☐ 4.65 Spec COND MS/cm | 40'-44' | 563 | 700 | 1000 | 0 ☐ | |
| ☐ 2.64 DO | 46'-50' | 13.5 | ≈13 | — | 0 ☐ | |
| ☐ 267 ReDox | 56'-60' | 0.15 | < 0.1 | None | 0.8 ☐ | |

## NOTES

SIGNATURE: D. Roderick Pendleton

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome
JOB NUMBER: 2842-00
DATE: 1-26-99
WELL ID: WP-99-16
ACTIVITY TIME: START 0800 END 1100
BOTTLE TIME: 0950
SAMPLE ISIS ID: WP9916034XX

☐ QC SAMPLES COLLECTED
DUPLICATE ID: —
MS ID: —
MSD ID: —

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: 50 FT ~~(TOR)~~ MAX. BGS
HISTORICAL WELL DEPTH: — FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): — FT
PROTECTIVE CASING / WELL DIFFERENCE: — FT
DEPTH TO WATER: — FT (TOR)
SCREEN LENGTH: 4.0 FT
WELL DIAMETER: 1.25 IN
WELL MATERIAL: Stainless
HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL
TOTAL VOLUME PURGED: — GAL
AMBIENT AIR: — PPM
WELL MOUTH: — PPM

## PURGE DATA

| | ① (46'-50') | ② (36'-40') | ③ (30'-34')* | ④ (25'-29') | ⑤ (20-24') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 3 gal | 3 gal | 3 gal | 2 gal |
| TEMPERATURE (degreesC) | 16.1 | 15.8 | 15.7 | 14.2 | 16.3 |
| pH (units) | 6.25 | 6.71 | 7.12 | 7.09 | 6.58 |
| TURBIDITY (ntu) | 11 | 17 | 3 | 57 | 13 |
| SPEC. COND. (uhmos/cm) | 12.5 | 7.02 | 6.07 | 2.99 | 1.13 |
| DISSOLVED OXYGEN (mg/L) | 2.02 | 1.26 | 3.50 | 1.10 | 0.58 |
| REDOX POTENTIAL | 128 | 33 | 6 | -33 | -19 |

SAMPLE OBSERVATIONS:
- [X] CLEAR 1,2,3,4,5,6,7
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING:
- [X] PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- [X] PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER

SAMPLING:
- [X] PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- [X] PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER

DECON FLUIDS USED:
- ☐ METHANOL
- [X] LIQUINOX
- [X] POTABLE WATER
- [X] DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID

WATER LEVEL EQUIPMENT USED:
- [X] ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE

NUMBER OF FILTERS USED: Ø

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

*Analytical Sample collected from 30'-34' interval

NOTES

SIGNATURE: A. Rustad

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-26-99

WELL ID: WP-99-16 | ACTIVITY | BOTTLE

TIME START: 0800 END: 1100 | TIME: 0950

SAMPLE ISIS ID: WP99160034XX

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

MAX MEASURED WELL DEPTH: 50 ~~bgs~~ FT ~~(TOR)~~ | HISTORICAL WELL DEPTH: — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): — FT | PROTECTIVE CASING / WELL DIFFERENCE: — FT

DEPTH TO WATER: — FT (TOR) | SCREEN LENGTH: 4.0 FT | WELL DIAMETER: 1.25 IN | WELL MATERIAL: Stainless

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ⑥ (15'-19') | ⑦ (8'-12') | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2 gal | 2 gal | | | |
| TEMPERATURE (degreesC) | 16.0 | 14.4 | | | |
| pH (units) | 6.39 | 6.41 | | | |
| TURBIDITY (ntu) | 0 | 31 | | | |
| SPEC. COND. (unmos/cm) | 0.899 | 0.642 | | | |
| DISSOLVED OXYGEN (mg/L) | 0.85 | 0.78 | | | |
| REDOX POTENTIAL | 4.3 | -14 | | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 1-7
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED | |
|---|---|---|---|---|---|---|
| | | PERISTALTIC PUMP | | METHANOL | ☒ | ELECTRIC COND. PROBE |
| | | SUBMERSIBLE PUMP | ☒ | LIQUINOX | ☐ | FLOAT ACTIVATED |
| | | BLADDER PUMP | ☒ | POTABLE WATER | ☐ | KECK INTERFACE PROBE |
| ☒ | ☒ | PVC/SILICON TUBING | ☒ | DEIONIZED WATER | ☐ | |
| | | TEFLON/SILICON TUBING | | HEXANE | | |
| | | WATTERA | | NITRIC ACID | | |
| | | IN LINE FILTER | | | | |
| | | PRESS/VAC FILTER | | | | |

NUMBER OF FILTERS USED: ∅

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: N. Kuntad

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-26-99

WELL ID: WP-99-17 | ACTIVITY | BOTTLE

TIME: START 1310 END 1610 | BOTTLE TIME: 1430

SAMPLE ISIS ID: WP9917034XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAX MEASURED WELL DEPTH | 50 FT ~~(TOR)~~ bgs | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.25 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (46'-50') | ② (36'-40') | ③ (30'-34') * | ④ (25'-29') | ⑤ (20'-24') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 4 gal | 4 gal | 2 gal | 3.5 gal |
| TEMPERATURE (degreesC) | 15.8 | 16.6 | 16.8 | 16.2 | 16.1 |
| pH (units) | 6.31 | 6.63 | 6.86 | 6.96 | 6.58 |
| TURBIDITY (ntu) | 0 | 10 | 9 | 0 | 48 |
| SPEC. COND. (uhmos/cm) | 12.7 | 9.4 | 5.0 | 2.11 | 0.898 |
| DISSOLVED OXYGEN (mg/L) | 3.46 | 2.97 | 2.75 | 3.02 | 1.71 |
| REDOX POTENTIAL | 170 | 92 | 8.3 | -65 | -52 |

SAMPLE OBSERVATIONS:

- [X] CLEAR 1,2,3,4,5,6
- ☐ COLORED
- ☐ CLOUDY
- [X] TURBID 7
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED | |
|---|---|---|---|---|---|---|
| | | PERISTALTIC PUMP | | METHANOL | [X] | ELECTRIC COND. PROBE |
| | | SUBMERSIBLE PUMP | [X] | LIQUINOX | ☐ | FLOAT ACTIVATED |
| | | BLADDER PUMP | [X] | POTABLE WATER | ☐ | KECK INTERFACE PROBE |
| [X] | [X] | PVC/SILICON TUBING | [X] | DEIONIZED WATER | ☐ | _____ |
| | | TEFLON/SILICON TUBING | | HEXANE | | |
| | | WATTERA | | NITRIC ACID | | |
| | | IN LINE FILTER | | _____ | NUMBER OF FILTERS USED _____ | |
| | | PRESS/VAC FILTER | | | | |
| | | _____ | | | | |

## ANALYTICAL PARAMETERS

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|
| | | | | ☐ | / / / |

* Analytical sample collected from 30'-34' bgs interval

## NOTES

SIGNATURE: A. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-26-99

WELL ID: WP9917034XX (WP-99-17) | ACTIVITY TIME START: 1310 END: 1610 | BOTTLE TIME: 1430

SAMPLE ISIS ID: WP9917034XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

MAX MEASURED WELL DEPTH: 50 FT ~~(TOR)~~ bgs | HISTORICAL WELL DEPTH: — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): — FT | PROTECTIVE CASING / WELL DIFFERENCE: — FT

DEPTH TO WATER: — FT (TOR) | SCREEN LENGTH: 4.0 FT | WELL DIAMETER: 1.25 IN | WELL MATERIAL: Stainless

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = — GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

(6) (15'-19') (4) (8'-12')

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | | 3 gal | | | |
| TEMPERATURE (degreesC) | 15.5 | 14.2 | | | |
| pH (units) | 6.48 | 6.61 | | | |
| TURBIDITY (ntu) | 3 | 41 | | | |
| SPEC. COND. (uhmos/cm) | 0.712 | 0.393 | | | |
| DISSOLVED OXYGEN (mg/L) | 1.46 | 2.14 | | | |
| REDOX POTENTIAL | -66 | -50 | | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 1-6
- ☐ COLORED
- ☐ CLOUDY
- ☒ TURBID 7
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☒ | ☒ | BLADDER PUMP |
| ☐ | ☐ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
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| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |

## NOTES

SIGNATURE: H. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE: 1-27-99

WELL ID: WP-99-18 | ACTIVITY TIME START: 0745 END: 1020 | BOTTLE TIME: 0930

SAMPLE ISIS ID: WP9918019XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH (max.) | 50 FT bgs (TOR) | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.25 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (46'-50') | ② (36'-40') | ③ (30'-34') | ④ (25'-29') | ⑤ 20'-24' |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 3 gal | 4 gal | 3 gal | 4 gal |
| TEMPERATURE (degreesC) | 16.4 | 16.8 | 16.5 | 17.2 | 17.3 |
| pH (units) | 6.15 | 6.42 | 6.82 | 7.47 | 6.25 |
| TURBIDITY (ntu) | 0 | 336 | 67 | 15 | 0 |
| SPEC. COND. (uhmos/cm) | 12.1 | 7.08 | 5.62 | 3.41 | 1.07 |
| DISSOLVED OXYGEN (mg/L) | 1.95 | 2.99 | 4.45 | 1.72 | 1.51 |
| REDOX POTENTIAL | 159 | 63 | -10 | -50 | -3 |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 1, 4, 5, 6, 7
- ☐ COLORED
- ☐ CLOUDY
- ☒ TURBID 2, 3
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED:
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED:
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED: _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: A. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-27-99

WELL ID: WP-99-18 | ACTIVITY TIME START: 0745 END: 1020 | BOTTLE TIME: 0930

SAMPLE ISIS ID: WP9918019XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 50 FT (~~TOR~~ bgs) | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.25 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ⑥ (15'-19')* | ⑦ (8'-12') | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gal | 3 gal | | | |
| TEMPERATURE (degreesC) | 16.9 | 15.2 | | | |
| pH (units) | 6.83 | 6.91 | | | |
| TURBIDITY (ntu) | 0 | 0 | | | |
| SPEC. COND. (uhmos/cm) | 0.679 | 0.618 | | | |
| DISSOLVED OXYGEN (mg/L) | 2.49 | 2.84 | | | |
| REDOX POTENTIAL | 3 | 13 | | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 1, 4, 5, 6, 7
- ☐ COLORED
- ☐ CLOUDY
- ☒ TURBID 2, 3
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ PVC/SILICON TUBING

SAMPLING: ☒ PERISTALTIC PUMP; ☐ SUBMERSIBLE PUMP; ☐ BLADDER PUMP; ☒ PVC/SILICON TUBING; ☐ TEFLON/SILICON TUBING; ☐ WATTERA; ☐ IN LINE FILTER; ☐ PRESS/VAC FILTER

DECON FLUIDS USED: ☐ METHANOL; ☒ LIQUINOX; ☒ POTABLE WATER; ☒ DEIONIZED WATER; ☐ HEXANE; ☐ NITRIC ACID

WATER LEVEL EQUIPMENT USED: ☒ ELECTRIC COND. PROBE; ☐ FLOAT ACTIVATED; ☐ KECK INTERFACE PROBE

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

* Analytical Sample collected from 15'-19' interval

## NOTES

SIGNATURE: A. Rustad

RECEIVED BY:

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-26-99

WELL ID: WP-99-19 | ACTIVITY TIME: START 1630 END 1730 | BOTTLE TIME: N/A

SAMPLE ISIS ID: N/A

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH (max) | 50 FT ~~(TOR)~~ bgs | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.25 IN | WELL MATERIAL | STAINLESS |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (30'-34') | ② (20'-24') | ③ (10'-14') | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4gal | 3gal | 3gal | | |
| TEMPERATURE (degreesC) | 16.5 | 16.8 | 15.1 | | |
| pH (units) | 6.71 | 6.63 | 6.59 | | |
| TURBIDITY (ntu) | 3 | 6 | 7 | | |
| SPEC. COND. (uhmos/cm) | 2.68 | 0.728 | 0.702 | | |
| DISSOLVED OXYGEN (mg/L) | 2.33 | 2.09 | 2.56 | | |
| REDOX POTENTIAL | 13 | 4 | 2 | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 1-3
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

No Analytical Sample

NOTES

SIGNATURE: J. Lustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-28-99

WELL ID: WP-99-20 | ACTIVITY TIME START: 0800 END: 1200 | BOTTLE TIME: 1040

SAMPLE ISIS ID: WP9920029XX

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH (Max) | 60 FT ~~(TOR)~~ bgs | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.25 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (56'-60') | ② (46'-50') | ③ (36'-40') | ④ (30'-34') | ⑤ (25'-29')* |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 4 gal | 4 gal | 4 gal | 4 gal |
| TEMPERATURE (degreesC) | 17.6 | 19.3 | 18.8 | 19.5 | 19.4 |
| pH (units) | 6.23 | 6.73 | 6.77 | 6.31 | 6.50 |
| TURBIDITY (ntu) | 0 | 13 | 2 | 0 | 2 |
| SPEC. COND. (uhmos/cm) | 16.3 | 13.9 | 10.9 | 6.58 | 6.17 |
| DISSOLVED OXYGEN (mg/L) | 0.89 | 3.67 | 1.61 | 1.37 | 0.34 |
| REDOX POTENTIAL | 172.5 | 84 | 64 | 113 | 114 |

SAMPLE OBSERVATIONS:
- [X] CLEAR 1,
- [X] COLORED Yellow 3,4,5
- [X] CLOUDY 2
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED | |
|---|---|---|---|---|---|---|
| | X | PERISTALTIC PUMP | | METHANOL | X | ELECTRIC COND. PROBE |
| | | SUBMERSIBLE PUMP | X | LIQUINOX | | FLOAT ACTIVATED |
| | | BLADDER PUMP | X | POTABLE WATER | | KECK INTERFACE PROBE |
| X | X | PVC/SILICON TUBING | X | DEIONIZED WATER | | |
| | | TEFLON/SILICON TUBING | | HEXANE | | |
| | | WATTERA | | NITRIC ACID | | |
| | | IN LINE FILTER | | | NUMBER OF FILTERS USED | |
| | | PRESS/VAC FILTER | | | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

*Analytical sample collected from 25'-29' interval

## NOTES

SIGNATURE: Nina L. Ruotad

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2342-00 | DATE: 1-28-99

WELL ID: WP-99-20 | ACTIVITY | BOTTLE

TIME: START 0800 END 1200 | TIME: 1040

SAMPLE ISIS ID: WP9920029XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

max
MEASURED WELL DEPTH: 60 ~~FT (TOR)~~ bgs | HISTORICAL WELL DEPTH: — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): — FT | PROTECTIVE CASING / WELL DIFFERENCE: — FT

DEPTH TO WATER: — FT (TOR) | SCREEN LENGTH: 4.0 FT | WELL DIAMETER: 1.25 IN | WELL MATERIAL: Stainless

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | (6) (20'-24') | (7) (15'-19') | (8) (8'-12') | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2 gal | 3 gal | 3 gal | | |
| TEMPERATURE (degreesC) | 17.9 | 19.9 | 19.6 | | |
| pH (units) | 5.47 | 5.97 | 6.62 | | |
| TURBIDITY (ntu) | 1 | 0 | 0 | | |
| SPEC. COND. (uhmos/cm) | 1.98 | 1.02 | 0.828 | | |
| DISSOLVED OXYGEN (mg/L) | 5.05 | 1.97 | 1.59 | | |
| REDOX POTENTIAL | 187 | 132 | 89 | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 8
- ☒ COLORED Yellow 6,7
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: A. Ruotad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-28-99

WELL ID: WP-99-21 | ACTIVITY TIME: START 1440 END 1730 | BOTTLE TIME: —

SAMPLE ISIS ID: —

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

MAX MEASURED WELL DEPTH: 50 bgs FT (TOR) | HISTORICAL WELL DEPTH: — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): — FT | PROTECTIVE CASING / WELL DIFFERENCE: — FT

DEPTH TO WATER: — FT (TOR) | SCREEN LENGTH: 4.0 FT | WELL DIAMETER: 1.25 IN | WELL MATERIAL: STAINLESS

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① 46'-50' | ② 36'-40' | ③ 30'-34' | ④ 25'-29' | ⑤ 20-24' |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 4 gal | 3 gal | 3 gal | 2 gal |
| TEMPERATURE (degreesC) | 18.1 | 18.4 | 18.4 | 18.8 | 17.6 |
| pH (units) | 6.49 | 6.68 | 6.82 | 6.78 | 6.99 |
| TURBIDITY (ntu) | Ø | 0 | 0 | 0 | 21 |
| SPEC. COND. (uhmos/cm) | 13.3 | 10.9 | 7.09 | 5.55 | 3.52 |
| DISSOLVED OXYGEN (mg/L) | 2.71 | 1.64 | 2.27 | 1.66 | 3.41 |
| REDOX POTENTIAL | 136 | 67 | 58 | 47 | 41 |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 1, 2, 3, 4
- ☐ COLORED
- ☒ CLOUDY 5, 6
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ ⑥ 10'-14' 4 gal Temp 16.3 pH 6.21 Turb. 129 S.C. 0.995 D.O. 1.32 Redox 56.7 | | | | | ☐ | |

NOTES

SIGNATURE: A. Eustard

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF ____

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-29-99

WELL ID: WP-99-22 | ACTIVITY | BOTTLE

TIME: START 0735 END | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = ____ GAL/VOL

TOTAL VOLUME PURGED ____ GAL

AMBIENT AIR ____ PPM | WELL MOUTH ____ PPM

## PURGE DATA

| | ① (36'-40') | ② (30'-34') | ③ (25'-29') | ④ (20'-24') | ⑤ (15'-19') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 gal | 3 gal | 4 gal | 4 gal | 3 gal |
| TEMPERATURE (degreesC) | 16.4 | 17.2 | 16.9 | 16.9 | 15.7 |
| pH (units) | 6.19 | 6.26 | 6.47 | 6.39 | 6.34 |
| TURBIDITY (ntu) | 34 | 3 | 12 | 0 | 0 |
| SPEC. COND. (uhmos/cm) | 9.5 | 4.42 | 2.26 | 1.29 | 0.843 |
| DISSOLVED OXYGEN (mg/L) | 3.18 | 3.05 | 2.42 | 3.16 | 1.06 |
| REDOX POTENTIAL | 206 | 161 | 75 | 67 | 40 |

SAMPLE OBSERVATIONS:

- ☒ CLEAR 2,4,5,6
- ☐ COLORED ____
- ☒ CLOUDY 1,3
- ☐ TURBID ____
- ☐ ODOR ____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | ____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ ____

WATER LEVEL EQUIPMENT USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ (8'-12') ⑥ 2 gal | | | | | ☐ | |
| ☐ 14.2 °C Temp. | | | | | ☐ | |
| ☐ 6.88 pH | | | | | ☐ | |
| ☐ 0 Turbidity | | | | | ☐ | |
| ☐ 0.271 Spec. Cond. | | | | | ☐ | |
| ☐ 1.40 Diss. Oxygen | | | | | ☐ | |
| ☐ 14.2 Redox | | | | | ☐ | |
| ☐ | | | | | ☐ | |

NOTES

SIGNATURE: ____

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE: 2-3-99

WELL ID: WP-99-23 | ACTIVITY TIME START: 1230 END: 1430 | BOTTLE TIME: –

SAMPLE ISIS ID: –

☐ QC SAMPLES COLLECTED — DUPLICATE ID: – | MS ID: – | MSD ID: –

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: 25.5 FT ~~(TOR)~~ bgs | HISTORICAL WELL DEPTH: – FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): – FT | PROTECTIVE CASING / WELL DIFFERENCE: – FT

DEPTH TO WATER: – FT (TOR) | SCREEN LENGTH: 4.0 FT | WELL DIAMETER: 1.0 IN | WELL MATERIAL: Stainless

HEIGHT OF WATER COLUMN: – FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = – GAL/VOL | TOTAL VOLUME PURGED: – GAL

AMBIENT AIR: – PPM | WELL MOUTH: – PPM

## PURGE DATA

| | ① (21'-25') | ② (15'-19') | ③ (8'-12') | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 3 gal | 3 gal | | |
| TEMPERATURE (degreesC) | 22.2 | 22.6 | 22.4 | | |
| pH (units) | 6.85 | 6.55 | 6.33 | | |
| TURBIDITY (ntu) | >999 | 37 | 4 | | |
| SPEC. COND. (unmos/cm) | 3.95 | 1.02 | 0.477 | | |
| DISSOLVED OXYGEN (mg/L) | 4.36 | 4.54 | 3.60 | | |
| REDOX POTENTIAL | 270 | 67 | 106 | | |

SAMPLE OBSERVATIONS:
- [X] CLEAR 3
- [X] COLORED (Yellow) 1
- [X] CLOUDY 2
- [X] TURBID 1
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [X] | [X] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | _____ |

DECON FLUIDS USED:
- [ ] METHANOL
- [X] LIQUINOX
- [X] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED:
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
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| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES: Extremely tight zone 21'-25' bgs - Refusal @ 25.5' bgs.

SIGNATURE: A. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE: 2-4-99

WELL ID: WP-99-24 | ACTIVITY | BOTTLE

TIME START: 0745 END: 1150 | TIME: 1015

SAMPLE ISIS ID: WP9924034XX

☐ QC SAMPLES COLLECTED — DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

MAX MEASURED WELL DEPTH: 50 ~~FT (TOR)~~ bgs | HISTORICAL WELL DEPTH: — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): — FT | PROTECTIVE CASING / WELL DIFFERENCE: — FT

DEPTH TO WATER: — FT (TOR) | SCREEN LENGTH: 4.0 FT | WELL DIAMETER: 1.0 IN | WELL MATERIAL: Stainless

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | (1) (46'-50') | (2) (36'-40') | (3) (30'-34') | (4) (25'-29') | (5) (20'-24') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 3 gal | 2 gal | 3 gal | 3 gal |
| TEMPERATURE (degreesC) | 17.7 | 18.9 | 17.4 | 19.5 | 19.3 |
| pH (units) | 6.50 | 6.70 | 6.88 | 6.74 | 6.57 |
| TURBIDITY (ntu) | 15 | 206 | 9 | 40 | 144 |
| SPEC. COND. (unmos/cm) | 10.1 | 9.08 | 6.21 | 4.62 | 2.98 |
| DISSOLVED OXYGEN (mg/L) | 4.06 | 3.95 | 4.59 | 4.54 | 4.45 |
| REDOX POTENTIAL | 42 | 19 | 32 | 43 | 59 |

SAMPLE OBSERVATIONS:
- [X] CLEAR 1, 2, 3, 4
- [ ] COLORED
- [X] CLOUDY 2, 5, 6
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [X] | [X] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | _____ |

DECON FLUIDS USED
- [ ] METHANOL
- [X] LIQUINOX
- [X] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ (6) (11'-15') 2 gal 18.1 Temp 6.06 pH 195 Turb. 0.928 S.C. 3.73 D.O. 59 Redox | | | | | ☐ | |

NOTES: Analytical Sample collected from 30'-34' bgs.

SIGNATURE: H. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2542-00 | DATE: 2/6/99

WELL ID: WP-99-25 | ACTIVITY | BOTTLE

TIME: START 13:40 END 14:25 | TIME:

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 50 (6.55) FT (TOR) | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.0 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

46-50 (1) 41-45 (2) 36-40 3 30-34 4 25-29 5 20-24

## PURGE DATA

| | 46-50 (1) | 41-45 (2) | 36-40 3 | 30-34 4 | 25-29 5 | 20-24 |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gallons | 3 gallons | 3 gallons | 3 gallons | 3 gallons | |
| TEMPERATURE (degreesC) | 20.5 | 20.1 | 20.4 | 20.8 | 20.6 | |
| pH (units) | 6.34 | 6.75 | 6.85 | 6.88 | 6.44 | |
| TURBIDITY (ntu) | 4 | 23 | 15 | 338 | 39 | |
| SPEC. COND. (unmos/cm) | 10.0 | 7.89 | 5.87 | 3.58 | 1.75 | |
| DISSOLVED OXYGEN (mg/L) | 3.11 | 3.97 | 3.76 | 3.90 | 3.37 | |
| REDOX POTENTIAL | 135.7 | 29.4 | 0.5 | -2.1 | 90.8 | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 1, 2, 3, 5
- ☐ COLORED
- ☐ CLOUDY
- ☒ TURBID 4
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| | | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

## NOTES

No Analytical Collected

SIGNATURE: James L Collins R.G.

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 7842-00 | DATE: 2/6/99

WELL ID: WP-99-26 | ACTIVITY TIME: START 17:05 END 17:30 | BOTTLE TIME:

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 26 FT (TOR) | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.0 IN | WELL MATERIAL | STAINLESS |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① 22-26 | ② 15-19 | ③ 8-12 | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gallon | 3 gallon | 3 gallon | | |
| TEMPERATURE (degreesC) | 20.3 | 20.5 | 20.9 | | |
| pH (units) | 6.170 | 6.44 | 6.147 | | |
| TURBIDITY (ntu) | >1000 | 42 | 4 | | |
| SPEC. COND. (unmos/cm) | 2.18 | .948 | .687 | | |
| DISSOLVED OXYGEN (mg/L) | 2.59 | 4.73 | 3.78 | | |
| REDOX POTENTIAL | 84.3 | 129.6 | 119.6 | | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 1 2 3
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☒ METHANOL
- ☒ LIQUINOX
- ☒ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

## NOTES

No Analytical Collected

SIGNATURE: James L Collins P.G.

RECEIVED BY:

HARDING LAWSON ASSOCIATES



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAED Chrome | JOB NUMBER: 2842-00 | DATE: 2-5-99

WELL ID: WP-99-27 | ACTIVITY | BOTTLE

TIME: START 0900 END | TIME

SAMPLE ISIS ID: WP9927029XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | ① (46'-50') | ② (36'-40') | ③ (30'-34') | ④ (25'-29') | ⑤ (20'-24') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gal | 3 gal | 3 gal | 3 gal | 2 gal |
| TEMPERATURE (degreesC) | 19.1 | 19.3 | 19.2 | 19.8 | 19.9 |
| pH (units) | 6.38 | 6.82 | 7.04 | 7.21 | 7.12 |
| TURBIDITY (ntu) | 4 | 2 | 2 | 41 | 30 |
| SPEC. COND. (~~umhos~~ mS/cm) | 10.0 | 7.90 | 6.93 | 5.53 | 4.14 |
| DISSOLVED OXYGEN (mg/L) | 5.23 | 4.57 | 3.68 | 5.81 | 4.68 |
| REDOX POTENTIAL | 171 | 91 | 37 | 36 | -9 |

SAMPLE OBSERVATIONS:

- ☒ CLEAR 1,2,3
- ☐ COLORED
- ☒ CLOUDY 4,5
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING

- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER

DECON FLUIDS USED

- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED

- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 2-5-99

WELL ID: WP-99-27 | ACTIVITY | BOTTLE

TIME: START 0900 END | TIME

SAMPLE ISIS ID: WP992702 9XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | (6) (12'-16') | (7) (18'-12') | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3gal | 3gal | | | |
| TEMPERATURE (degreesC) | 19.9 | 19.8 | | | |
| pH (units) | 6.35 | 6.47 | | | |
| TURBIDITY (ntu) | 7 | 24 | | | |
| SPEC. COND. (unmos/cm) | 0.891 | 0.683 | | | |
| DISSOLVED OXYGEN (mg/L) | 2.76 | 4.04 | | | |
| REDOX POTENTIAL | 68 | 105 | | | |

SAMPLE OBSERVATIONS:

- ☐ CLEAR
- ☒ COLORED (green) 6, 7
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING

- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER
- ☐ _____

DECON FLUIDS USED

- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED

- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE: 2-4-99

WELL ID: WP-99-28 | ACTIVITY TIME START: 1240 END: 1450 | BOTTLE TIME: 1415

SAMPLE ISIS ID: WP9928024XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH (Max) | 40 FT ~~(TOR)~~ bgs | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.0 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = — GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (37'-40') | ② (30'-34')* | ③ (25'-29')* | ④ (20'-24')* | 15-19' |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3gal | 3gal | 3gal | 3gal | 3gal |
| TEMPERATURE (degreesC) | 20.0 | 20.6 | 20.1 | 20.6 | 20.8°C |
| pH (units) | 6.66 | 11.01 | 6.97 | 6.33 | 6.21 |
| TURBIDITY (ntu) | 7 | 18 | 14 | 6 | 2 |
| SPEC. COND. ~~(umhos/cm)~~ mS | 8.41 | 6.23 | 3.15 | 1.45 | .95 |
| DISSOLVED OXYGEN (mg/L) | 4.61 | 2.57 | 4.36 | 3.09 | 3.19 |
| REDOX POTENTIAL | 59 | -91 | 8 | 78 | 66. |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 1,2,3,4
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☒ ODOR (Solvent) 2,3
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED | |
|---|---|---|---|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP | ☐ | METHANOL | ☒ | ELECTRIC COND. PROBE |
| ☐ | ☐ | SUBMERSIBLE PUMP | ✓ | LIQUINOX | ☐ | FLOAT ACTIVATED |
| ☒ (4) | ☐ | BLADDER PUMP | ☒ | POTABLE WATER | ☐ | KECK INTERFACE PROBE |
| ☒ | ☒ | PVC/SILICON TUBING | ☒ | DEIONIZED WATER | ☐ | |
| ☐ | ☐ | TEFLON/SILICON TUBING | ☐ | HEXANE | | |
| ☐ | ☐ | WATTERA | ☐ | NITRIC ACID | | |
| ☐ | ☐ | IN LINE FILTER | ☐ | | NUMBER OF FILTERS USED | |
| ☐ | ☐ | PRESS/VAC FILTER | | | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ WP-99-28 CONT. | | | | | ☐ | |
| ☐ 8-12' Depth Intv. | | | | | ☐ | |
| ☐ 3gal Purge Vol. | | | | | ☐ | |
| ☐ 21.1°C Temp | | | | | ☐ | |
| ☐ 6.24 → pH | | | | | ☐ | |
| ☐ 17 → NTU | | | | | ☐ | |
| ☐ .672 → Spec. Cond. | | | | | ☐ | |
| ☐ 3.41 → D.O. | | | | | ☐ | |
| ☐ 239 Redox (27.4) | | | | | ☐ | |

NOTES * Sample had solvent odor
+ Analytical sample collected from 20'-24' interval.

SIGNATURE: A. Rustad

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE: 2-4-99

WELL ID: WP-99-29 | ACTIVITY | BOTTLE

TIME: START 1520 END 1730 | TIME:

SAMPLE iSIS ID:

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH (Max) | 50 FT ~~(TOR)~~ bgs | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.0 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (46'-50') | ② (36'-40') | ③ (30'-34') | ④ (25'-29') | ⑤ (18'-22') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 4 gal | 3 gal | 3 gal | 3 gal |
| TEMPERATURE (degreesC) | 28.8 | 20.4 | 20.6 | 28.5 | 22.0 |
| pH (units) | 6.22 | 6.53 | 9.28 | 7.37 | 6.36 |
| TURBIDITY (ntu) | 24 | 19 | 31 | 2 | 5 |
| SPEC. COND. (unmos/cm) | 9.75 | 5.57 | 4.15 | 2.64 | 1.54 |
| DISSOLVED OXYGEN (mg/L) | 4.12 | 4.11 | 4.67 | 3.94 | 3.68 |
| REDOX POTENTIAL | 90 | 77 | 11 | 7 | 34 |

SAMPLE OBSERVATIONS:

- [X] CLEAR 1, 2, 4, 5, 6, 7
- [X] COLORED Yellow/gr. 3
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [X] | [X] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | _____ |

DECON FLUIDS USED:

- [ ] METHANOL
- [X] LIQUINOX
- [X] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED:

- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED: _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| | | | | | | |

## NOTES

SIGNATURE: M. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 2-4-99

WELL ID: WP-99-29 | ACTIVITY | BOTTLE

TIME: START 1520 END 1730 | TIME: -

SAMPLE ISIS ID: -

☐ QC SAMPLES COLLECTED | DUPLICATE ID: - | MS ID: - | MSD ID: -

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAX MEASURED WELL DEPTH | 50 FT ~~(TOR)~~ BGS | HISTORICAL WELL DEPTH | - FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | - FT | PROTECTIVE CASING / WELL DIFFERENCE | - FT |
| DEPTH TO WATER | - FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.0 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: - FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = - GAL/VOL

TOTAL VOLUME PURGED: - GAL

AMBIENT AIR: - PPM | WELL MOUTH: - PPM

## PURGE DATA

| | (6) (13'-17') | (7) (8'-12') | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2 gal | 2 gal | | | |
| TEMPERATURE (degreesC) | 23.2 | 26.3 | | | |
| pH (units) | 6.22 | 6.22 | | | |
| TURBIDITY (ntu) | 0 | 3 | | | |
| SPEC. COND. (uhmos/cm) | 1.24 | 0.931 | | | |
| DISSOLVED OXYGEN (mg/L) | 3.36 | 3.26 | | | |
| REDOX POTENTIAL | 63 | 78 | | | |

SAMPLE OBSERVATIONS:

- ☒ CLEAR 6, 7
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED | |
|---|---|---|---|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP | ☐ | METHANOL | ☒ | ELECTRIC COND. PROBE |
| ☐ | ☐ | SUBMERSIBLE PUMP | ☒ | LIQUINOX | ☐ | FLOAT ACTIVATED |
| ☐ | ☐ | BLADDER PUMP | ☒ | POTABLE WATER | ☐ | KECK INTERFACE PROBE |
| ☒ | ☒ | PVC/SILICON TUBING | ☒ | DEIONIZED WATER | ☐ | |
| ☐ | ☐ | TEFLON/SILICON TUBING | ☐ | HEXANE | | |
| ☐ | ☐ | WATTERA | ☐ | NITRIC ACID | | |
| ☐ | ☐ | IN LINE FILTER | ☐ | | | |
| ☐ | ☐ | PRESS/VAC FILTER | | | | |
| ☐ | | | | | | |

NUMBER OF FILTERS USED: _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |
| ☐ | | | | | ☐ | |

NOTES: No analytical sample collected.

SIGNATURE: H. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 2/6/99

WELL ID: WP-99-30 | ACTIVITY | BOTTLE

TIME: START 08:40 END 09:20 | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 30 FT (TOR) ~~3.28~~ | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | — FT (TOR) | SCREEN LENGTH | 4.0 FT | WELL DIAMETER | 1.0 IN | WELL MATERIAL | Stainless |

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① | ② | ③ | ④ | |
|---|---|---|---|---|---|
| | 27.5-30 | 21-24 | 15-19 | 8-12 | |
| PURGE VOLUME (gallons) | 3 gallon | 3 gallon | 3 gallon | 3 gallon | |
| TEMPERATURE (degreesC) | 21.4 | 22.8 | 22.9 | 22.5 | |
| pH (units) | 6.81 | 6.63 | 6.39 | 6.20 | |
| TURBIDITY (ntu) | >1000 | 90 | 40 | 38 | |
| SPEC. COND. (unmos/cm) | 7.86 | 3.87 | 1.37 | 0.654 | |
| DISSOLVED OXYGEN (mg/L) | 4.27 | 2.57 | 3.16 | 2.98 | |
| REDOX POTENTIAL | 86.1 | 34.4 | 65.8 | 89.3 | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR 2, 3, 4
- ☐ COLORED
- ☐ CLOUDY
- ☒ TURBID 1
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ ☐ ☐ ☒ ☐ ☐ ☐ ☐

SAMPLING: ☒ PERISTALTIC PUMP; ☐ SUBMERSIBLE PUMP; ☐ BLADDER PUMP; ☒ PVC/SILICON TUBING; ☐ TEFLON/SILICON TUBING; ☐ WATTERA; ☐ IN LINE FILTER; ☐ PRESS/VAC FILTER; ☐ _____

DECON FLUIDS USED: ☐ METHANOL; ☒ LIQUINOX; ☒ POTABLE WATER; ☐ DEIONIZED WATER; ☐ HEXANE; ☐ NITRIC ACID; ☐ _____

WATER LEVEL EQUIPMENT USED: ☒ ELECTRIC COND. PROBE; ☐ FLOAT ACTIVATED; ☐ KECK INTERFACE PROBE; ☐ _____

NUMBER OF FILTERS USED: _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

NOTES: No Analytical Collected

SIGNATURE: James L. Collins P.G.

RECEIVED BY:

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT WP(GW) SAEP Chrome | JOB NUMBER 2842-00 | DATE 2-5-99

WELL ID WP-99-31 | ACTIVITY | BOTTLE

TIME START 1430 END 1600 | TIME —

SAMPLE ISIS ID —

☐ QC SAMPLES COLLECTED | DUPLICATE ID — | MS ID — | MSD ID —

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH (Max) 24 FT (TOR) | HISTORICAL WELL DEPTH — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) — FT | PROTECTIVE CASING / WELL DIFFERENCE — FT

DEPTH TO WATER — FT (TOR) | SCREEN LENGTH 4.0 FT | WELL DIAMETER 1.0 IN | WELL MATERIAL STAINLESS

HEIGHT OF WATER COLUMN — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED — GAL

AMBIENT AIR — PPM | WELL MOUTH — PPM

## PURGE DATA

| | ① (20'-24') | ② (15'-19') | ③ (8'-12') | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3gal | 2gal | 4gal | | |
| TEMPERATURE (degreesC) | 21.1 | 20.9 | 20.7 | | |
| pH (units) | 6.89 | 6.43 | 6.60 | | |
| TURBIDITY (ntu) | 37 | 7 | 15 | | |
| SPEC. COND. (unmos/cm) | 2.71 | 0.873 | 0.751 | | |
| DISSOLVED OXYGEN (mg/L) | 3.93 | 3.38 | 3.77 | | |
| REDOX POTENTIAL | 112 | 117 | 153 | | |

SAMPLE OBSERVATIONS:

- [X] CLEAR 1,2,3
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING |
|---|---|
| [X] | [X] PERISTALTIC PUMP |
| [ ] | [ ] SUBMERSIBLE PUMP |
| [ ] | [ ] BLADDER PUMP |
| [X] | [X] PVC/SILICON TUBING |
| [ ] | [ ] TEFLON/SILICON TUBING |
| [ ] | [ ] WATTERA |
| [ ] | [ ] IN LINE FILTER |
| [ ] | [ ] PRESS/VAC FILTER |
| [ ] | [ ] |

DECON FLUIDS USED

- [ ] METHANOL
- [X] LIQUINOX
- [X] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED

- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

NOTES No Analytical collected

SIGNATURE: A. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE: 2-8-99

WELL ID: WP-99-32 | ACTIVITY | BOTTLE

TIME: START 1515 END 1900 | TIME: —

SAMPLE ISIS ID: —

☐ QC SAMPLES COLLECTED | DUPLICATE ID: — | MS ID: — | MSD ID: —

## WATER LEVEL / WELL DATA

MAX MEASURED WELL DEPTH: 40 ~~FT (TOR)~~ bgs | HISTORICAL WELL DEPTH: — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): — FT | PROTECTIVE CASING / WELL DIFFERENCE: — FT

DEPTH TO WATER: — FT (TOR) | SCREEN LENGTH: 4.0 FT | WELL DIAMETER: 1.0 IN | WELL MATERIAL: STAINLESS

HEIGHT OF WATER COLUMN: — FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = — GAL/VOL | TOTAL VOLUME PURGED: — GAL

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | ① (36'-40') | ② (27'-31') | ③ (21'-25') | ④ (15'-19') | ⑤ (8'-12') |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 4 gal | 3gal | 3gal | 2 gal |
| TEMPERATURE (degreesC) | 17.5 | 17.8 | 18.4 | 20.2 | 22.8 |
| pH (units) | 6.54 | 6.39 | 6.14 | 6.48 | 6.93 |
| TURBIDITY (ntu) | 1 | 2 | 4 | 1 | 1 |
| SPEC. COND. (unmos/cm) | 4.96 | 2.27 | 1.33 | 0.311 | 0.123 |
| DISSOLVED OXYGEN (mg/L) | 4.65 | 4.62 | 3.80 | 3.99 | 3.46 |
| REDOX POTENTIAL | 217 | 157 | 135 | 118 | 75 |

SAMPLE OBSERVATIONS:
- [x] CLEAR 1, 2, 3, 4, 5
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|---|---|
| [x] | [x] | PERISTALTIC PUMP | ☐ | METHANOL | [x] ELECTRIC COND. PROBE |
| ☐ | ☐ | SUBMERSIBLE PUMP | [x] | LIQUINOX | ☐ FLOAT ACTIVATED |
| ☐ | ☐ | BLADDER PUMP | [x] | POTABLE WATER | ☐ KECK INTERFACE PROBE |
| [x] | [x] | PVC/SILICON TUBING | [x] | DEIONIZED WATER | ☐ _____ |
| ☐ | ☐ | TEFLON/SILICON TUBING | ☐ | HEXANE | |
| ☐ | ☐ | WATTERA | ☐ | NITRIC ACID | |
| ☐ | ☐ | IN LINE FILTER | ☐ | _____ | NUMBER OF FILTERS USED _____ |
| ☐ | ☐ | PRESS/VAC FILTER | | | |
| ☐ | ☐ | _____ | | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES: No Analytical Sample Collected

SIGNATURE: H. Rustad

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 7842-00-TKSB | DATE: 3-8-99

WELL ID: WP-99-33 | ACTIVITY | BOTTLE

TIME: START 1445 END 1625 | TIME

SAMPLE ISIS ID: WP9933

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| Depth (ft bgs) | 46-050 | 36-40 | 26-30 | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4.0 | 4.0 | 4.0 | | |
| TEMPERATURE (degreesC) | 19.9 | 20.2 | 21.3 | | |
| pH (units) | 5.90 | 6.21 | 6.48 | | |
| TURBIDITY (ntu) | 356 | 71 | ~~5.87~~ 587 | | |
| SPEC. COND. (~~umhos~~ ms/cm) | 9.7 | 7.8 | 5.9 | | |
| DISSOLVED OXYGEN (mg/L) | 1.82 | 2.78 | 1.88 | | |
| ~~REDOX POTENTIAL~~ TIME | 1545 | 16:10 | 1625 | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☐ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED:
- ☐ METHANOL
- ☒ LIQUINOX
- ☐ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED:
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ DEPTH INTERVAL | | HEADSPACE LOADING (ppm) | | WHERE TAKEN | ☐ | |
| ☐ 26-30 | | 250 | | at bucket | ☐ | |
| ☐ 36-40 | | Not taken | | Not taken | ☐ | |

NOTES: 46-50 | 1.2 ppm | at bucket

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

PAGE 2 OF 12

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 2842.00-TKB | DATE: 030999

WELL ID: WP-99-33 | ACTIVITY | BOTTLE

TIME: START 0945 END 1145 | TIME

SAMPLE ISIS ID: WP9933

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

DEPTH (bgs) 76-80 ~~56-60~~ 62-66 (corr 030899)

| | | | | | | |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 7 gal | 8 gal | | | | |
| TEMPERATURE (degreesC) | 19.3 | 19.2 | | | | |
| pH (units) | 6.19 | 6.24 | | | | |
| TURBIDITY (ntu) | 26 | 22 | | | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 18.9 | 15.8 | | | | |
| DISSOLVED OXYGEN (mg/L) | 3.36 | 3.90 | | | | |
| ~~REDOX POTENTIAL~~ TIME | 11:00 | 11:45 | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ☐ CLOUDY ☐ TURBID ☐ ODOR ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ ☐ ☐ ☒ ☐ ☐ ☐ ☐ ☐

SAMPLING: ☐ PERISTALTIC PUMP ☐ SUBMERSIBLE PUMP ☐ BLADDER PUMP ☒ PVC/SILICON TUBING ☐ TEFLON/SILICON TUBING ☐ WATTERA ☐ IN LINE FILTER ☐ PRESS/VAC FILTER _____

DECON FLUIDS USED: ☐ METHANOL ☒ LIQUINOX ☐ POTABLE WATER ☒ DEIONIZED WATER ☐ HEXANE ☐ NITRIC ACID _____

WATER LEVEL EQUIPMENT USED: ☐ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ KECK INTERFACE PROBE _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| INTERVAL | PID (ppm) | LOCATION |
|---|---|---|
| 76-80 | 0.6 | @ bucket |
| 62-66 | 0 | @ borehole |

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|
| | | | | | |

## NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 2842.00-TK13 | DATE: 03-09-99

WELL ID: WP-99-34 | ACTIVITY TIME START: 0750 END: 0915 | BOTTLE TIME:

SAMPLE ISIS ID: WP9934

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

Depth (bgs) 36-40 | 26-30 | 16-20

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4.0 | 4.0 | 5.0 | | |
| TEMPERATURE (degreesC) | 19.8 | 20.8 | 21.3 | | |
| pH (units) | 6.17 | 7.10 | 6.47 | | |
| TURBIDITY (ntu) | ~~6.6~~ 66 | ~~5.~~353 | 45 | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 9.2 | 3.7 | 1.1 | | |
| DISSOLVED OXYGEN (mg/L) | 3.90 | 2.3 | 1.8 | | |
| ~~REDOX POTENTIAL~~ Time | 0845 | 0900 | 0915 | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED _____
☐ CLOUDY _____
☐ TURBID _____
☐ ODOR _____
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|---|---|
| ☐ | ☐ | PERISTALTIC PUMP | ☐ | METHANOL | ☐ ELECTRIC COND. PROBE |
| ☐ | ☐ | SUBMERSIBLE PUMP | ☒ | LIQUINOX | ☐ FLOAT ACTIVATED |
| ☐ | ☐ | BLADDER PUMP | ☒ | POTABLE WATER | ☐ KECK INTERFACE PROBE |
| ☒ | ☒ | PVC/SILICON TUBING | ☒ | DEIONIZED WATER | ☐ _____ |
| ☐ | ☐ | TEFLON/SILICON TUBING | ☐ | HEXANE | |
| ☐ | ☐ | WATTERA | ☐ | NITRIC ACID | |
| ☐ | ☐ | IN LINE FILTER | ☐ | _____ | NUMBER OF FILTERS USED _____ |
| ☐ | ☐ | PRESS/VAC FILTER | | | |
| | | _____ | | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| INTERVAL | PID (ppm) | | location | | | |
| 36-40 | 13 | | @ bucket | | | |
| 26-30 | 54-90 | | @ bucket | | | |
| 16-20 | 7 | | @ bucket | | | |

## NOTES

SIGNATURE: Jeffrey D. Adams

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility
JOB NUMBER: 2842.00.TKB
DATE: 3/9/99
WELL ID: WP-99-35
ACTIVITY TIME: START 1230 END 1415
BOTTLE TIME:
SAMPLE ISIS ID: WP9935

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

DEPTH (bgs) 22-26

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.0 | | | | |
| TEMPERATURE (degreesC) | 25.3 | | | | |
| pH (units) | 6.84 | | | | |
| TURBIDITY (ntu) | 999 | | | | |
| SPEC. COND. (~~umhos~~ ins/cm) | 4.57 | | | | |
| DISSOLVED OXYGEN (mg/L) | 5.58 | | | | |
| ~~REDOX POTENTIAL~~ TIME | 1407 | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ ☐ ☐ ☒ ☐ ☐ ☐ ☐

SAMPLING:
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☒ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
☐ _____

DECON FLUIDS USED:
☐ METHANOL
☒ LIQUINOX
☐ POTABLE WATER
☒ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ _____

WATER LEVEL EQUIPMENT USED:
☐ ELECTRIC COND PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES

| Interval | PID (ppm) | location |
|---|---|---|
| 22-26 | 0 | 0 bucket |

tight, poor recharge, refusal @ 26' bgs

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 2842.00 TKB | DATE: 03-09-99

WELL ID: WP-99-36 | ACTIVITY TIME START: 1453 END: 1750 | BOTTLE TIME:

SAMPLE ISIS ID: WP9936

[X] QC SAMPLES COLLECTED | DUPLICATE ID: WP9936048XD | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| DEPTH (bgs) | 44-48 | 30-34 | 18-22 | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4.0 | 9.0 | 7.0 | | |
| TEMPERATURE (degreesC) | 22.0 | 21.7 | 22.3 | | |
| pH (units) | 6.58 | 6.59 | 6.24 | | |
| TURBIDITY (ntu) | 10 | 27 | 22 | | |
| SPEC. COND. (~~uMHOS~~ mS/cm) | 7.74 | 3.50 | 1.00 | | |
| DISSOLVED OXYGEN (mg/L) | 3.95 | ~~3.52~~ 2.40 | 3.05 | | |
| ~~REDOX POTENTIAL~~ TIME | 1600 | 1613 0 | 1615 0 | | |

2.40

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED _____
- [ ] CLOUDY _____
- [ ] TURBID _____
- [ ] ODOR _____
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: [X]

SAMPLING:
- [ ] PERISTALTIC PUMP
- [ ] SUBMERSIBLE PUMP
- [ ] BLADDER PUMP
- [X] PVC/SILICON TUBING
- [ ] TEFLON/SILICON TUBING
- [ ] WATTERA
- [ ] IN LINE FILTER
- [ ] PRESS/VAC FILTER

DECON FLUIDS USED:
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID

WATER LEVEL EQUIPMENT USED:
- [ ] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | |

| NOTES: INTERVAL (BGS) | PID (ppm) | Point of measure |
|---|---|---|
| 44-48 | 0.2 | @ bucket |
| 30-34 | 3.3 | @ bucket |
| 18-22 | 0 | @ bucket |

upwind @ 40' bgs

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 2842.00.TKB | DATE: 030999

WELL ID: WP-99-37 | ACTIVITY | BOTTLE

TIME START: 1730 END: 1850 | TIME

SAMPLE ISIS ID: WP9937

[ ] QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

DEPTH (bgs) 40-44 | 26-30 | 16-20

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 gal | 4 gal | 4 gal | | |
| TEMPERATURE (degreesC) | 21.9 | 22.2 | 21.8 | | |
| pH (units) | 6.65 | 6.45 | 6.13 | | |
| TURBIDITY (ntu) | 105 | 15 | 18 | | |
| SPEC. COND. (~~umos~~ mS/cm) | 7.75 | 1.80 | 1.03 | | |
| DISSOLVED OXYGEN (mg/L) | 2.65 | 2.19 | 2.74 | | |
| ~~REDOX~~ POTENTIAL TIME | 1800 | 1815 | 1845 | | |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [ ] | [ ] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | |

DECON FLUIDS USED
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ]

WATER LEVEL EQUIPMENT USED
- [ ] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ]

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | |

| NOTES | INTERVAL (bgs) | PID (ppm) | Point of measure |
|---|---|---|---|
| | 40-44 | 5.0 | Bucket |
| | 26-30 | 6.0 | 4 |
| | 16-20 | 0.2 | 4 |

refusal @ 44' bgs

SIGNATURE:

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 2842.00.TK13 | DATE: 03/10/99

WELL ID: MW-99-38 | ACTIVITY | BOTTLE

TIME: START 1630 END 1705 | TIME:

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA Depth (bgs) 22-26

| | | | | | | |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | < 0.5 | | | | | |
| TEMPERATURE (degreesC) | 23.3 | | | | | |
| pH (units) | 6.43 | | | | | |
| TURBIDITY (ntu) | 86 | | | | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 2.40 | | | | | |
| DISSOLVED OXYGEN (mg/L) | 5.42 | | | | | |
| ~~REDOX POTENTIAL~~ Time | 1700 | | | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| | ☐ PERISTALTIC PUMP | ☐ METHANOL | ☐ ELECTRIC COND. PROBE |
| | ☐ SUBMERSIBLE PUMP | ☒ LIQUINOX | ☐ FLOAT ACTIVATED |
| ☒ | ☐ BLADDER PUMP | ☐ POTABLE WATER | ☐ KECK INTERFACE PROBE |
| | ☒ PVC/SILICON TUBING | ☒ DEIONIZED WATER | ☐ |
| | ☐ TEFLON/SILICON TUBING | ☐ HEXANE | |
| | ☐ WATTERA | ☐ NITRIC ACID | NUMBER OF FILTERS USED |
| | ☐ IN LINE FILTER | ☐ | |
| | ☐ PRESS/VAC FILTER | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

NOTES: Interval 22-26 | DTD 10 | @ bucket | Refusal @ 26' bgs

SIGNATURE: [signature]

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 2842.00.TKB | DATE: 3/10/99

WELL ID: WP-99-39 | ACTIVITY | BOTTLE

TIME: START 1715 END 1800 | TIME

SAMPLE ISIS ID: WP993902TXX

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

Depth (bgs) 23-27

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gal | | | | |
| TEMPERATURE (degreesC) | 21.8 | | | | |
| pH (units) | 6.11 | | | | |
| TURBIDITY (ntu) | 25 | | | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 1.53 | | | | |
| DISSOLVED OXYGEN (mg/L) | 1.83 | | | | |
| ~~REDOX POTENTIAL~~ Time | 17:55 | | | | |

SAMPLE OBSERVATIONS:

☐ CLEAR
☐ COLORED _____
☐ CLOUDY _____
☐ TURBID _____
☐ ODOR _____
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| | ☐ PERISTALTIC PUMP | ☐ METHANOL | ☐ ELECTRIC COND. PROBE |
| | ☐ SUBMERSIBLE PUMP | ☑ LIQUINOX | ☐ FLOAT ACTIVATED |
| | ☐ BLADDER PUMP | ☐ POTABLE WATER | ☐ KECK INTERFACE PROBE |
| ☑ | ☒ PVC/SILICON TUBING | ☑ DEIONIZED WATER | ☐ _____ |
| | ☐ TEFLON/SILICON TUBING | ☐ HEXANE | |
| | ☐ WATTERA | ☐ NITRIC ACID | NUMBER OF FILTERS USED _____ |
| | ☐ IN LINE FILTER | ☐ _____ | |
| | ☐ PRESS/VAC FILTER | | |
| | ☐ _____ | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

| Interval (bgs) | ~~PID~~ PID (ppm) | Measurement |
|---|---|---|
| 23-27 | 0.4 | Bucket |

Refusal @ 27' bgs.

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium plating Facility | JOB NUMBER: 2842.00.TKB | DATE: 03/11/99

WELL ID: WP-99-40 | ACTIVITY | BOTTLE

TIME: START 0720 END 0920 | TIME:

SAMPLE ISIS ID: WP9940

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | DEPTH (bgs) 27-31 | 16-20 | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3.0 | ~~5.0~~ 10 | | | |
| TEMPERATURE (degreesC) | 21.6 | 22.6 | | | |
| pH (units) | 5.88 | 6.14 | | | |
| TURBIDITY (ntu) | 999 | 130 | | | |
| SPEC. COND. (~~umhos~~/cm) | 5.95 | 1.22 | | | |
| DISSOLVED OXYGEN (mg/L) | 5.13 | 2.72 | | | |
| ~~REDOX POTENTIAL~~ Time | 0845 | 09:00 | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| | | PERISTALTIC PUMP |
| | | SUBMERSIBLE PUMP |
| | | BLADDER PUMP |
| ✓ | ✓ | PVC/SILICON TUBING |
| | | TEFLON/SILICON TUBING |
| | | WATTERA |
| | | IN LINE FILTER |
| | | PRESS/VAC FILTER |
| | | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☐ ✓ LIQUINOX
- ☐ POTABLE WATER
- ☐ ✓ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

| NOTES | Interval (bgs) | PID (ppm) | measurement location |
|---|---|---|---|
| | 27-31 | 7 | @ bucket |
| | 16-20 | .7 | " |

refusal @ 31' bgs

SIGNATURE: W. D. Calcutt

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating | JOB NUMBER: 02842-00 | DATE: 3-11-99

WELL ID: WP-99-41 | ACTIVITY | BOTTLE

TIME: START 0940 END 1400 | TIME:

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

DEPTH (bgs) 77'-81' 56'-60' 36'-40' 26'-30' 16'-20'

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 8 gal | 8 | 4 | 5 | |
| TEMPERATURE (degreesC) | 18.4 | 17.4 | 17.9 | 18.5 | 18.5 |
| pH (units) | 6.14 | 6.40 | 6.57 | 6.55 | 6.53 |
| TURBIDITY (ntu) | 157 | 16 | 63 | 55 | 33 |
| SPEC. COND. (unmos/cm) | 20.6 | 13.9 | 6.57 | 4.07 | .91 |
| DISSOLVED OXYGEN (mg/L) | 3.60 | 4.28 | 1.61 | 1.61 | 2.69 |
| ~~REDOX POTENTIAL~~ TIME | 11:50 | 1225 | 1300 | 1320 | 1345 |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☐ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☒ | ☐ | BLADDER PUMP |
| ☐ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☐ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- _____

WATER LEVEL EQUIPMENT USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

| NOTES Interval | PID (ppm) | Location |
|---|---|---|
| 77-81 | 8 | ① bucket |
| 56-60 | 0 | " |
| 36-40 | 2.6 | ③ bucket |
| 26-30 | 23 | ② Bucket |
| 16-20 | 15 | " |

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP
JOB NUMBER: 2842.00.TKB
DATE: 3/11/99
WELL ID: WP-99-41
ACTIVITY TIME: START 0940 END 1400
BOTTLE TIME:
SAMPLE ISIS ID: WP9941

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

Depth (ft-bgs) 6-10

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 | | | | |
| TEMPERATURE (degreesC) | 18.0 | | | | |
| pH (units) | 6.73 | | | | |
| TURBIDITY (ntu) | 5 | | | | |
| SPEC COND. (~~umhos~~ mS/cm) | 0.714 | | | | |
| DISSOLVED OXYGEN (mg/L) | 8.09 | | | | |
| ~~REDOX POTENTIAL~~ Time | 14:00 | | | | |

03/11/99

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ ☐ ☐ ☒ ☐ ☐ ☐ ☐

SAMPLING:
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☒ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER

DECON FLUIDS USED:
☐ METHANOL
☒ LIQUINOX
☐ POTABLE WATER
☒ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID

WATER LEVEL EQUIPMENT USED:
☐ ELECTRIC COND PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
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| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES

PID 3.5 ppm @ bucket

SIGNATURE: [signature]

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted].



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 2842-00-TKB | DATE: 03/11/98

WELL ID: WP-99-42 | ACTIVITY | BOTTLE

TIME: START 1435 END 1530 | TIME:

SAMPLE ISIS ID: WP99.42

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

Depth (ft-bgs) 19-23

| | | | | | | |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 | | | | | |
| TEMPERATURE (degreesC) | 21.4 | | | | | |
| pH (units) | 6.63 | | | | | |
| TURBIDITY (ntu) | 37 | | | | | |
| SPEC. COND. (~~umhos~~ uS/cm) | 1.50 | | | | | |
| DISSOLVED OXYGEN (mg/L) | 3.14 | | | | | |
| ~~REDOX POTENTIAL~~ Time | 1525 | | | | | |

03/11/98

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☐ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☐ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

PID = 0.4ppm @ bucket

refusal @ 23' bgs

SIGNATURE: W. W. Clark

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility
JOB NUMBER: 2842.00.TKB
DATE: 3/11/99
WELL ID: WP-99-43
ACTIVITY TIME: START 1630 END 2005
BOTTLE TIME:
SAMPLE ISIS ID: WP9943

[X] QC SAMPLES COLLECTED
DUPLICATE ID: WP9943030XD
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

| Depth (ft-bgs) | 78-82 | 56-60 | 36-40 | 26-30 | 16-20 |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 9 | 6 | 7 | 5 | 5 |
| TEMPERATURE (degreesC) | 18.1 | 18.3 | 18.9 | 18.7 | 19.4 |
| pH (units) | 6.25 | 6.17 | 6.26 | 6.90 | 6.54 |
| TURBIDITY (ntu) | 6 | 22 | 64 | 75 | 85 |
| SPEC. COND. (~~umhos~~ ms/cm) | 20.0 | 15.2 | 11.0 | 1.79 | 0.802 |
| DISSOLVED OXYGEN (mg/L) | 4.61 | 4.5 | 2.73 | 4.51 | 1.93 |
| ~~REDOX POTENTIAL~~ Time | 1815 | 1845 | 1910 | 1935 | 1950 |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING:
- [X] PERISTALTIC PUMP
- [ ] SUBMERSIBLE PUMP
- [ ] BLADDER PUMP
- [X] PVC/SILICON TUBING
- [ ] TEFLON/SILICON TUBING
- [ ] WATTERA
- [ ] IN LINE FILTER
- [ ] PRESS/VAC FILTER

SAMPLING:
- [ ] PERISTALTIC PUMP
- [ ] SUBMERSIBLE PUMP
- [ ] BLADDER PUMP
- [X] PVC/SILICON TUBING
- [ ] TEFLON/SILICON TUBING
- [ ] WATTERA
- [ ] IN LINE FILTER
- [ ] PRESS/VAC FILTER

DECON FLUIDS USED:
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID

WATER LEVEL EQUIPMENT USED:
- [ ] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE

NUMBER OF FILTERS USED:

## ANALYTICAL PARAMETERS

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|
| | | | | | |

NOTES

| Interval (ft-bgs) | PID (ppm) | Location measured |
|---|---|---|
| 78-82 | 0 | @ bucket |
| 56-60 | 0.5 | ↓ |
| 36-40 | 0.5 | |
| 26-30 | 0.8 | |
| 16-20 | 2.5 | |

SIGNATURE: [signature]

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP
JOB NUMBER: 2842.00.TKB
DATE: 3/11/99
WELL ID: WP-99-43
ACTIVITY TIME: START 1630 END 2005
BOTTLE TIME:
SAMPLE ISIS ID: WP9943

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

Depth (ft-bgs) 6-10

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 | | | | |
| TEMPERATURE (degreesC) | 19.3 | | | | |
| pH (units) | 6.59 | | | | |
| TURBIDITY (ntu) | 24 | | | | |
| SPEC. COND. (~~unmos~~ mo/cm) | 0.65 | | | | |
| DISSOLVED OXYGEN (mg/L) | 1.58 | | | | |
| ~~REDOX POTENTIAL~~ Time | 2005 | | | | |

Sampled @ 3/11/99

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | |

DECON FLUIDS USED
☐ METHANOL
☒ LIQUINOX
☐ POTABLE WATER
☒ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ _____

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

## NOTES

PID = 0.3 @ bucket

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 2842.00 TKR | DATE: 3/12/99

WELL ID: WP-99-44 | ACTIVITY | BOTTLE

TIME: START 0715 END 1020 | TIME:

SAMPLE ISIS ID: WP9944

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

Depth (ft BGS) 65-69 | 46-50 | 25-29

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 6 | 5 | 5 | | |
| TEMPERATURE (degreesC) | 14.5 | 15.6 | 16.2 | | |
| pH (units) | 5.82 | 6.18 | 6.93 | | |
| TURBIDITY (ntu) | 50 | 25 | 23 | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 15.2 | 12.7 | 4.20 | | |
| DISSOLVED OXYGEN (mg/L) | 3.65 | 3.57 | 3.62 | | |
| ~~REDOX POTENTIAL~~ Time | 0915 | 0935 | 1010 | | |

03/12/99

SAMPLE OBSERVATIONS:

- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☐ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED

- ☐ METHANOL
- ☒ LIQUINOX
- ☐ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED

- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES

SIGNATURE: W. D. Colucci

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 2842.00.TKB | DATE: 3/16/99

WELL ID: WP-99-45 | ACTIVITY | BOTTLE

TIME: START 1540 END 1945 | TIME

SAMPLE ISIS ID: WP9945

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

Depth (ft-bgs) 56-60 | 36-40 | 26-30 | 11-15

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 10 | 4 | 6 | 5 | |
| TEMPERATURE (degreesC) | 14.7 | 13.6 | 14.9 | 15.4 | |
| pH (units) | 5.99 | 6.61 | 6.80 | 6.59 | |
| TURBIDITY (ntu) | 0 | 3.68 | 183 | 101 | |
| SPEC. COND. ~~(umhos~~/cm) | 12.3 | 7.54 | 4.25 | 0.93 | |
| DISSOLVED OXYGEN (mg/L) | 3.85 | 6.01 | 3.95 | 1.42 | |
| ~~REDOX POTENTIAL~~ Time. | 1735 | 1830 | 1910 | 1935 | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ ☐ ☐ ☒ ☐ ☐ ☐ ☐ ☐

SAMPLING:
- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☒ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER

DECON FLUIDS USED:
- ☐ METHANOL
- ☒ LIQUINOX
- ☐ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID

WATER LEVEL EQUIPMENT USED:
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

NOTES

| Interval (ft-bgs) | PID (ppm) | |
|---|---|---|
| 56-60 | 0 | @bucket |
| 36-40 | 39 | @bucket |
| 26-30 | 47 | " |
| 11-15 | 0.2 | " |

SIGNATURE:

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 2342.00.TKB | DATE: 3/17/99

WELL ID: WP-99-46 | ACTIVITY | BOTTLE

TIME: START 0915 END 1100 | TIME:

SAMPLE ISIS ID: WP9946

[X] QC SAMPLES COLLECTED — DUPLICATE ID: WP994603SXD | MS ID: WP994603SMS | MSD ID: WP994603SMSD

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

DEPTH (ft-bgs) 31-35

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 | | | | |
| TEMPERATURE (degreesC) | 18.3 | | | | |
| pH (units) | 6.73 | | | | |
| TURBIDITY (ntu) | 999 | | | | |
| SPEC. COND. (~~umhos~~/cm) | 9.1 | | | | |
| DISSOLVED OXYGEN (mg/L) | 3.14 | | | | |
| ~~REDOX POTENTIAL~~ TIME | 1045 | | | | |

SAMPLE OBSERVATIONS:

- [ ] CLEAR
- [ ] COLORED _____
- [ ] CLOUDY _____
- [ ] TURBID _____
- [ ] ODOR _____
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING |
|---|---|
| [ ] | [ ] PERISTALTIC PUMP |
| [ ] | [ ] SUBMERSIBLE PUMP |
| [ ] | [ ] BLADDER PUMP |
| [X] | [X] PVC/SILICON TUBING |
| [ ] | [ ] TEFLON/SILICON TUBING |
| [ ] | [ ] WATTERA |
| [ ] | [ ] IN LINE FILTER |
| [ ] | [ ] PRESS/VAC FILTER |
| [ ] | [ ] _____ |

DECON FLUIDS USED:
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED:
- [ ] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
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| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |

## NOTES

SIGNATURE: M. D. Checchi

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP
JOB NUMBER: 2842.00.TKB
DATE: 3/17/99
WELL ID: WP-99-47
ACTIVITY TIME: START 1345 END 1455
BOTTLE TIME:
SAMPLE ISIS ID: WP9947

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

| Depth (ft-bgs) | 17-21 | 6-10 | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 | | | | |
| TEMPERATURE (degreesC) | 17.3 | 13.6 | | | |
| pH (units) | 6.34 | 6.45 | | | |
| TURBIDITY (ntu) | 82 | 12 | | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 0.77 | 0.41 | | | |
| DISSOLVED OXYGEN (mg/L) | 0.8 | ~~0.42~~ 2.91 | | | |
| ~~REDOX POTENTIAL~~ TIME | 1435 | 1450 | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☐ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | |

DECON FLUIDS USED
☐ METHANOL
☒ LIQUINOX
☐ POTABLE WATER
☒ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ _____

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES

| Int. | PID | |
|---|---|---|
| 17-21 | 5 | @bucket |
| 6-10 | 1 | @bucket |

SIGNATURE: [signature]

RECEIVED BY: _____

GWFORM.XLS/GENERIC

10/17/96

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrom Plating Facility | JOB NUMBER: 2842.00.TKB | DATE: 3/15/99

WELL ID: WP-99-48 | ACTIVITY | BOTTLE

TIME: START 0900 END 1030 | TIME:

SAMPLE ISIS ID: WP9948

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

Depth (ft. bgs) 15-19 5-9

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 | 5 | | | |
| TEMPERATURE (degreesC) | 25. | 30 | | | |
| pH (units) | 5.9 | 5.8 | | | |
| TURBIDITY (ntu) | 82 | 10 | | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 1.2 | 1.0 | | | |
| DISSOLVED OXYGEN (mg/L) | 3.05 | 2.18 | | | |
| ~~REDOX POTENTIAL~~ TIME | 0955 | 1010 | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| | ☐ PERISTALTIC PUMP | ☐ METHANOL | ☐ ELECTRIC COND. PROBE |
| | ☐ SUBMERSIBLE PUMP | ☒ LIQUINOX | ☐ FLOAT ACTIVATED |
| | ☐ BLADDER PUMP | ☐ POTABLE WATER | ☐ KECK INTERFACE PROBE |
| ☒ | ☒ PVC/SILICON TUBING | ☒ DEIONIZED WATER | ☐ _____ |
| | ☐ TEFLON/SILICON TUBING | ☐ HEXANE | |
| | ☐ WATTERA | ☐ NITRIC ACID | NUMBER OF FILTERS USED _____ |
| | ☐ IN LINE FILTER | ☐ _____ | |
| | ☐ PRESS/VAC FILTER | | |
| | ☐ _____ | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES

| ft-bgs | PID ppm | |
|---|---|---|
| 15-19 | 13 | @ bucket |
| 5-9 | 10 | @ bucket |

SIGNATURE: W. D. Schuster

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP | JOB NUMBER: 2842.00.TAB | DATE: 03/11/99

WELL ID: WP-99-49 | ACTIVITY | BOTTLE

TIME: START 1230 END 1450 | TIME

SAMPLE ISIS ID: WP9949

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| DEPTH (ft-bgs) | 39-43 | 17-21 | 4-8 | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 8 | 4 | 4 | | |
| TEMPERATURE (degreesC) | 21.1 | 20.4 | 21.6 | | |
| pH (units) | 6.32 | 6.62 | 6.64 (DUP) | | |
| TURBIDITY (ntu) | 111 | 43 | ~~235~~ 115 | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 10.8 | 0.79 | 2.36 | | |
| DISSOLVED OXYGEN (mg/L) | 2.73 | 2.19 | 2.27 | | |
| ~~REDOX POTENTIAL~~ TIME | 1400 | 1430 | 1450 | | |

SAMPLE OBSERVATIONS:

☐ CLEAR
☐ COLORED _____
☐ CLOUDY _____
☐ TURBID _____
☐ ODOR _____
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☐ | PERISTALTIC PUMP |
| | ☐ | SUBMERSIBLE PUMP |
| | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| | ☐ | TEFLON/SILICON TUBING |
| | ☐ | WATTERA |
| | ☐ | IN LINE FILTER |
| | ☐ | PRESS/VAC FILTER |
| | ☐ | _____ |

DECON FLUIDS USED:
☐ METHANOL
☒ LIQUINOX
☐ POTABLE WATER
☒ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ _____

WATER LEVEL EQUIPMENT USED:
☐ ELECTRIC COND PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

NOTES

39-43 2 ppm @ bucket

17-21 0 ppm @ bucket

SIGNATURE: W. D. Calvert

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP | JOB NUMBER: 25942.00.TKB | DATE: 3/18/99

WELL ID: WP-99-50 | ACTIVITY | BOTTLE

TIME: START 1550 END 1900 | TIME:

SAMPLE ISIS ID: WP9950

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

DEPTH (ft-bgs) 51-55 31-34 9-13

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 10 | 10 | 5 | | |
| TEMPERATURE (degreesC) | 17.5 | 17.4 | Not Log | | |
| pH (units) | 6.20 | 6.20 | | | |
| TURBIDITY (ntu) | ~~2.03~~ 203 | 599 | not | | |
| SPEC. COND. (~~umhos~~/cm) | 13.6 | 7.24 | work. | | |
| DISSOLVED OXYGEN (mg/L) | 2.5 | 4.27 | | | |
| ~~REDOX POTENTIAL~~ TIME | 1720 | 1805 | 1815 | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED _____
☐ CLOUDY _____
☐ TURBID _____
☐ ODOR _____
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
☐ METHANOL
☒ LIQUINOX
☐ POTABLE WATER
☒ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ _____

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

NOTES: 51-55 Open @ bucket

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 2842.00.TKB | DATE: 3/22/95

WELL ID: WP-95-53 | ACTIVITY | BOTTLE

TIME: START 1510 END 1530 | TIME:

SAMPLE ISIS ID: WP9953

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 32.5 FT (TOR) | HISTORICAL WELL DEPTH | NA FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | NA FT | PROTECTIVE CASING / WELL DIFFERENCE | NA FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | 2.5 FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

Depth (ft-bgs) 29.5 - 32

| | | | | | | |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1528 4 | | | | | |
| TEMPERATURE (degreesC) | 17.1 | | | | | |
| pH (units) | 6.40 | | | | | |
| TURBIDITY (ntu) | 135 | | | | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 3.31 | | | | | |
| DISSOLVED OXYGEN (mg/L) | 0.85 | | | | | |
| ~~REDOX POTENTIAL~~ Time | 1528 | | | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING
- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER
- ☐ _____

DECON FLUIDS USED
- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

PID Bucket
1515 - 1.2 1 Gallon
1520 - 1.2 2.5 Gallons
1528 - 0 4

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT | JOB NUMBER | DATE

WELL ID: WP-99-53

ACTIVITY: TIME START 1540 END 1550

BOTTLE TIME

SAMPLE ISIS ID: WP9953

☐ QC SAMPLES COLLECTED — DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH: 20 FT (TOR) | HISTORICAL WELL DEPTH: FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): FT | PROTECTIVE CASING / WELL DIFFERENCE: FT | | |
| DEPTH TO WATER: FT (TOR) | SCREEN LENGTH: L / FT | WELL DIAMETER: IN | WELL MATERIAL | | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: 1.7 PPM

## PURGE DATA

Depth 16-20

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 | | | | |
| TEMPERATURE (degreesC) | 17.2 | | | | |
| pH (units) | 6.53 | | | | |
| TURBIDITY (ntu) | 76 | | | | |
| SPEC. COND. ~~(umhos~~ MS/cm) | .665 | | | | |
| DISSOLVED OXYGEN (mg/L) | 0.67 | | | | |
| REDOX POTENTIAL | 1548 | | | | |

SAMPLE OBSERVATIONS:

- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☒ ODOR Slight
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING

- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER

DECON FLUIDS USED

- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID

WATER LEVEL EQUIPMENT USED

- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| | | | | | | |

## NOTES

PDO

1542 - 2.1 2 gallons

1544 - 2.1 3 gallons

SIGNATURE:

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT

JOB NUMBER

DATE 8/22/99

WELL ID ~~WP-57~~ - WP-99-53

ACTIVITY TIME START 1556 END

BOTTLE TIME

SAMPLE ISIS ID

☐ QC SAMPLES COLLECTED

DUPLICATE ID

MS ID

MSD ID

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH 10 FT (TOR)

HISTORICAL WELL DEPTH FT (TOR)

PROTECTIVE CASING STICKUP (FROM GROUND) FT

PROTECTIVE CASING / WELL DIFFERENCE FT

DEPTH TO WATER FT (TOR)

SCREEN LENGTH FT

WELL DIAMETER IN

WELL MATERIAL

HEIGHT OF WATER COLUMN FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = GAL/VOL ☐ 1.5 GAL/FT (6 IN)

TOTAL VOLUME PURGED GAL

AMBIENT AIR PPM

WELL MOUTH PPM

## PURGE DATA

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1 | | | | |
| TEMPERATURE (degreesC) | 14.0 | | | | |
| pH (units) | 7.07 | | | | |
| TURBIDITY (ntu) | 85 | | | | |
| SPEC. COND. (unmos/cm) | 1741 | | | | |
| DISSOLVED OXYGEN (mg/L) | NA | | | | |
| ~~REDOX POTENTIAL~~ | 165 | | | | |

SAMPLE OBSERVATIONS:

☐ CLEAR

☐ COLORED

☐ CLOUDY

☐ TURBID

☐ ODOR

☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING

SAMPLING

☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER

DECON FLUIDS USED

☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID

WATER LEVEL EQUIPMENT USED

☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES PDP.

0 - 1602 - 1 Gallon

very slow recharge

SIGNATURE:

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility
JOB NUMBER: 2842.00.TKB
DATE: 3/23/99
WELL ID: WP-99-54
ACTIVITY TIME: START 0715 END 1000
BOTTLE TIME:
SAMPLE ISIS ID: WP9954

[X] QC SAMPLES COLLECTED
DUPLICATE ID: WP9954062XD
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: 62 FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

| Depth (ft-bgs) | 60-62 | 48-50 | 28-~~3~~30 | 18-20 | 8-10 |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 6.5 | 5.0 | 5.0 | 6.0 | 5.0 |
| TEMPERATURE (degreesC) | * | 17.5 | 18 | 19.1 | 17.2 |
| pH (units) | * | 6.43 | 6.35 | 6.35 | 6.25 |
| TURBIDITY (ntu) | * | 165 | 5 | 5 | 7 |
| SPEC. COND. (~~unmos~~ mm/cm) | * | 18.0 | 4.61 | .688 | .745 |
| DISSOLVED OXYGEN (mg/L) | * | 2.25 | 1.92 | .95 | 1.11 |
| ~~REDOX POTENTIAL~~ Time | 0825 | 0850 | 0910 | 09:25 | 09:41 |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING:
- [X]
- [ ]
- [ ]
- [X]
- [ ]
- [ ]
- [ ]
- [ ]

SAMPLING:
- [ ] PERISTALTIC PUMP
- [ ] SUBMERSIBLE PUMP
- [ ] BLADDER PUMP
- [X] PVC/SILICON TUBING
- [ ] TEFLON/SILICON TUBING
- [ ] WATTERA
- [ ] IN LINE FILTER
- [ ] PRESS/VAC FILTER
- [ ] _____

DECON FLUIDS USED:
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED:
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |

NOTES

| Interval (ft-bgs) | PID (ppm) | Location |
|---|---|---|
| 60-62 | 0 | @ bucket |
| 48-50 | 0 | @ bucket |
| 28-30 | 1 | |
| 18-20 | .1 | " |
| 8-10 | 0 | " |

* Horiba not working, might be frozen

SIGNATURE: [signature]

RECEIVED BY: _____

GWFORM.XLS/GENERIC

10/17/96

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 2842.00.TKB | DATE: 3/23/99

WELL ID: WP-99-55 | ACTIVITY | BOTTLE

TIME: START 1130 END 1425 | TIME:

SAMPLE ISIS ID: WP-99-55

[X] QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: WP9955070MS | MSD ID: WP9955070MD

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 70 FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| Depth (ft-bgs) | 66-70 | 46-50 | 26-30 | 16-20 | 6-10 |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 8. | 5 | 5 | 4 | 5 |
| TEMPERATURE (degreesC) | 14.7 | 14.2 | 15.1 | 15.0 | 12.2 |
| pH (units) | 6.33 | 6.54 | 6.56 | 6.31 | 6.69 |
| TURBIDITY (ntu) | 676 | 193 | 209 | 19 | 50 |
| SPEC. COND. (~~umhos~~ mS/cm) | 35.6 | 14.4 | 1.71 | .691 | .307 |
| DISSOLVED OXYGEN (mg/L) | 1.38 | 2.50 | 1.68 | 0.98 | 3.49 |
| ~~REDOX POTENTIAL~~ TIME | 1245 | 1320 | 1342 | 1410 | 1416 |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED _____
- [ ] CLOUDY _____
- [ ] TURBID _____
- [ ] ODOR _____
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [X] | [ ] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | _____ |

DECON FLUIDS USED
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | / / / |

NOTES

| Interval (ft-bgs) | PID (ppm) | Location |
|---|---|---|
| 66-70 | 0 | Bucket |
| 46-50 | 0 | Bucket |
| 16-20 | 0 | " |
| 6-10 | 0 | " |

SIGNATURE: W. J. Celeda

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 02842.00.TKB | DATE: 3/23/99

WELL ID: WP-99-56 | ACTIVITY | BOTTLE

TIME: START 1445 END 1735 | TIME:

SAMPLE ISIS ID: WP9956

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| DEPTH (ft-bgs) | 48-52 | 26-30 | 16-20 | 6-10 | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 7 | 5 | 5 | 3 | |
| TEMPERATURE (degreesC) | 17.5 | 16.8 | 16.4 | 13.5 | |
| pH (units) | 6.20 | 6.09 | 6.20 | 6.55 | |
| TURBIDITY (ntu) | 72 | 40 | 18 | 222 | |
| SPEC. COND. (~~uMhos~~/cm) | 13.1 | 3.19 | .668 | .232 | |
| DISSOLVED OXYGEN (mg/L) | 1.03 | 0.93 | 0.62 | | |
| ~~REDOX POTENTIAL~~ Salinity (2) | 0.74 | 0.18 | 0.02 | 0 | |
| Time | 1637 | 1654 | 1712 | 1729 | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☒ ODOR Specific
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED | |
|---|---|---|---|---|---|---|
| ☒ | ☐ | PERISTALTIC PUMP | ☐ | METHANOL | ☒ | ELECTRIC COND. PROBE |
| ☐ | ☐ | SUBMERSIBLE PUMP | ☒ | LIQUINOX | ☐ | FLOAT ACTIVATED |
| ☐ | ☐ | BLADDER PUMP | ☐ | POTABLE WATER | ☐ | KECK INTERFACE PROBE |
| ☒ | ☒ | PVC/SILICON TUBING | ☒ | DEIONIZED WATER | ☐ | |
| ☐ | ☐ | TEFLON/SILICON TUBING | ☐ | HEXANE | | |
| ☐ | ☐ | WATTERA | ☐ | NITRIC ACID | | |
| ☐ | ☐ | IN LINE FILTER | ☐ | | NUMBER OF FILTERS USED | |
| ☐ | ☐ | PRESS/VAC FILTER | | | | |
| ☐ | ☐ | | | | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

Interval (ft-bgs) | PID (ppm) | Location

NOTES

| Depth | PID | Sonic Bucket |
|---|---|---|
| 48-52 | 0 | |

SIGNATURE: [signature]

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted].



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 2842.00-TKB | DATE: 03 24 89

WELL ID: WP-99-57 | ACTIVITY | BOTTLE

TIME: START 0730 END 0930 | TIME

SAMPLE ISIS ID: WP9957

[X] QC SAMPLES COLLECTED | DUPLICATE ID: WP9957050XD | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

DEPTH (ft-bgs) 46-50 | 26-30 | 16-20 | 6-10

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 | 4 | 4 | 2 | |
| TEMPERATURE (degreesC) | 15 | | | | |
| pH (units) | 6.20 | | | | |
| TURBIDITY (ntu) | 36 | | | | |
| SPEC. COND. (uhmos/cm) | 17.6 | | | | |
| DISSOLVED OXYGEN (mg/L) | 2.5 | | | | |
| ~~REDOX POTENTIAL~~ SALINITY(%) | 1.03 | | | | |
| TIME | 0830 | 0900 | 0910 | 0920 | |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [ ] | [ ] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [X] | [X] | BLADDER PUMP |
| [ ] | [ ] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | _____ |

DECON FLUIDS USED
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | / / / |

INTERVAL (ft-bgs) PID (ppm) —

## NOTES

No PID readings

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 28412.00.TKB | DATE: 3/24/95

WELL ID: WP-99-58 | ACTIVITY | BOTTLE

TIME: START 1020 END | TIME

SAMPLE ISIS ID: WP9958

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

Depth (ft-bgs) 16.5-19

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 7 | 4 | | | |
| TEMPERATURE (degreesC) | 22.1 | 23.7 | | | |
| pH (units) | 6.26 | 6.09 | | | |
| TURBIDITY (ntu) | 209 | 21 | | | |
| SPEC. COND. (~~umhos~~/cm) | .788 | .613 | | | |
| DISSOLVED OXYGEN (mg/L) | 0.96 | 0.90 | | | |
| ~~REDOX POTENTIAL~~ SALINITY (%) | 0.03 | 0.03 | | | |
| | 1046 | 1053 | | | |

SAMPLE OBSERVATIONS:

☐ CLEAR
☐ COLORED _____
☐ CLOUDY _____
☐ TURBID _____
☐ ODOR _____
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| ☐ | ☐ PERISTALTIC PUMP | ☐ METHANOL | ☑ ELECTRIC COND. PROBE |
| ☐ | ☐ SUBMERSIBLE PUMP | ☑ LIQUINOX | ☐ FLOAT ACTIVATED |
| ☐ | ☐ BLADDER PUMP | ☐ POTABLE WATER | ☐ KECK INTERFACE PROBE |
| ☑ | ☑ PVC/SILICON TUBING | ☑ DEIONIZED WATER | ☐ _____ |
| ☐ | ☐ TEFLON/SILICON TUBING | ☐ HEXANE | |
| ☐ | ☐ WATTERA | ☐ NITRIC ACID | |
| ☐ | ☐ IN LINE FILTER | ☐ _____ | NUMBER OF FILTERS USED _____ |
| ☐ | ☐ PRESS/VAC FILTER | | |
| ☐ | ☐ _____ | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES: PID - Down

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SACP Chrome Plating Facility | JOB NUMBER: 28412.00.TK13 | DATE: 3/24/99

WELL ID: WP-99-59 | ACTIVITY | BOTTLE

TIME: START 1345 END 1550 | TIME:

SAMPLE ISIS ID: WP995901OXX

[X] QC SAMPLES COLLECTED | DUPLICATE ID: WP995901OXX | MS ID: WP995901OMS | MSD ID: WP995901OMS | onsite

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| Depth | 50-54 | 36-40 | 26-30 | 16-20 | 6-10 |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 7 | 3 | — | — | 5 |
| TEMPERATURE (degreesC) | 15.5 | 14.7 | Very Slight | Very Slight | 10.6 |
| pH (units) | 6.35 | 6.67 | Reading | Reading | 6.78 |
| TURBIDITY (ntu) | 175 | <999 | No Data | No Data | 19 |
| SPEC. COND. ~~(umhos/cm)~~ | 12.4 | 11.4 | Collected | Collected | 1.07 |
| DISSOLVED OXYGEN (mg/L) | 1.27 | 1.61 | in | in | 0.12 |
| ~~REDOX POTENTIAL~~ SAL | 0.70 | 0.64 | Sample Collected | Sample Collected | 0.04 |
| | 1447 | 1501 | 1/2 Level | 1/2 Level | 1547 |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [X] ODOR Fuel-like
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING / SAMPLING:
- [ ] PERISTALTIC PUMP
- [ ] SUBMERSIBLE PUMP
- [ ] BLADDER PUMP
- [ ] PVC/SILICON TUBING
- [ ] TEFLON/SILICON TUBING
- [ ] WATTERA
- [ ] IN LINE FILTER
- [ ] PRESS/VAC FILTER

DECON FLUIDS USED:
- [ ] METHANOL
- [ ] LIQUINOX
- [ ] POTABLE WATER
- [ ] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID

WATER LEVEL EQUIPMENT USED:
- [ ] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|
| | | | | | |

NOTES: PDM Down

0.1-like sheen on purge water - 50-54

Fuel-like sheen on purge water - 36-40

Fuel-like sheen on purge water - 6-10

SIGNATURE:

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility
JOB NUMBER: 2842.00.TKB
DATE: 3/24/99
WELL ID: WP-99-60
ACTIVITY TIME: START 1640 END 1800
BOTTLE TIME:
SAMPLE ISIS ID: WP9960

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

| DEPTH (ft-bgs) | 10-14 | 20-30 | 16-20 | 6-10 | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1 Gal | — | — | 2 | |
| TEMPERATURE (degreesC) | No Recy | No Par. | No Par. | 12.0 | |
| pH (units) | Taken | | | 7.41 | |
| TURBIDITY (ntu) | Slow ~~vetty~~ | | | 204 | |
| SPEC. COND. (~~unmos/cm~~ ms) | vetty | | | 22.3 | |
| DISSOLVED OXYGEN (mg/L) | | | | 1.77 | |
| ~~REDOX POTENTIAL~~ SALINITY TIME | | | | 1.33 | |
| | 1711 - Sample Time | | | 1755 | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ ☐ ☐ ☒ ☐ ☐ ☐ ☐
SAMPLING: ☐ PERISTALTIC PUMP ☐ SUBMERSIBLE PUMP ☐ BLADDER PUMP ☒ PVC/SILICON TUBING ☐ TEFLON/SILICON TUBING ☐ WATTERA ☐ IN LINE FILTER ☐ PRESS/VAC FILTER ☐ _____

DECON FLUIDS USED: ☐ METHANOL ☒ LIQUINOX ☐ POTABLE WATER ☒ DEIONIZED WATER ☐ HEXANE ☐ NITRIC ACID ☐ _____

WATER LEVEL EQUIPMENT USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ KECK INTERFACE PROBE ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES: 180 - Down

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 2842.00.TKB | DATE: 3/25/99

WELL ID: WP-99-61 | ACTIVITY | BOTTLE

TIME: START 0800 END 0915 | TIME

SAMPLE ISIS ID: WP9961

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | DEPTH (ft bgs) 24-28 | 16-20 | 6-10 | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 | 5 | 2 | | |
| TEMPERATURE (degreesC) | 15.7 | 15.9 | 12.6 | | |
| pH (units) | 5.99 | 6.58 | 6.15 | | |
| TURBIDITY (ntu) | 49 | 22 | 35 | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 1.03 | .464 | .513 | | |
| DISSOLVED OXYGEN (mg/L) | 2.3 | 0.81 | 2.43 | | |
| ~~REDOX POTENTIAL~~ SALINITY | .04 | 0.01 | 0.02 | | |
| TIME | 0830 | 846 | 900 | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☐ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
- ☐ METHANOL
- ☒ LIQUINOX
- ☐ POTABLE WATER
- ☒ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

NOTES: Refusal @ 29' bgs - PID Down

SIGNATURE: M. Callender

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 2842.00.TKB | DATE: 3/25/99

WELL ID: WP-99-62 | ACTIVITY | BOTTLE

TIME: START 1510 END | TIME

SAMPLE ISIS ID: WP9962

[X] QC SAMPLES COLLECTED | DUPLICATE ID: WP9962 030XD | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| DEPTH (ft-bgs) | 59-63 | 46-50 | 26-30 | 16-20 | 6-10 |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 7 | 5 | 5 | 5 | 2 |
| TEMPERATURE (degreesC) | 18.7 | 17.7 | 17.6 | 16.5 | 13.5 |
| pH (units) | 6.49 | 6.40 | 6.76 | 6.32 | 6.60 |
| TURBIDITY (ntu) | 111 | 31 | 47 | 7 | 3 |
| SPEC. COND. (~~uMHOS~~/cm) | 17.3 | 10.5 | .812 | .669 | .603 |
| DISSOLVED OXYGEN (mg/L) | 1.78 | 1.81 | 0.94 | 0.55 | 6.71 * |
| ~~REDOX POTENTIAL~~ SALINITY | 1.02 | 0.59 | 0.04 | 0.03 | 0.03 |
| | | 1615 | 1637 | 1645 | 1900 |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING |
|---|---|
| [X] | [ ] PERISTALTIC PUMP |
| [ ] | [ ] SUBMERSIBLE PUMP |
| [ ] | [ ] BLADDER PUMP |
| [X] | [X] PVC/SILICON TUBING |
| [ ] | [ ] TEFLON/SILICON TUBING |
| [ ] | [ ] WATTERA |
| [ ] | [ ] IN LINE FILTER |
| [ ] | [ ] PRESS/VAC FILTER |
| [ ] | _____ |

DECON FLUIDS USED
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | |

| Interval (ft-bgs) | PID (ppm) |
|---|---|
| 59-63 | 0 |
| 26-30 | 0 |
| 6-10 | 0 |

NOTES: * Slow recharge - Sample Aerated

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 02842-00 | DATE:

WELL ID: LwP-99-63 | ACTIVITY | BOTTLE

TIME: START END | TIME:

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| Depth | 36-40 | 26-30 | 16-20 | 6-10 | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 8 | 3 | 5 | 5 | |
| TEMPERATURE (degreesC) | 21.0 | 22.6 | 22.2 | 23.2 | |
| pH (units) | 5.87 | 6.92 | 6.20 | 6.25 | |
| TURBIDITY (ntu) | 4 | 614 | ~~+10.83~~ | 8 | |
| SPEC. COND. (uhmos/cm) | 1407 | 1.48 | ~~7330~~ 1.1 | .210 | |
| DISSOLVED OXYGEN (mg/L) | 0.95 | 4.19 | 0.94 | 1.03 | |
| REDOX POTENTIAL | 0.18 | 0.07 | 0.04 | 0 | |
| Time | 805 | 830 | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING:
- ☒
- ☒

SAMPLING:
- ☒ PERISTALTIC PUMP
- SUBMERSIBLE PUMP
- BLADDER PUMP
- ☒ PVC/SILICON TUBING
- TEFLON/SILICON TUBING
- WATTERA
- IN LINE FILTER
- PRESS/VAC FILTER

DECON FLUIDS USED:
- METHANOL
- LIQUINOX
- POTABLE WATER
- DEIONIZED WATER
- HEXANE
- ☒ NITRIC ACID

dedicated tubing

WATER LEVEL EQUIPMENT USED:
- ☒ ELECTRIC COND. PROBE
- FLOAT ACTIVATED
- KECK INTERFACE PROBE

NUMBER OF FILTERS USED:

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| | | | | | | |

| Depth | PID |
|---|---|
| 36-40 | 1.6 |
| 26-30 | 10.0 |
| 16-20 | 2.3 |
| 6-10 | 0.3 |

NOTES

SIGNATURE:

RECEIVED BY:

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 02842.00.TKB | DATE: 03/29/99

WELL ID: WP-99-64 | ACTIVITY | BOTTLE

TIME: START 1230 END 1358 | TIME:

SAMPLE ISIS ID: WP9964

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 30 FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

DEPTH (ft-bgs) 26-30 | 16-20 | 6-10

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4gal | 4 | 4 | | |
| TEMPERATURE (degreesC) | 22.6 | 22.7 | 23.5 | | |
| pH (units) | 6.94 | 6.39 | 6.40 | | |
| TURBIDITY (ntu) | 111 | 999 | 93 | | |
| SPEC. COND. (~~umhos~~/cm) | 1.65 | 1.10 | 0.723 | | |
| DISSOLVED OXYGEN (mg/L) | 3.95 | 1.61 | 2.30 | | |
| ~~REDOX POTENTIAL~~ SALINITY | .07% | 0.04% | 0.03 | | |
| TIME | 13:15 | 1337 | 13:52 | | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ☐ CLOUDY ☐ TURBID ☐ ODOR ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED:
☐ METHANOL ☒ LIQUINOX ☐ POTABLE WATER ☒ DEIONIZED WATER ☐ HEXANE ☐ NITRIC ACID ☐ _____

WATER LEVEL EQUIPMENT USED:
☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ KECK INTERFACE PROBE ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

Interval (ft-bgs) | PID (ppm)

NOTES

| Interval (ft-bgs) | PID (ppm) | |
|---|---|---|
| 26-30 | 0 | @ bucket |
| 16-20 | 1.0 | |
| 6-10 | 0 | |

SIGNATURE: W. D. Schuster

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 02542.000 TKB | DATE: 3/30/99

WELL ID: WP-99-65 | ACTIVITY | BOTTLE

TIME START: 0730 END: 0930 | TIME

SAMPLE ISIS ID: WP9965

[X] QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: WP9965035 MS | MSD ID: WP9965035 MD

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

DEPTH (ft-bgs) 31-34 | 16-20 | 6-10

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 4 gal | 5 gal | 6 gal | | |
| TEMPERATURE (degreesC) | 19.9 | 19.4 | 20.7 | | |
| pH (units) | 6.20 | 6.01 | 6.09 | | |
| TURBIDITY (ntu) | 423 | 18 | 25 | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 1.47 | 1.3[illegible] | .814 | | |
| DISSOLVED OXYGEN (mg/L) | 2.00 | 1.85 | .93 | | |
| ~~REDOX POTENTIAL~~ SALINITY % | 0.07 | 0.07 | 0.04 | | |
| TIME | 08:45 | 09:10 | 09:25 | | |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [X] | [ ] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | |

DECON FLUIDS USED:
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED:
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: S4EP Chromium Plating Facility | JOB NUMBER: 02842.00.TKB | DATE: 03/30/99

WELL ID: WP-99-66 | ACTIVITY TIME: START 1130 END 1345 | BOTTLE TIME:

SAMPLE ISIS ID: WP9966

[X] QC SAMPLES COLLECTED | DUPLICATE ID: WP9966DUP0 | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| DEPTH (ft-bgs) | 59-63 | 46-50 | 26-30 | 16-20 | 6-10 |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5.0 | 5.0 | 5.0 | 3.0 | |
| TEMPERATURE (degreesC) | 19.0 | 16.8 | 15.8 | 14.6 | Slow |
| pH (units) | 6.34 | 6.53 | 6.61 | 6.48 | recharge |
| TURBIDITY (ntu) | 78 | 165 | 48 | 270 | sample |
| SPEC. COND. (~~umhos~~/cm) | 25.2 | 13.5 | .98 | 0.29 | collected |
| DISSOLVED OXYGEN (mg/L) | 4.50 | 2.10 | 1.88 | 2.04 | |
| ~~REDOX POTENTIAL~~ SALINITY | 1.52 | 0.77 | 0.04 | 0.01 | |
| TIME | 1230 | 1250 | 1310 | 1330 | 1335 |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [X] | [ ] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | |

DECON FLUIDS USED:
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ]

WATER LEVEL EQUIPMENT USED:
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ]

NUMBER OF FILTERS USED:

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| | | | | | | |

NOTES

Interval | PID (ppm)
59-63 | 0
46-50 | 0
16-20

REFUSAL @ 63' bgs

SIGNATURE:

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 02842.00.TKB | DATE: 8/31/99

WELL ID: WP-99-67 | ACTIVITY | BOTTLE

TIME: START 0700 END 1755 | TIME

SAMPLE ISIS ID: WP9967

[X] QC SAMPLES COLLECTED | DUPLICATE ID: WP996701DX | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) = GAL/VOL [ ] 1.5 GAL/FT (6 IN) | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

DEPTH (ft-bgs) 16'-20' 6-10

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 gal | 6 gal | | | |
| TEMPERATURE (degreesC) | 21.5 | 21.9 | | | |
| pH (units) | 6.58 | 6.07 | | | |
| TURBIDITY (ntu) | >3 | 18 | | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 1.04 | .326 | | | |
| DISSOLVED OXYGEN (mg/L) | 1.27 | .94 | | | |
| ~~REDOX POTENTIAL~~ SALINITY % | 0.04 | 0.01 | | | |
| TIME | 7:15 | 7:45 | | | |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED _____
- [ ] CLOUDY _____
- [ ] TURBID _____
- [ ] ODOR _____
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| [ ] | [ ] | PERISTALTIC PUMP |
| [ ] | [ ] | SUBMERSIBLE PUMP |
| [ ] | [ ] | BLADDER PUMP |
| [X] | [X] | PVC/SILICON TUBING |
| [ ] | [ ] | TEFLON/SILICON TUBING |
| [ ] | [ ] | WATTERA |
| [ ] | [ ] | IN LINE FILTER |
| [ ] | [ ] | PRESS/VAC FILTER |
| [ ] | [ ] | _____ |

DECON FLUIDS USED
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | |

NOTES: PID 6-10 PPM 0

SIGNATURE: W. D. Calcutt

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 02842.00.TK6 | DATE: 03/31/99

WELL ID: WP-99-68 | ACTIVITY | BOTTLE

TIME: START 0845 END | TIME

SAMPLE ISIS ID: WP9968

[X] QC SAMPLES COLLECTED | DUPLICATE ID: WP99680050XD | MS ID: WP99680 MS | MSD ID: WP99680 MD

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| PURGE DATA DEPTH (ft-bgs) | 76-80 | 66-70 | 46-50 | 26-30 | 16-20 |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 8 | 9 | 4 | 8 | 5 |
| TEMPERATURE (degreesC) | 19.9 | 20.0 | 21.2 | 21.5 | 21.5 |
| pH (units) | 6.17 | 6.04 | 6.73 | 6.83 | 7.05 |
| TURBIDITY (ntu) | 155 | 68 | 158 | 27 | 32 |
| SPEC. COND. (~~umhos~~/cm) | 15.6 | 14.5 | 11.3 | 6.40 | 0.74 |
| DISSOLVED OXYGEN (mg/L) | 2.30 | 1.67 | 4.49 | 1.90 | 2.03 |
| ~~REDOX POTENTIAL~~ SALINITY | 0.91 | 0.84 | 0.64 | 0.39 | 0.03 |
| TIME | 1027 | 1100 | 1135 | 1215 | 1230 |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING |
|---|---|
| [X] | [ ] PERISTALTIC PUMP |
| [ ] | [ ] SUBMERSIBLE PUMP |
| [ ] | [ ] BLADDER PUMP |
| [X] | [X] PVC/SILICON TUBING |
| [ ] | [ ] TEFLON/SILICON TUBING |
| [ ] | [ ] WATTERA |
| [ ] | [ ] IN LINE FILTER |
| [ ] | [ ] PRESS/VAC FILTER |
| [ ] | [ ] _____ |

DECON FLUIDS USED
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
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| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |

Interval | PID (ppm)

NOTES

| | | |
|---|---|---|
| 76'-80' | 0.2 | @ bucket. |
| 66-70' | 0 | " |
| 46-50 | 0 | " |
| 26-30 | 3.1 | " |
| 16-20 | 0.8 | " |

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 02842.00.TKB | DATE: 3/31/99

WELL ID: WP-99-68 | ACTIVITY TIME START: 0845 END: 1250 | BOTTLE TIME:

SAMPLE ISIS ID: WP9968

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

DEPTH (ft-bgs) 6-10

| | | | | | | |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 7 | | | | | |
| TEMPERATURE (degreesC) | 22.1 | | | | | |
| pH (units) | 6.54 | | | | | |
| TURBIDITY (ntu) | 24 | | | | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 0.50 | | | | | |
| DISSOLVED OXYGEN (mg/L) | 1.79 | | | | | |
| ~~REDOX POTENTIAL~~ SALINITY | 0.02 | | | | | |
| ~~TIME~~ | 1245 | | | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | | WATER LEVEL EQUIPMENT USED | |
|---|---|---|---|---|---|---|
| ☐ | ☐ | PERISTALTIC PUMP | ☐ | METHANOL | ☒ | ELECTRIC COND. PROBE |
| ☐ | ☐ | SUBMERSIBLE PUMP | ☒ | LIQUINOX | ☐ | FLOAT ACTIVATED |
| ☐ | ☐ | BLADDER PUMP | ☐ | POTABLE WATER | ☐ | KECK INTERFACE PROBE |
| ☒ | ☒ | PVC/SILICON TUBING | ☒ | DEIONIZED WATER | ☐ | _____ |
| ☐ | ☐ | TEFLON/SILICON TUBING | ☐ | HEXANE | | |
| ☐ | ☐ | WATTERA | ☐ | NITRIC ACID | | |
| ☐ | ☐ | IN LINE FILTER | ☐ | _____ | | |
| ☐ | ☐ | PRESS/VAC FILTER | | | | |
| ☐ | ☐ | _____ | | | | |

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | |

Interval PID (ppm)

## NOTES

~~20-30~~ 3.1 @ bucket.
Lmw 03/31/99

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility
JOB NUMBER: 02842.00 TKB
DATE: 03/31/99
WELL ID: WP-99-69
ACTIVITY TIME: START 1330 END 1515
BOTTLE TIME:
SAMPLE ISIS ID: WP99-69

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

| DEPTH (ft-bgs) | 26-30 | 16-20 | 6-10 | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 | 5 | 7 | | |
| TEMPERATURE (degreesC) | 25.5 | 22.5 | 24.1 | | |
| pH (units) | 6.80 | 6.90 | 6.62 | | |
| TURBIDITY (ntu) | 999 | 323 | 49 | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 12.9 | 1.09 | .437 | | |
| DISSOLVED OXYGEN (mg/L) | 2.90 | 1.42 | 1.87 | | |
| ~~REDOX POTENTIAL~~ % SALINITY | 0.74 | 0.05 | .02 | | |
| TIME | 1430 | 1445 | 1515 | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒ ☐ ☐ ☒ ☐ ☐ ☐ ☐
SAMPLING:
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☒ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
☐ _____

DECON FLUIDS USED:
☐ METHANOL
☒ LIQUINOX
☐ POTABLE WATER
☒ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ _____

WATER LEVEL EQUIPMENT USED:
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

NOTES
26-30 ~~1.0~~ 1.3 @ bucket
16-20 2.2 " "
6-10 0.1 " "

PRD was 033199

SIGNATURE: [signature]

RECEIVED BY: _____

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PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 02842.00.TKB | DATE: 03/31/99

WELL ID: WP-99-70 | ACTIVITY | BOTTLE

TIME: START 1705 END 1835 | TIME

SAMPLE ISIS ID: WP9970

☐ QC SAMPLES COLLECTED — DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| DEPTH (ft-bgs) | 26-30 | 16-20 | 6-10 | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2 gal | 6 gal | 8 gal | | |
| TEMPERATURE (degreesC) | 27.6 | 24.9 | 25.4 | | |
| pH (units) | 6.53 | 6.52 | 5.98 | | |
| TURBIDITY (ntu) | 154 | 353 | 420 | | |
| SPEC. COND. (~~mS~~ µS/cm) | 9.3 | .608 | .420 | | |
| DISSOLVED OXYGEN (mg/L) | 9.50 | 0.90 | 1.09 | | |
| ~~REDOX POTENTIAL~~ Eh SALINITY | 0.52 | 0.03 | 0.01 | | |
| TIME | 18:00 | 18:20 | 18:35 | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |
| ☐ | ☐ | _____ |

DECON FLUIDS USED
☐ METHANOL
☒ LIQUINOX
☐ POTABLE WATER
☒ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ _____

WATER LEVEL EQUIPMENT USED
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

NOTES: X 26-20 extremly Poor Recharge

| | FID | PPM | Bucket |
|---|---|---|---|
| 26-30 | | 0.2 | U |
| 16-20 | | 0.8 | U |
| 6-10 | | 0.0 | U |

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility
JOB NUMBER: 02842.00.TKB
DATE: 04/01/99
WELL ID: WP-99-71
ACTIVITY TIME: START 0855 END 160
BOTTLE TIME:
SAMPLE ISIS ID: WP9971

[X] QC SAMPLES COLLECTED
DUPLICATE ID: WP9971040XD
MS ID: ~~WP9971~~ WP9971030MS
MSD ID: WP9971030MD

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

| DEPTH (ft bgs) | 36-40 | 26-30 | 16-20 | 6-10 | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.5 gal | 3.5 gal | 5 gal | 5 gal | |
| TEMPERATURE (degreesC) | 17.9 | 17.3 | 15.2 | 11.30 | |
| pH (units) | 6.26 | 6.83 | 6.93 | 7.22 | |
| TURBIDITY (ntu) | 18 | 711 | 190 | 66 | |
| SPEC. COND. (~~umhos~~ ms/cm) | 14.4 | 12.8 | 5.02 | .608 | |
| DISSOLVED OXYGEN (mg/L) | 5.90 | 3.40 | 2.00 | 1.14 | |
| ~~REDOX POTENTIAL~~ % SALINITY | 0.84% | 0.73 | 0.29 | 0.02 | |
| TIME | 09:48 (09:48 | 10:25 | 10:44 | 11:00 | |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING:
- [X]
- [ ]
- [ ]
- [X]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

SAMPLING:
- [ ] PERISTALTIC PUMP
- [ ] SUBMERSIBLE PUMP
- [ ] BLADDER PUMP
- [X] PVC/SILICON TUBING
- [ ] TEFLON/SILICON TUBING
- [ ] WATTERA
- [ ] IN LINE FILTER
- [ ] PRESS/VAC FILTER
- [ ] _____

DECON FLUIDS USED:
- [ ] METHANOL
- [X] LIQUINOX
- [ ] POTABLE WATER
- [X] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED:
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |
| [ ] | | | | | [ ] | / / / |

## NOTES

| | PID (ppm) | |
|---|---|---|
| 36-40 | 0.1 | @ bucket. |
| 26-30 | ø | " |
| 16-20 | 1.1 | " |
| 6-10 | ø | " |

SIGNATURE: W. D. Calvert

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chromium Plating Facility | JOB NUMBER: 02842.00.TKB | DATE: 9/01/99

WELL ID: WP-99-72 | ACTIVITY TIME START: 1325 END: 1500 | BOTTLE TIME:

SAMPLE ISIS ID: WP9972

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| DEPTH (ft-bgs) | 30-34 | 16-20 | 6-10 | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5gal | 8gal | 5gal | | |
| TEMPERATURE (degreesC) | 21.7 | 22.1 | 22.9 | | |
| pH (units) | 6.82 | 6.50 | 6.05 | | |
| TURBIDITY (ntu) | 13 | ~~496~~ 18 | 29 | | |
| SPEC. COND. (~~mS~~/cm) | 3.55 | .496 | .394 | | |
| DISSOLVED OXYGEN (mg/L) | 3.22 | 1.02 | 1.27 | | |
| ~~REDOX POTENTIAL~~ SALINITY | 0.17 | 0.02 | 0.01 | | |
| TIME | 14:02 | 14:25 | 14:40 | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| ☒ | ☐ | PERISTALTIC PUMP |
| ☐ | ☐ | SUBMERSIBLE PUMP |
| ☐ | ☐ | BLADDER PUMP |
| ☒ | ☒ | PVC/SILICON TUBING |
| ☐ | ☐ | TEFLON/SILICON TUBING |
| ☐ | ☐ | WATTERA |
| ☐ | ☐ | IN LINE FILTER |
| ☐ | ☐ | PRESS/VAC FILTER |

DECON FLUIDS USED:
☐ METHANOL
☒ LIQUINOX
☐ POTABLE WATER
☒ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
_____

WATER LEVEL EQUIPMENT USED:
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
_____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|
| PID (ppm) | | | | | |

NOTES

| | | | |
|---|---|---|---|
| 30-34 | 14 | @ bottom | refusal @ 34' bgs |
| 16-20 | 1.4 | 11 | |
| 6-10 | 0 | 4 | |

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842-00 | DATE: 1-13-99

WELL ID: PZ-8D | ACTIVITY | TIME START: 0815 END: 0910 | BOTTLE TIME: 0900

SAMPLE ISIS ID: WCPZ8D000XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 30.5 FT (TOR) | HISTORICAL WELL DEPTH | 33.5 FT (TOR) B | PROTECTIVE CASING STICKUP (FROM GROUND) | -0.67 FT | PROTECTIVE CASING / WELL DIFFERENCE | 0 FT |
| DEPTH TO WATER | 4.98 FT (TOR) | SCREEN LENGTH | 10 FT | WELL DIAMETER | 2 IN | WELL MATERIAL | PVC |

HEIGHT OF WATER COLUMN: 25.52 FT x ☒ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = 4.08 GAL/VOL

TOTAL VOLUME PURGED: 8 GAL

6/18/92 Installed

AMBIENT AIR: — PPM | WELL MOUTH: — PPM

## PURGE DATA

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3 gal | 6 gal | 7 gal | 8 gal | |
| TEMPERATURE (degreesC) | 16.2 | 16.4 | 16.4 | 16.5 | |
| pH (units) | 6.92 | 7.95 | 7.81 | 7.57 | |
| TURBIDITY (ntu) | + | - | - | - | |
| SPEC. COND. (~~umhos~~/cm) | 0.799 | 0.889 | 0.793 | 0.95 | |
| DISSOLVED OXYGEN (mg/L) | 1.49 | 2.46 | 2.50 | 2.29 | |
| REDOX POTENTIAL | 205.2 | 133.3 | 166 | 158 | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☒ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|---|
| ☒ | ☒ | PERISTALTIC PUMP | ☐ METHANOL | ☒ ELECTRIC COND. PROBE |
| ☐ | ☐ | SUBMERSIBLE PUMP | ☐ LIQUINOX | ☐ FLOAT ACTIVATED |
| ☐ | ☐ | BLADDER PUMP | ☐ POTABLE WATER | ☐ KECK INTERFACE PROBE |
| ☒ | ☒ | PVC/SILICON TUBING | ☐ DEIONIZED WATER | ☐ _____ |
| ☐ | ☐ | TEFLON/SILICON TUBING | ☐ HEXANE | |
| ☐ | ☐ | WATTERA | ☐ NITRIC ACID | |
| ☐ | ☐ | IN LINE FILTER | ☐ _____ | NUMBER OF FILTERS USED _____ |
| ☐ | ☐ | PRESS/VAC FILTER | | |
| ☐ | ☐ | _____ | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |
| ☐ | | | | | ☐ | ____/____/____/____ |

NOTES: Particulate material found in water - may be from side of well.

Hach Kit: Total Cr < 2.5mg/L, Hex Cr = 0mg/L, Ferrous = 0mg/L

SIGNATURE: Gina L. Curtis

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAED | JOB NUMBER: 02842.00TK | DATE: 3-16-99

WELL ID: P2-8D (WC well) | ACTIVITY | BOTTLE

TIME: START 1550 END 1645 | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 30.75 FT (TOR) | HISTORICAL WELL DEPTH | 33.5 FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FLUSH FT | PROTECTIVE CASING / WELL DIFFERENCE | -0.6 FT |
| DEPTH TO WATER | 3.15 FT (TOR) | SCREEN LENGTH | 10 FT | WELL DIAMETER | 2 IN | WELL MATERIAL | PVC |

HEIGHT OF WATER COLUMN: 27.6 FT x ☒ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = 4.416 GAL/VOL

TOTAL VOLUME PURGED: 5 GAL

AMBIENT AIR: 0.0 PPM | WELL MOUTH: 0.0 PPM

## PURGE DATA

| | 1605 | 1612 | 1621 | 1627 | 1634 |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 |
| TEMPERATURE (degreesC) | 10.5 | 9.1 | 8.8 | 8.9 | 8.7 |
| pH (units) | 6.08 | 6.51 | 6.81 | 6.91 | 6.90 |
| TURBIDITY (ntu) | 258 | 151 | 89 | 81 | 58 |
| SPEC. COND. (uhmos/cm) | 146 | 78 | 72 | 70 | 70 |
| DISSOLVED OXYGEN (mg/L) | 10.44 | 9.14 | 9.01 | 8.79 | 8.74 |
| REDOX POTENTIAL | | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ☐ CLOUDY ☐ TURBID ☐ ODOR ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: ☒

SAMPLING: ☒ PERISTALTIC PUMP; ☐ SUBMERSIBLE PUMP; ☐ BLADDER PUMP; ☐ PVC/SILICON TUBING; ☐ TEFLON/SILICON TUBING; ☐ WATTERA; ☐ IN LINE FILTER; ☐ PRESS/VAC FILTER; ☐ _____

DECON FLUIDS USED: ☐ METHANOL; ☒ LIQUINOX; ☐ POTABLE WATER; ☒ DEIONIZED WATER; ☐ HEXANE; ☐ NITRIC ACID; ☐ _____

WATER LEVEL EQUIPMENT USED: ☒ ELECTRIC COND. PROBE; ☐ FLOAT ACTIVATED; ☐ KECK INTERFACE PROBE; ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☒ FIELD SCREENING | | N | HCL | 2 40 mL VOA | ☒ | |

NOTES: INSTRUCTIONS FROM ROD PENDLETON: PURGE 5 GALLONS THEN SAMPLE
DO NOT SAMPLE FROM ISCO. KINK HOSE, PULL HOSE FROM WELL AND DRAIN INTO VOA VIALS

WELL INSTALLED 6-18-92 BY WOODWARD CLYDE

SIGNATURE: Bradley B. W

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome | JOB NUMBER: 2842.00.TKB | DATE: 3-17-99

WELL ID: PZ-4D | ACTIVITY TIME: START 0850 END 0921 | BOTTLE TIME:

SAMPLE ISIS ID: PZ4D99 (WC well)

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 38.6 FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FLUSH FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | 2.25 FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | 2 IN | WELL MATERIAL | PVC |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

9" from GS to top of piezometer
38.6' to screen bottom measured from top of piezometer

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| TIME | 0910 | 0913 | 0916 | 0919 | 0921 |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 |
| TEMPERATURE (degreesC) | 15.8 | 14.7 | 14.2 | 13.9 | 14.1 |
| pH (units) | 6.32 | 6.46 | 6.45 | 6.44 | 6.42 |
| TURBIDITY (ntu) | 55 | 84 | 87 | 51 | 45 |
| SPEC. COND. (uhmos/cm) | 6460 | 6130 | 5800 | 5970 | 6150 |
| DISSOLVED OXYGEN (mg/L) | 1.23 | 1.30 | 1.80 | 2.77 | 1.60 |
| REDOX POTENTIAL | | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED _____ ☐ CLOUDY _____ ☐ TURBID _____ ☐ ODOR _____ ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING / SAMPLING:
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
_____

DECON FLUIDS USED:
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
_____

WATER LEVEL EQUIPMENT USED:
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
_____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE ___ OF ___

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating
JOB NUMBER: 02842.00.TKB
DATE: 03/29/99
WELL ID: PZ-16D (WC Well)
ACTIVITY TIME: START 1615 END 1640
BOTTLE TIME:
SAMPLE ISIS ID: ~~PZ0~~ PZ16D0 XX

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: 28.20 FT (TOR)
HISTORICAL WELL DEPTH: 31 FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): Flush FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: 3.85 FT (TOR)
SCREEN LENGTH: 10 FT
WELL DIAMETER: 2 IN
WELL MATERIAL: PVC
HEIGHT OF WATER COLUMN: 24.35 FT x ☒ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = 3.9 gal/vol GAL/VOL
TOTAL VOLUME PURGED: 13 gal GAL
AMBIENT AIR: 0.0 PPM
WELL MOUTH: 0.0 PPM

## PURGE DATA

| PURGE VOLUME (gallons) | 3 | 6 | 9 | 13 gal | |
|---|---|---|---|---|---|
| TEMPERATURE (degreesC) | 17.5 | 17.0 | 16.7 | 15.4 | |
| pH (units) | 6.67 | 6.70 | 6.62 | 6.63 | |
| TURBIDITY (ntu) | 2 | 162 | 15 | -1 | |
| SPEC. COND. (unmos/cm) | .672 | .691 | .696 | .712 | |
| DISSOLVED OXYGEN (mg/L) | 2.00 | 1.70 | 2.29 | 2.08 | |
| ~~REDOX POTENTIAL~~ SAL % | 0.02 | 0.03 | 0.03 | 0.03 | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED ___
☐ CLOUDY ___
☐ TURBID ___
☐ ODOR ___
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

SAMPLING
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
☐ ___

DECON FLUIDS USED
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ ___

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ ___

NUMBER OF FILTERS USED ___

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
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| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: [signature]
RECEIVED BY:

GWFORM.XLS/GENERIC

10/17/96

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating | JOB NUMBER: 02842.00.TKB | DATE: 3/29/99

WELL ID: PZ-8D (WC well) | ACTIVITY: 1

TIME: START 15:10 END 15:42 | BOTTLE TIME:

SAMPLE ISIS ID: PZ08D0030XX

[ ] QC SAMPLES COLLECTED | DUPLICATE ID: N/A | MS ID: " | MSD ID: "

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 30.85 FT (TOR) | HISTORICAL WELL DEPTH | 33' FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | Flush FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | 4.20 FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | 2" IN | WELL MATERIAL | PVC |

HEIGHT OF WATER COLUMN: 26.65 FT x [X] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = 4.26 gal/VOL GAL/VOL

TOTAL VOLUME PURGED: 17 gal GAL

AMBIENT AIR: 0.0 PPM | WELL MOUTH: 0.0 PPM

## PURGE DATA

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5 gal | 10 | 15 | 17 gal | |
| TEMPERATURE (degreesC) | 18.4 | 17.3 | 16.9 | 16.9 | |
| pH (units) | 7.30 | 6.90 | 6.63 | 6.62 | |
| TURBIDITY (ntu) | 159 | 41 | 15 | 7 | |
| SPEC. COND. (uhmos/cm) | .197 | 0.335 | .438 | .472 | |
| DISSOLVED OXYGEN (mg/L) | 3.38 | 1.93 | 2.26 | 1.66 | |
| ~~REDOX POTENTIAL~~ SAL | 0.00 | 0.01 | 0.01 | 0.01 | |

SAMPLE OBSERVATIONS:
- [X] CLEAR
- [ ] COLORED _____
- [ ] CLOUDY _____
- [ ] TURBID _____
- [ ] ODOR _____
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING: [ ] [ ] [ ] [X] [ ] [ ] [ ] [ ] [ ]

SAMPLING: [ ] PERISTALTIC PUMP; [ ] SUBMERSIBLE PUMP; [ ] BLADDER PUMP; [X] PVC/SILICON TUBING; [ ] TEFLON/SILICON TUBING; [ ] WATTERA; [ ] IN LINE FILTER; [ ] PRESS/VAC FILTER; [ ] _____

DECON FLUIDS USED: [ ] METHANOL; [ ] LIQUINOX; [ ] POTABLE WATER; [ ] DEIONIZED WATER; [ ] HEXANE; [ ] NITRIC ACID; [ ] _____

WATER LEVEL EQUIPMENT USED: [X] ELECTRIC COND. PROBE; [ ] FLOAT ACTIVATED; [ ] KECK INTERFACE PROBE; [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | | | | | [ ] | / / / |

NOTES: 30.85 − 4.20 = 26.65

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAED Chrome Plating | JOB NUMBER: 02842.00 | DATE: 3/30/99

WELL ID: PZ-13D (WC Well) | ACTIVITY | BOTTLE

TIME: START 16:15 END 16:46 | TIME: 16:45

SAMPLE ISIS ID: PZ13D0032XX

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 31.8 FT (TOR) | HISTORICAL WELL DEPTH | 31.5 FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | 4.25 FT (TOR) | SCREEN LENGTH | 10.0 FT | WELL DIAMETER | 2 IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: 27.55 FT x ☒ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = 4.40 GAL/VOL

TOTAL VOLUME PURGED: 14 GAL

AMBIENT AIR: 0 PPM | WELL MOUTH: 0 PPM

## PURGE DATA

| PURGE VOLUME (gallons) | 3 | 6 | 9 | 14 | |
|---|---|---|---|---|---|
| TEMPERATURE (degreesC) | 18.6 | 15.9 | ~~17.5~~ | 17.2 | |
| pH (units) | 6.29 | 6.00 | 5.92 | 5.94 | |
| TURBIDITY (ntu) | 61 | 5 | 7 | 17 | |
| SPEC. COND. (uhmos/cm) | .91 | .92 | .92 | .92 | |
| DISSOLVED OXYGEN (mg/L) | 1.15 | .90 | 1.64 | 1.37 | |
| REDOX POTENTIAL | 0.04 | 0.04 | 0.04 | 0.04 | |

SAMPLE OBSERVATIONS:

- ☒ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING / SAMPLING

- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER

DECON FLUIDS USED

- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED

- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | ____/____/____/____ |

## NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility
JOB NUMBER: 2842.00:TKB
DATE: 03/30/99
WELL ID: PZ-5D (WC Well)
ACTIVITY TIME: START 1700 END 1745
BOTTLE TIME:
SAMPLE ISIS ID: PZ05D0043XX

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: 43.65 FT (TOR)
HISTORICAL WELL DEPTH: 43 FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: 2.85 FT (TOR)
SCREEN LENGTH: 10 FT
WELL DIAMETER: 2 IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: 40.15 FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = 6.4 GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: 0 PPM
WELL MOUTH: 0 PPM

## PURGE DATA

| PURGE VOLUME (gallons) | 4 gal | 9 gal | 15 | 19 | |
|---|---|---|---|---|---|
| TEMPERATURE (degreesC) | 13.8 | 12.9 | 13.4 | 13.5 | |
| pH (units) | 6.13 | 6.41 | 6.46 | 6.50 | |
| TURBIDITY (ntu) | 153 | 5 | 3 | 0 | |
| SPEC. COND. (uhmos/cm) | 8.73 | 8.9 | 8.9 | 8.95 | |
| DISSOLVED OXYGEN (mg/L) | 1.85 | 2.3 | 1.82 | 3.0 | |
| ~~REDOX POTENTIAL~~ SAL | .47 | .48 | .48 | .48 | |

SAMPLE OBSERVATIONS:
- ☒ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

SAMPLING
- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER
- ☐ _____

DECON FLUIDS USED
- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
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| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |
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| ☐ | | | | | ☐ | / / / |
| ☐ | | | | | ☐ | / / / |

## NOTES

40.15
.16
24090
4015
64240

SIGNATURE: W. D. Calcutt

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Pluting Facility | JOB NUMBER: 2842,00;TKB | DATE: 4/01/89

WELL ID: PZ-11D (WC Well) | ACTIVITY | BOTTLE

TIME: START 1530 END 1635 | TIME

SAMPLE ISIS ID: PZ11D0034XX

[X] QC SAMPLES COLLECTED | DUPLICATE ID: PZ11D0034XD | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 34.2 FT (TOR) | HISTORICAL WELL DEPTH | 34 FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | -1.0 FT | PROTECTIVE CASING / WELL DIFFERENCE | 1 FT |
| DEPTH TO WATER | 5 FT (TOR) | SCREEN LENGTH | 10 FT | WELL DIAMETER | 2 IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: 29 FT x [X] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = 4.64 GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| PURGE VOLUME (gallons) | 2 | 5 | 9 | 13 | 19 |
|---|---|---|---|---|---|
| TEMPERATURE (degreesC) | 16.6 | 15.9 | 15.6 | 15.5 | 15.2 |
| pH (units) | 6.83 | 6.88 | 7.04 | 7.05 | 7.08 |
| TURBIDITY (ntu) | 59 | 12 | 11 | 9 | 1 |
| SPEC. COND. (~~umhos~~ mS/cm) | 1.29 | 1.49 | 1.54 | 1.60 | 1.59 |
| DISSOLVED OXYGEN (mg/L) | 2.85 | 2.27 | 1.10 | 0.93 | 0.92 |
| ~~REDOX POTENTIAL~~ SALINITY (%) | 0.05 | 0.06 | 0.07 | 0.07 | 0.07 |

SAMPLE OBSERVATIONS:
- [X] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| [X] | [ ] PERISTALTIC PUMP | [ ] METHANOL | [X] ELECTRIC COND. PROBE |
| [ ] | [ ] SUBMERSIBLE PUMP | [ ] LIQUINOX | [ ] FLOAT ACTIVATED |
| [ ] | [ ] BLADDER PUMP | [ ] POTABLE WATER | [ ] KECK INTERFACE PROBE |
| [X] | [X] PVC/SILICON TUBING | [ ] DEIONIZED WATER | [ ] |
| [ ] | [ ] TEFLON/SILICON TUBING | [ ] HEXANE | |
| [ ] | [ ] WATTERA | [ ] NITRIC ACID | |
| [ ] | [ ] IN LINE FILTER | [ ] | |
| [ ] | [ ] PRESS/VAC FILTER | | |
| [ ] | [ ] | | |

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [X] | mod 8021B | | HCl | 2x40mL | [X] | |

NOTES: PID in hole 7.1 ppm. Lock cut and left in protective casing.
PID after 12 gallons 0 ppm

29
.14
174
29
4.64

4.64

SIGNATURE:

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 44411 2342.00 | DATE: 5/5/99

WELL ID: CP-99-01 | ACTIVITY | BOTTLE

TIME: START END | TIME:

SAMPLE ISIS ID: CP9901

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 131.6 FT ~~(TOR)~~ bgs | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | — FT | PROTECTIVE CASING / WELL DIFFERENCE | — FT |
| DEPTH TO WATER | 2.6 FT ~~(TOR)~~ bgs | SCREEN LENGTH | 20' N | WELL DIAMETER | IN | WELL MATERIAL | PVC, Filter Fabric |

HEIGHT OF WATER COLUMN: ~~8.0~~ FT (80 bgs) x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: 0.0 PPM | WELL MOUTH: PPM

## PURGE DATA

CP9901130XX CP9901098XX CP9901080XX CP9901056XX CP9901

| PURGE VOLUME (gallons) | — | 4.0 | 4.5 | 4.0 | 3.0 |
|---|---|---|---|---|---|
| TEMPERATURE (degreesC) | N/A | NA | NA | | |
| pH (units) | | | | | |
| TURBIDITY (ntu) | | | | | |
| SPEC. COND. (uhmos/cm) | | | | | |
| DISSOLVED OXYGEN (mg/L) | | | | | |
| REDOX POTENTIAL | | | | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| | PERISTALTIC PUMP | METHANOL | ELECTRIC COND. PROBE |
| | SUBMERSIBLE PUMP | LIQUINOX | FLOAT ACTIVATED |
| | BLADDER PUMP | POTABLE WATER | KECK INTERFACE PROBE |
| | PVC/SILICON TUBING | DEIONIZED WATER | |
| | TEFLON/SILICON TUBING | HEXANE | |
| | WATTERA | NITRIC ACID | |
| | IN LINE FILTER | | |
| | PRESS/VAC FILTER | | |

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| CP9901130XX | 8260 | — | HCL | 2x40ml | ☐ | |
| CP9901098XX | 8260 | — | HCL | 2x40ml | ☐ | |
| CP9901080XX | 8260 | — | HCL | 2x40ml | ☐ | |
| CP9901056XX | 8260 | — | HCL | 2x40ml | ☐ | |
| CP9901042XX | 8260 | — | HCL | 2x40ml | ☐ | |

NOTES

1. Sample CP9901130XX first sample, ~~first~~ could not purge, NO volume for purge data.
2. Sample CP9901098XX, water turbid, pH conductivity meter not working
3. Sample CP9901080XX, water slightly turbid, Lt brown to gray
4. Sample CP9901056XX, water slightly turbid, Lt brown to gray
5. Sample CP9901042XX.

SIGNATURE: Glen Oakes

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SARP Chrome Plating Facility | JOB NUMBER: 4441-2842.00 | DATE: 5/6/99

WELL ID: TB-CP-01 / RB-CP-01 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID: TBCP01 / RBCP01

☑ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | TBCP01 | RBCP01 | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | — | — | | | |
| TEMPERATURE (degreesC) | N/A | N/A | | | |
| pH (units) | ↓ | ↓ | | | |
| TURBIDITY (ntu) | | | | | |
| SPEC. COND. (uhmos/cm) | | | | | |
| DISSOLVED OXYGEN (mg/L) | | | | | |
| REDOX POTENTIAL | ↓ | ↓ | | | |

SAMPLE OBSERVATIONS:
- ☑ CLEAR
- ☐ COLORED _____
- ☐ CLOUDY _____
- ☐ TURBID _____
- ☐ ODOR _____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| | ☐ PERISTALTIC PUMP | ☐ METHANOL | ☐ ELECTRIC COND. PROBE |
| | ☐ SUBMERSIBLE PUMP | ☐ LIQUINOX | ☐ FLOAT ACTIVATED |
| | ☐ BLADDER PUMP | ☐ POTABLE WATER | ☐ KECK INTERFACE PROBE |
| | ☐ PVC/SILICON TUBING | ☐ DEIONIZED WATER | ☐ _____ |
| | ☐ TEFLON/SILICON TUBING | ☐ HEXANE | |
| | ☐ WATTERA | ☐ NITRIC ACID | |
| | ☐ IN LINE FILTER | ☐ _____ | NUMBER OF FILTERS USED _____ |
| | ☐ PRESS/VAC FILTER | | |
| | ☐ _____ | | |

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| TBCP01 | VOA 8260 | No | HCL | 2 40ml | ☐ | |
| RBCP01 | VOA 8260 | No | HCL | 2 40ml | ☐ | |

NOTES

Trip blank for CP9901 Samples collected on 5/5/99 used HCA DI water from Portland, ME.

RBCP01 - Rinse blank of screen prior to CP9902 and after CP9901.

SIGNATURE: Glen Danker

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

PAGE 1 OF ____

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP CHROME PLATING FACILITY | JOB NUMBER: 4441-284200 | DATE: 5/6/99

WELL ID: CP9902 | ACTIVITY | BOTTLE

TIME: START 0800 END | TIME

SAMPLE ISIS ID: CP9902-

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH | ~~FT (TOR)~~ bgs | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | 4.0 ~~FT (TOR)~~ bgs | SCREEN LENGTH | 20' ~~FT~~ | WELL DIAMETER | IN | WELL MATERIAL | PVC, Filter Fabric |

HEIGHT OF WATER COLUMN ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = ____ GAL/VOL | TOTAL VOLUME PURGED ____ GAL

AMBIENT AIR 0.1 PPM | WELL MOUTH 0.1 PPM

## PURGE DATA

| | CP9902133XX | CP9902133XD | CP9902133MS | CP9902133MD | CP9902096XX |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.5 | | | | 7.0 |
| TEMPERATURE (degreesC) | | | | | 16.9 |
| pH (units) | 6.2 | 6.2 | | | 6.8 |
| TURBIDITY (ntu) | 320 | 320 | | | 717 |
| SPEC. COND. (uhmos/cm) | 28.5 ~~mS/cm~~ | 28.5 | | | 23.1 |
| DISSOLVED OXYGEN (mg/L) | 1.62 | 1.62 | ~~1.30~~ | | 1.80 |
| ~~REDOX POTENTIAL~~ Salinity | | | | | 1.39 |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ____ ☐ CLOUDY ____ ☐ TURBID ____ ☐ ODOR ____ ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER ____

DECON FLUIDS USED
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ ____

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9902133XX | 8260 | No | HCL | 2 40ml | ☐ | ____/____/____/____ |
| 2. CP9902133XD | | | | | ☐ | ____/____/____/____ |
| 3 CP9902133MS | | | | | ☐ | ____/____/____/____ |
| 4. CP9902133MD | | | | | ☐ | ____/____/____/____ |
| 5. CP9902096XX | | | | | ☐ | ____/____/____/____ |

NOTES

| | Time | headspace |
|---|---|---|
| 1. CP9902133XX | 1225 | 0.1 ppm |
| ~~2. CP9902133~~ 5. CP9902096XX | 1300 | 0.1 ppm |

SIGNATURE: Glen Davies

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP CHROME PLATING FACILITY | JOB NUMBER: 9441 2842 00 | DATE: 5/6/99

WELL ID: CP9902 | ACTIVITY | BOTTLE

TIME: START 0800 END 1545 | TIME

SAMPLE ISIS ID:

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | CP9902044XX | CP9902032XX | CP9902020XX | CP9902006XX | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 7.5 | 2.0 * | * | * | |
| TEMPERATURE (degreesC) | 17.3 | 16.5 | 17.2 | N/A | |
| pH (units) | 7.35 | 7.15 | 7.31 | | |
| TURBIDITY (ntu) | 519 | 66 | 864 | | |
| SPEC. COND. ~~(umhos/cm)~~ ms/cm | 24.6 | 24.5 | 17.3 | | |
| DISSOLVED OXYGEN (mg/L) | 1.33 | 2.24 | 5.08 | | |
| ~~REDOX POTENTIAL~~ Salinity % | 1.5 | 1.49 | 1.02 | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING / SAMPLING:
- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER
- ☐ _____

DECON FLUIDS USED:
- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED:
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED: _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 6. CP9902044XX | 8260 | NO | HCL | 2 40ml | ☐ | |
| 7. CP9902032XX | | | | | ☐ | |
| 8 CP9902020XX | | | | | ☐ | |

Time | P.I.D ppm

## NOTES

| | | | |
|---|---|---|---|
| 6. | CP9902044XX | 1420 | 0.0 |
| * 7 | CP9902033XX | 1435 | 0.6 - Pumped dry twice |
| * 8 | CP9902020XX | 1500 | 0.2 - Pumped dry twice |
| > 9 | CP9902006XX | 1730 | |

pumped dry twice

SIGNATURE: Glen Barbas

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Planting Facility

JOB NUMBER: 44411-~~28054~~ 2842.00

DATE: 5/10/99

WELL ID: ~~8~~ CP-03-99

ACTIVITY TIME: START 0900 END

BOTTLE TIME:

SAMPLE ISIS ID: CP0399

☐ QC SAMPLES COLLECTED

DUPLICATE ID:

MS ID:

MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: 116.4 FT ~~(TOR)~~ bgs

HISTORICAL WELL DEPTH: FT (TOR)

PROTECTIVE CASING STICKUP (FROM GROUND): FT

PROTECTIVE CASING / WELL DIFFERENCE: FT

DEPTH TO WATER: ~~4~~ FT ~~(TOR)~~ bgs

SCREEN LENGTH: 20" ~~FT~~

WELL DIAMETER: IN

WELL MATERIAL: PVC, Fiberfabric

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL

TOTAL VOLUME PURGED: GAL

AMBIENT AIR: 0.0 ~~PPM~~ (1) 112'-114' (2) 95'-97' (3) 74'-76' (4) 54'-56' (5) 37'-39'

WELL MOUTH: PPM

## PURGE DATA

| | CP9903114xx | CP9903~~076xx~~ 097xx | CP9903076xx | CP9903056xx | CP9903039xx |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.0 | 5.0 | 5.0 | 5.0 | 1.5 |
| TEMPERATURE (degreesC) | 17.2 | 16.3 | 16.2 | 17.7 | 17.3 |
| pH (units) | 5.55 | 6.03 | 6.15 | 6.51 | 6.78 |
| TURBIDITY (ntu) | 5 | 122 | 325 | 183 | 999 |
| SPEC. COND. (~~umhos/cm~~ mS/cm) | 16.5 | ~~2.87~~ 15.1 | 16.1 | 18.4 | 14.7 |
| DISSOLVED OXYGEN (mg/L) | 2.38 | 2.87 | 2.96 | 3.77 | 4.61 |
| ~~REDOX POTENTIAL~~ SAL. | | | 0.94 | 1.07 | 0.85 |

SAMPLE OBSERVATIONS:

☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING

SAMPLING
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER

DECON FLUIDS USED
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9903114xx | 8260 | NO | HCL | 2-40ml | ✓ | |
| 2. CP9903097xx | ↓ | ↓ | ↓ | ↓ | ✓ | |
| 3 CP9903076xx | | | | | ✓ | |
| 4. CP9903056xx | | | | | ✓ | |
| 5. CP9903039xx | | | | | ✓ | |

NOTES

| | time | PID |
|---|---|---|
| 1. CP9903114xx | 1140 | 2.0 |
| 2. CP9903097xx | 1210 | 0.2 |
| 3. CP9903076xx | 12:41 | 0.1 |
| 4. CP9903056xx | 13:36 | 0.0 |
| 5. CP9903039xx | 14:20 | 0.0 |

SIGNATURE: [signature]

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Stratford Chrome Plating | JOB NUMBER: 4441-2542.00 | DATE: 5/7/99

WELL ID: CP-99-04 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID: CP9904

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 16.4 FT (TOR) BGS | HISTORICAL WELL DEPTH | — FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT |
| PROTECTIVE CASING / WELL DIFFERENCE | FT | DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | 20" ~~FT~~ |
| WELL DIAMETER | IN | WELL MATERIAL | PVC, Filter Fabric | | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: 0.0 PPM | WELL MOUTH: 0.6 PPM

## PURGE DATA

CP9904159XX CP9904112XX CP9904088XX CP9904045XX CP9904034XX

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1.0 gal. | 5.25 | 5.25 | 5.0 | 5.0 |
| TEMPERATURE (degreesC) | 15.1 | 14.8 | 14.7 | 14.7 | N/A |
| pH (units) | 6.3 | 6.77 | 6.62 | 6.79 | Instrument Failure |
| TURBIDITY (ntu) | 973 | 143 | 24 | 74 | |
| SPEC. COND. ~~(umhos/cm)~~ mS/cm | 25.8 | 20.1 | 20.4 | 15.4 | |
| DISSOLVED OXYGEN (mg/L) | 5.06 | 2.53 | 3.71 | 3.86 | |
| REDOX POTENTIAL | | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED _____ ☐ CLOUDY _____ ☐ TURBID _____ ☐ ODOR _____ ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING: ☐ PERISTALTIC PUMP ☐ SUBMERSIBLE PUMP ☐ BLADDER PUMP ☐ PVC/SILICON TUBING ☐ TEFLON/SILICON TUBING ☐ WATTERA ☐ IN LINE FILTER ☐ PRESS/VAC FILTER _____

DECON FLUIDS USED: ☐ METHANOL ☐ LIQUINOX ☐ POTABLE WATER ☐ DEIONIZED WATER ☐ HEXANE ☐ NITRIC ACID ☐ _____

WATER LEVEL EQUIPMENT USED: ☐ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ KECK INTERFACE PROBE ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9904159XX | 8260 | NO | HCL | 2x40ml | ☑ | |
| 2. CP9904112XX | ↓ | ↓ | ↓ | ↓ | ☐ | |
| 3 CP9904088XX | | | | | ☐ | |
| 4. CP9904045XX | | | | | ☐ | |
| 5. CP9904034XX | | | | | ☐ | |

| NOTES | | time | PID |
|---|---|---|---|
| 1. | CP9904159XX | 0940 | 0.2ppm |
| 2. | CP9904112XX | 1015 | 0.1 |
| 3 | CP9904088XX | 1050 | 0.1 |
| 4 | CP9904045XX | 1115 | 0.2 |
| 5 | CP9904034XX | 1140 | 0.4 |

→ pumped dry twice

SIGNATURE: Glen Danka

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SIAEP | JOB NUMBER: | DATE: 5/8/99

WELL ID: CP9904 | ACTIVITY: | BOTTLE

TIME: START END | TIME:

SAMPLE ISIS ID: CP9904

☐ QC SAMPLES COLLECTED | DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR) | HISTORICAL WELL DEPTH: FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): FT | PROTECTIVE CASING / WELL DIFFERENCE: FT

DEPTH TO WATER: FT (TOR) | SCREEN LENGTH: FT | WELL DIAMETER: IN | WELL MATERIAL:

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

~~EB~~ TBCP02

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | | | | | |
| TEMPERATURE (degreesC) | | | | | |
| pH (units) | | | | | |
| TURBIDITY (ntu) | | | | | |
| SPEC. COND. (uhmos/cm) | | | | | |
| DISSOLVED OXYGEN (mg/L) | | | | | |
| REDOX POTENTIAL | | | | | |

SAMPLE OBSERVATIONS:

☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING

☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
_____

DECON FLUIDS USED

☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
_____

WATER LEVEL EQUIPMENT USED

☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
_____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| TBCP02 | 8260 | NO | HCl | 1 40ml VOA | ☐ | |

## NOTES

Trip Blank for CP-99-04

~~CP-99-05~~

SIGNATURE: [signature]

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF ____

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 4441-254209 | DATE: 5/7/99

WELL ID: CP-99-05 | ACTIVITY | BOTTLE

TIME: START ____ END ____ | TIME ____

SAMPLE ISIS ID: CP9905

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: ~~131~~ 131 FT ~~(TOR)~~ BGS | HISTORICAL WELL DEPTH: ____ FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): ____ FT | PROTECTIVE CASING / WELL DIFFERENCE: ____ FT

DEPTH TO WATER: ____ FT (TOR) | SCREEN LENGTH: 20' FT | WELL DIAMETER: ____ IN | WELL MATERIAL: ____

HEIGHT OF WATER COLUMN: ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = ____ GAL/VOL ☐ 1.5 GAL/FT (6 IN) | TOTAL VOLUME PURGED: ____ GAL

AMBIENT AIR: 0.0 PPM | WELL MOUTH: 0.0 PPM

## PURGE DATA

CP9905131XX CP9905099XX CP9905074XX CP9905057XX CP9905032XX

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2gal | 5.0 | 5.0 ~~4.0~~ | 5.0 | 4.0 |
| TEMPERATURE (degreesC) | 15.3 | 14.7 | ~~14.8~~ | 14.8 | 15.2 |
| pH (units) | 6.40 | 6.25 | ~~6.5~~ | 6.5 | 7.19 |
| TURBIDITY (ntu) | 999 | 436 | ~~616~~ | 616 | 999 |
| SPEC. COND. ~~(uhmos/cm)~~ mS/cm | 25.1 | 18.2 | ~~30.0~~ | 30.0 | 31.4 |
| DISSOLVED OXYGEN (mg/L) | 3.51 | 5.84 | ~~6.17~~ | 6.17 | 6.59 |
| REDOX POTENTIAL | | | -30 | | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ____ ☐ CLOUDY ____ ☐ TURBID ____ ☐ ODOR ____ ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING
☐ PERISTALTIC PUMP ☐ SUBMERSIBLE PUMP ☐ BLADDER PUMP ☐ PVC/SILICON TUBING ☐ TEFLON/SILICON TUBING ☐ WATTERA ☐ IN LINE FILTER ☐ PRESS/VAC FILTER ____

DECON FLUIDS USED
☐ METHANOL ☐ LIQUINOX ☐ POTABLE WATER ☐ DEIONIZED WATER ☐ HEXANE ☐ NITRIC ACID ____

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ KECK INTERFACE PROBE ☐ ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9905131XX | 6280 | No | HCL | 2-40ml VOA | ☐ | ____/____/____/____ |
| 2. CP9905099XX | 6280 | No | 4C | 2-40ml VOA | ☐ | ____/____/____/____ |
| 3. CP9905074XX | | | | | ☐ | ____/____/____/____ |
| 4 CP9905057XX | | | | | ☐ | ____/____/____/____ |
| 5 CP9905032XX - Bailed dry 3 times. | | | | | ☐ | ____/____/____/____ |

| NOTES | time | PID |
|---|---|---|
| 1. CP9905131XX | 1615 | 0.1 |
| 2 CP9905099XX | 1650 | 0.1 |
| 3 CP9905074XX | 1705 | 0.0 |
| 4 CP9905057XX | 1730 | 0.0 |
| 5 CP9905032XX | 1810 | |

SIGNATURE: ____

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 4441 284200 | DATE: 5/8/99

WELL ID: TBCP03 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID: TBCP03

[X] QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

TBCP03

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | | | | | |
| TEMPERATURE (degreesC) | | | | | |
| pH (units) | | | | | |
| TURBIDITY (ntu) | | | | | |
| SPEC. COND. (uhmos/cm) | | | | | |
| DISSOLVED OXYGEN (mg/L) | | | | | |
| REDOX POTENTIAL | | | | | |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED _____
- [ ] CLOUDY _____
- [ ] TURBID _____
- [ ] ODOR _____
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING / SAMPLING:
- [ ] PERISTALTIC PUMP
- [ ] SUBMERSIBLE PUMP
- [ ] BLADDER PUMP
- [ ] PVC/SILICON TUBING
- [ ] TEFLON/SILICON TUBING
- [ ] WATTERA
- [ ] IN LINE FILTER
- [ ] PRESS/VAC FILTER
- [ ] _____

DECON FLUIDS USED:
- [ ] METHANOL
- [ ] LIQUINOX
- [ ] POTABLE WATER
- [ ] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED:
- [ ] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| [ ] | TBCP03 8260 | No | HCL | 1,40 ml | [ ] | |
| [ ] | Trip Blank for | | | | [ ] | |
| [ ] | CP-99-05 | | | | [ ] | |
| [ ] | CP-99-08 | | | | [ ] | |

## NOTES

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 4441-2842.04 | DATE: 5/9/99

WELL ID: CP-99-06 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID: CP9906

☐ QC SAMPLES COLLECTED | DUPLICATE ID: CP9906080XD | MS ID: CP9906080MS | MSD ID: CP9906080MD

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 139.5 FT ~~(TOR)~~ BGS | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | 4.0 ~~FT (TOR)~~ BGS | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: 0.4 PPM | WELL MOUTH: 1.0 @ 0900 PPM

## PURGE DATA

CP9906128XX CP9906114XX, CP9906080XX, XD, MS, MD

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.0 | 5.25 | 5.5 | | |
| TEMPERATURE (degreesC) | 21.9 | 21.3 | 21.9 | | |
| pH (units) | 5.47 | 6.09 | 6.26 | | |
| TURBIDITY (ntu) | 79 | 999 | 174 | | |
| SPEC. COND. ~~(uMhos/cm)~~ mS/cm | 25.0 | 21.7 | X 18.3 | | |
| DISSOLVED OXYGEN (mg/L) | 1.87 | 1.08 | 2.90 | | |
| REDOX POTENTIAL | | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED _____
☐ CLOUDY _____
☐ TURBID _____
☐ ODOR _____
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
_____

DECON FLUIDS USED
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
_____

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
_____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9906128XX | 8260 | No | HCl | 2-40ml | ☐ | |
| 2 CP9906114XX | | | | | ☐ | |
| 3 CP9906080XX | | | | | ☐ | |
| 4 CP9906080XD | | | | | ☐ | |
| 5. CP9906080MS | | | | | ☐ | |
| 6. CP9906080MD | | | | | ☐ | |

| NOTES | Time | PID | PID wellhead | |
|---|---|---|---|---|
| 1. CP9906128XX | 0910 | 0.2 | 0.4 | No odor. |
| 2. CP9906114XX | 0930 | 0.2 | 0.4 | |
| 3. CP9906080XX | 0950 | 0.2 | 0.4 | |

SIGNATURE: Glen Parker 5/9/99

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrom Platy Faculty | JOB NUMBER: 4441-2842.00 | DATE: 5/9/99

WELL ID: CP-99-06 | ACTIVITY | BOTTLE

TIME: START | END 1115 | TIME

SAMPLE ISIS ID: CP9906

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 139.5 FT ~~(TOR)~~ bgs | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

CP990605 2xx | CP990603 0xx

| | | | | | | |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5.5 | 5.5 | | | | |
| TEMPERATURE (degreesC) | 22.5 | 22.8 | | | | |
| pH (units) | 6.59 | 6.57 | | | | |
| TURBIDITY (ntu) | 16 | 13 | | | | |
| SPEC. COND. ~~(umhos/cm)~~ mS/cm | 15.4 | 14.3 | | | | |
| DISSOLVED OXYGEN (mg/L) | 3.15 | 3.45 | | | | |
| REDOX POTENTIAL | | | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED _____
☐ CLOUDY _____
☐ TURBID _____
☐ ODOR _____
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING
- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER
- ☐ _____

DECON FLUIDS USED
- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ _____

WATER LEVEL EQUIPMENT USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 7. CP990605 2xx | 8260 | NO | HCl | 2-40ml | ☐ | |
| 8. CP990603 0xx | | | | | ☐ | |

| | time | PID | well head PID |
|---|---|---|---|
| 7. CP990605 2xx | 1020 | 0.2 | 0.4 |
| 8 CP990603 0xx | 1045 | 16.0 | 0.4 |

NOTES

SIGNATURE: Glenn Rambo 5/9/99

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP CHROME PLATING FACILITY | JOB NUMBER: 44411-2842.00 | DATE: 5-11-99

WELL ID: ~~CP-07-99~~ CP-99-07 | ACTIVITY | BOTTLE TIME

TIME: START END

SAMPLE ISIS ID: ~~CP9912~~ CP9907

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: 115.7 ~~FT (TOR)~~ bgs | HISTORICAL WELL DEPTH: FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND): FT | PROTECTIVE CASING / WELL DIFFERENCE: FT

DEPTH TO WATER: ~5' ~~FT (TOR)~~ bgs | SCREEN LENGTH: 20' ~~FT~~ | WELL DIAMETER: IN | WELL MATERIAL: PVC / FILTER FABRIC

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = GAL/VOL ☐ 1.5 GAL/FT (6 IN) | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

(1) 113'-115' (2) 84'-86' (3) 68'-70' (4) 37'-39' (5) 18'-20'

## PURGE DATA

CP9907115XX CP9907086XX CP9907070XX CP9907039XX CP9907020XX

| PURGE VOLUME (gallons) | 1 | 5 | 5 | 3 ⊛ | 3 ⊛ |
|---|---|---|---|---|---|
| TEMPERATURE (degreesC) | 17.4 | 16.6 | 16.7 | 16.4 | 16.8 |
| pH (units) | 6.2 | 6.43 | 6.61 | 6.94 | 7.23 |
| TURBIDITY (ntu) | 16 | 25 | 42 | 21 | 761 |
| SPEC. COND. (MS ~~umhos~~/cm) | 23.5 | 19.5 | 23.5 | 4.09 | 3.04 |
| DISSOLVED OXYGEN (mg/L) | 2.27 | 1.50 | 3.06 | 3.97 | Not Enough H2O |
| ~~REDOX POTENTIAL~~ Salinity ‰ | 1.43 | 1.16 | 1.42 | 0.26 | 0.18 |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ☐ CLOUDY ☐ TURBID ☐ ODOR ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING: ☐ PERISTALTIC PUMP ☐ SUBMERSIBLE PUMP ☐ BLADDER PUMP ☐ PVC/SILICON TUBING ☐ TEFLON/SILICON TUBING ☐ WATTERA ☐ IN LINE FILTER ☐ PRESS/VAC FILTER ☐ _____

DECON FLUIDS USED: ☐ METHANOL ☐ LIQUINOX ☐ POTABLE WATER ☐ DEIONIZED WATER ☐ HEXANE ☐ NITRIC ACID ☐ _____

WATER LEVEL EQUIPMENT USED: ☐ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ KECK INTERFACE PROBE ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ 1. CP9907115XX ⊛ | 8260 | No | HCl | 2x40-ml | ✓ | |
| ☐ 2. CP9907086XX | " | " | " | " | ✓ | |
| ☐ 3. CP9907070XX | " | " | " | " | ✓ | |
| ☐ 4. CP9907039XX | " | " | " | " | ✓ | |
| ☐ 5. CP9907020XX | " | " | " | " | | |

NOTES: ⊛ CP9907115XX ALSO collected SVOCs (2-1L AG)

⊛ purged dry 3 times each

(1) 11:22 No PID Readings; 0 PID
(2) 11:45 PID = 0
(3) 12:05 PID = 0
(4) 12:43 PID = 0
(5) 13:18 PID = 0

TIME PID

SIGNATURE: John D. Zyg 5/11/99

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF ____

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 4441-284200 | DATE: 5/6/99

WELL ID: CP-99-08 | ACTIVITY TIME START 0800 END 1700 | BOTTLE TIME:

SAMPLE ISIS ID: CP9908

☐ QC SAMPLES COLLECTED — DUPLICATE ID: | MS ID: | MSD ID:

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 158.8 ~~FT (TOR)~~ BTS | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | 4 ~~FT (TOR)~~ BTS | SCREEN LENGTH | 20' | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = ____ GAL/VOL | TOTAL VOLUME PURGED ____ GAL

AMBIENT AIR 0.0 PPM | WELL MOUTH 0.0 PPM

## PURGE DATA

CP990815 8xx CP990813 5xx

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.0 | 5.0 | | | |
| TEMPERATURE (degreesC) | 21.1 | 21.6 | | | |
| pH (units) | 6.57 | 6.18 | | | |
| TURBIDITY (ntu) | 999 | 105 | | | |
| SPEC. COND. ~~(umhos/cm)~~ ms/cm | 35.5 | 33.1 | | | |
| DISSOLVED OXYGEN (mg/L) | 4.8 | 2.21 | | | |
| REDOX POTENTIAL | | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ____ ☐ CLOUDY ____ ☐ TURBID ____ ☐ ODOR ____ ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING / SAMPLING:
- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER
- ☐ ____

DECON FLUIDS USED:
- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ ____

WATER LEVEL EQUIPMENT USED:
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP990815 8xx | 8260 | No | HCl | 2-40ml | ☐ | |
| 2. CP990813 5xx | | | | | ☐ | |

Strong "Pine" odor while pulling Rods to 95'
extremely Strong "Pine odor" while purging 95-97 Sample.
abandoned hole after talking to Cindy Sundquist.
Hole grouted.

| | time | PID | Ambient | well head |
|---|---|---|---|---|
| NOTES 1. CP990815 8xx | 1250 | 148.00 | 1.4 | 75.0 |
| 2. CP990813 5xx | 1430 | 121.00 | 0.2 | 26.0 |

VOC in well mouth - 2.5 ppm
VOC in Breathing Zone - 0.0 ppm

SIGNATURE: ____

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF ____

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility
JOB NUMBER: 44411-2842-00
DATE: 5/19/99
WELL ID: CP-99-08
ACTIVITY TIME: START ____ END ____
BOTTLE TIME: ____
SAMPLE ISIS ID: CP9908

[X] QC SAMPLES COLLECTED
DUPLICATE ID: CP9908073XD
MS ID: CP9908073MS
MSD ID: CP9908073MD

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH ____ FT (TOR)
HISTORICAL WELL DEPTH ____ FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND) ____ FT
PROTECTIVE CASING / WELL DIFFERENCE ____ FT
DEPTH TO WATER ____ FT (TOR)
SCREEN LENGTH ____ FT
WELL DIAMETER ____ IN
WELL MATERIAL ____
HEIGHT OF WATER COLUMN ____ FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = ____ GAL/VOL
TOTAL VOLUME PURGED ____ GAL
AMBIENT AIR ____ PPM
WELL MOUTH ____ PPM

## PURGE DATA

| | CP9908101XX | CP9908073XX | CP9908073XD, MS, MD | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 3.0 | | | | |
| TEMPERATURE (degreesC) | 21.9 | 22.5 | | | |
| pH (units) | 6.18 | 6.59 | | | |
| TURBIDITY (ntu) | 231 | 72 | | | |
| SPEC. COND. (~~uhmos~~ mS/cm) | 23.3 | 19.6 | | | |
| DISSOLVED OXYGEN (mg/L) | 1.80 | 2.0 | | | |
| ~~REDOX POTENTIAL~~ Salinity % | 1.42 | 1.16 | | | |

SAMPLE OBSERVATIONS:
[ ] CLEAR
[ ] COLORED ____
[ ] CLOUDY ____
[ ] TURBID ____
[ ] ODOR ____
[ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]

SAMPLING
[ ] PERISTALTIC PUMP
[ ] SUBMERSIBLE PUMP
[ ] BLADDER PUMP
[ ] PVC/SILICON TUBING
[ ] TEFLON/SILICON TUBING
[ ] WATTERA
[ ] IN LINE FILTER
[ ] PRESS/VAC FILTER
[ ] ____

DECON FLUIDS USED
[ ] METHANOL
[ ] LIQUINOX
[ ] POTABLE WATER
[ ] DEIONIZED WATER
[ ] HEXANE
[ ] NITRIC ACID
[ ] ____

WATER LEVEL EQUIPMENT USED
[ ] ELECTRIC COND. PROBE
[ ] FLOAT ACTIVATED
[ ] KECK INTERFACE PROBE
[ ] ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9908101XX | 8260 | No | HCl | 2 · 40ml VOA. | | |
| 2. CP9908073XX | | | | | | |
| 3. CP9908073XD | | | | | | |
| 4. CP9908073MS | | | | | | |
| 5 CP9908073MD | | | | | | |

NOTES

| | time | PID | wellhead |
|---|---|---|---|
| 1. CP9908101XX | 1405 | 6.9 | 2.0 |
| 2. CP9908073XX | 1440 | 4.5 | 0.7 |

New hole adjacent to CP-99-08 logged hole. Offset ≈ 2".

SIGNATURE: [signature]

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 44411-2842.00 | DATE: 5/14/99

WELL ID: ~~CP-08~~ CP-99-08 | ACTIVITY | BOTTLE TIME

TIME: START ____ END ____

SAMPLE ISIS ID: CP9908

[X] QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN ____ FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = ____ GAL/VOL | TOTAL VOLUME PURGED ____ GAL

AMBIENT AIR ____ PPM | WELL MOUTH ____ PPM

## PURGE DATA

CP990806 2XX CP990804 6XX CP990803 4XX

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5.0 | 5.0 | 5.0 | | |
| TEMPERATURE (degreesC) | 20.5 | 20.8 | 22.1 | | |
| pH (units) | 6.16 | 6.48 | 7.03 | | |
| TURBIDITY (ntu) | 82 | 403 | 87 | | |
| SPEC. COND. (~~umhos~~ mS/cm) | ~~1.13~~ 20.3 | 13.7 | 5.51 | | |
| DISSOLVED OXYGEN (mg/L) | 1.03 | 1.03 | 3.25 | | |
| ~~REDOX POTENTIAL~~ Salinity | 1.21% | 0.78% | 0.26% | | |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED ____
- [ ] CLOUDY ____
- [ ] TURBID ____
- [ ] ODOR ____
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING
- [ ] PERISTALTIC PUMP
- [ ] SUBMERSIBLE PUMP
- [ ] BLADDER PUMP
- [ ] PVC/SILICON TUBING
- [ ] TEFLON/SILICON TUBING
- [ ] WATTERA
- [ ] IN LINE FILTER
- [ ] PRESS/VAC FILTER
- [ ] ____

DECON FLUIDS USED
- [ ] METHANOL
- [ ] LIQUINOX
- [ ] POTABLE WATER
- [ ] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] ____

WATER LEVEL EQUIPMENT USED
- [ ] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 6. CP990806 2XX | 8260 | NO | HCl | 40ml x 2 | [ ] | |
| 7. CP990804 2XX | 8260<br>8270 | NO | HCl<br>4°C | 40ml x 2<br>1L x 1 | [ ] | |
| 8 CP990803 4XX | 8260 | NO | HCl | 40ml x 2 | [ ] | |

| | time | PID | wellhead |
|---|---|---|---|
| 6. CP990806 2XX | 1515 | 15.8 | |
| 7 CP990804 2XX | 1550 | 99.8 | |
| 8 CP990803 4XX | 1635 | 151.8 | |

NOTES: pulled V.C. Dregg tube. 12ppm. on headspace 0.5ppm at wellhead

SIGNATURE: Glenn Carbee

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 4441-284200 | DATE: 5/9/99

WELL ID: CP-99-09 | ACTIVITY | BOTTLE

TIME: START ____ END ____ | TIME ____

SAMPLE ISIS ID: CP9909

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 92.6 ~~BGS~~ FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | 2 0 ~~IN~~ | WELL MATERIAL | |

HEIGHT OF WATER COLUMN ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = ____ GAL/VOL | TOTAL VOLUME PURGED ____ GAL

AMBIENT AIR 0.5 PPM | WELL MOUTH ____ PPM

## PURGE DATA

CP9909090XX CP9909035XX CP9909011XX

| | | | | | | |
|---|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | — | 3.0 | 2.0 | | | |
| TEMPERATURE (degreesC) | NA | 18.9 | 18.3 | | | |
| pH (units) | | 6.76 | 6.94 | | | |
| TURBIDITY (ntu) | | 999 | 999 | | | |
| SPEC. COND. (~~umhos/cm~~ ms/cm) | | 3.69 | 1.81 | | | |
| DISSOLVED OXYGEN (mg/L) | | 1.31 | 2.96 | | | |
| REDOX POTENTIAL | | | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ____ ☐ CLOUDY ____ ☐ TURBID ____ ☐ ODOR ____ ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
____

DECON FLUIDS USED
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
____

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9909090XX | 8260 | No | HCl | 2-40 ml | ☐ | |
| 2. CP9909035XX | | | | | ☐ | |
| 3 CP9909011XX | | | | | ☐ | |

| | time | PID |
|---|---|---|
| 1. CP9909090XX | 1330 | 4.6 |
| 2 CP9909035XX | 1445 | 21.0 |
| 3 CP9909011XX | 1510 | 7.6 |

NOTES

Sampler only opened small amount, water very turbid.
Reinstalled new screen.
Used new sample tubing

SIGNATURE: Glen Danks

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 44411-2842.00 | DATE: 5/18/99

WELL ID: CP-99-10 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID: CP9910

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 75.9 bgs FT ~~(TOR)~~ | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT |
| PROTECTIVE CASING / WELL DIFFERENCE | FT | DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | 20' FT |
| WELL DIAMETER | IN | WELL MATERIAL | | | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: 0.0 PPM | WELL MOUTH: PPM

## PURGE DATA

CP9910075xx CP9910060xx CP9910050xx CP9910043xx CP9910036xx

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| TEMPERATURE (degreesC) | 19.1 | 18.7 | 18.8 | 19.0 | 19.3 |
| pH (units) | 6.07 | 6.15 | 6.58 | 6.37 | 6.55 |
| TURBIDITY (ntu) | 189 | 804 | 382 | 14 | 18 |
| SPEC. COND. (~~umhos~~ mS/cm) | 20.4 | 16.1 | 13.1 | 10.4 | 8.74 |
| DISSOLVED OXYGEN (mg/L) | 4.74 | 3.0 | 2.05 | 2.18 | 1.16 |
| ~~REDOX POTENTIAL~~ Salinity % | 1.22 | 0.94 | 0.76 | 0.58 | 0.48 |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED _____
☐ CLOUDY _____
☐ TURBID _____
☐ ODOR _____
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING

☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
_____

DECON FLUIDS USED
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
_____

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
_____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9910075xx | 8260 | No | HCl | 2 40-ml VOA | ☐ | |
| 2 CP9910060xx | | | | | ☐ | |
| 3. CP9910050xx | | | | | ☐ | |
| 4. CP9910043xx | | | | | ☐ | |
| 5 CP9910036xx | | | | | ☐ | |

| | time | PID |
|---|---|---|
| 1. CP9910075xx | 1500 | 4.5 |
| 2. CP9910060xx | 1515 | 1.3 |
| 3 CP9910050xx | 1530 | 15.0 |
| 4 CP9910043xx | 1545 | 24.5 |
| 5 CP9910036xx | 1610 | 16.7 |

NOTES

SIGNATURE: Glenn Cooke

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 44411-2840.00 | DATE: 5/18/29

WELL ID: CP-99-10 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID: CP9910

[X] QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

| | CP9910029XX | | TBCP007 | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5.0 | | | | |
| TEMPERATURE (degreesC) | 7.81 | | | | |
| pH (units) | 19.1 | | | | |
| TURBIDITY (ntu) | 8 | | | | |
| SPEC. COND. (~~µmhos~~ mS/cm) | 3.78 | | | | |
| DISSOLVED OXYGEN (mg/L) | 2.23 | | | | |
| ~~REDOX POTENTIAL~~ Salinity % | 0.19 | | | | |

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING
- [ ] PERISTALTIC PUMP
- [ ] SUBMERSIBLE PUMP
- [ ] BLADDER PUMP
- [ ] PVC/SILICON TUBING
- [ ] TEFLON/SILICON TUBING
- [ ] WATTERA
- [ ] IN LINE FILTER
- [ ] PRESS/VAC FILTER
- [ ] _____

DECON FLUIDS USED
- [ ] METHANOL
- [ ] LIQUINOX
- [ ] POTABLE WATER
- [ ] DEIONIZED WATER
- [ ] HEXANE
- [ ] NITRIC ACID
- [ ] _____

WATER LEVEL EQUIPMENT USED
- [ ] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] KECK INTERFACE PROBE
- [ ] _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 6. CP9910029XX | 8260 | No | HCL | 2-40ml | [ ] | |
| 7. TBCP007 trip blank. | | | | | [ ] | |

| NOTES | | time | PID |
|---|---|---|---|
| 6. CP9910029XX | | 1615 | 045 |

SIGNATURE: Glen Danbo

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP CHROME PLATING FACILITY | JOB NUMBER: 44411-284200 | DATE: 5-12-99

WELL ID: CP-99-11 | ACTIVITY | BOTTLE

TIME: START END | TIME

SAMPLE ISIS ID: CP9911

☐ QC SAMPLES COLLECTED — DUPLICATE ID | MS ID | MSD ID

78.4' bgs

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 78.4' bgs FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT |
| PROTECTIVE CASING / WELL DIFFERENCE | FT | DEPTH TO WATER | ~4.5 bgs FT (TOR) | SCREEN LENGTH | 20" FT |
| WELL DIAMETER | IN | WELL MATERIAL | PVC, FILTER FABRIC | HEIGHT OF WATER COLUMN | FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = ☐ 1.5 GAL/FT (6 IN) GAL/VOL |
| TOTAL VOLUME PURGED | GAL | AMBIENT AIR | 0.0 PPM | WELL MOUTH | PPM |

76'-78' CP9911078XX | 58'-60' | 44'-46' | 14'-16'

## PURGE DATA

| | CP9911078XX plus DUPLICATE | CP9911060XX | CP9911047XX | CP9911016XX | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1.5 | 5.0 | 5.0 | 1.5 ⊛ | |
| TEMPERATURE (degreesC) | 16.8 | 16.6 | 15.9 | 16.2 | |
| pH (units) | 6.17 | 6.53 | 6.34 | 7.02 | |
| TURBIDITY (ntu) | 226 | 48 | 652 | 85 | |
| SPEC. COND. (~~umhos~~ mS/cm) | 35.1 | 20.1 | 5.55 | 2.70 | |
| DISSOLVED OXYGEN (mg/L) | 2.62 | 2.10 | 1.39 | 6.70 | |
| ~~REDOX POTENTIAL~~ SAL: ‰ | 2.21 | 1.22 | 0.29 | 0.16 | |

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ COLORED ☐ CLOUDY ☐ TURBID ☐ ODOR ☐ OTHER (see notes)

① ② ③ WATER IS BROWN ④

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING: ☐ PERISTALTIC PUMP ☐ SUBMERSIBLE PUMP ☐ BLADDER PUMP ☐ PVC/SILICON TUBING ☐ TEFLON/SILICON TUBING ☐ WATTERA ☐ IN LINE FILTER ☐ PRESS/VAC FILTER ☐ _____

DECON FLUIDS USED: ☐ METHANOL ☐ LIQUINOX ☐ POTABLE WATER ☐ DEIONIZED WATER ☐ HEXANE ☐ NITRIC ACID ☐ _____

WATER LEVEL EQUIPMENT USED: ☐ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ KECK INTERFACE PROBE ☐ _____

NUMBER OF FILTERS USED _____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9911078XX, plus CP9911078XD | 8260 | No | HCl | 2x40ml. | ☐ | |
| 2. CP9911060XX | " | " | " | " | ☐ | |
| 3. CP9911047XX | " | " | " | " | ☐ | |
| 4. CP9911016XX | " | " | " | " | ☐ | |

| NOTES ~~Times~~ | TIME | PID |
|---|---|---|
| 1. CP9911078XX | 10:48 | 0.0 |
| 2. CP9911060XX | 11:10 | 0.0 |
| 3. CP9911047XX | 12:15 | 0.0 |
| 4. CP9911016XX | 12:32 | 0.0 — odor to nose ~~like~~ like a "burnt" insulation |

⊛ purged dry 4 times prior to sampling

SIGNATURE: _____

RECEIVED BY: _____

HARDING LAWSON ASSOCIATES

PAGE 1 OF 1

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP CHROME PLATING FACILITY | JOB NUMBER: 4441-2842-02 | DATE: 5-10-99

WELL ID: ~~CP-0~~ CP-12-99 | ACTIVITY TIME: START ____ END ____ | BOTTLE TIME: ____

SAMPLE ISIS ID: CP9912

☐ QC SAMPLES COLLECTED | DUPLICATE ID: ____ | MS ID: ____ | MSD ID: ____

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 121.6' FT ~~(TOR)~~ bgs | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | ~3'/4' FT ~~(TOR)~~ BGS | SCREEN LENGTH | 20' ~~FT~~ | WELL DIAMETER | IN | WELL MATERIAL | PVC / FILTER FABRIC |

HEIGHT OF WATER COLUMN: ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) = ____ GAL/VOL ☐ 1.5 GAL/FT (6 IN) | TOTAL VOLUME PURGED: ____ GAL

(1) 120'-122' (2) 90'-92' (3) 54'-56' AMBIENT AIR | (4) 20'-21' PPM | (5) 9'-14' WELL MOUTH PPM

## PURGE DATA

CP9912122XX CP9912092XX CP9912056XX CP9912021XX CP9912011XX

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1.5 | 5.0 | 5.0 | 2.0 ⊛ | 1.0 ⊛ |
| TEMPERATURE (degreesC) | ~~4~~ 17.9° | 16.4 | 15.9 | 17.2 | |
| pH (units) | 6.43 | 7.05 | 6.94 | 6.88 | |
| TURBIDITY (ntu) | 999 | 999 | 232 | 372 | not enough to perform tests |
| SPEC. COND. (~~umhos/cm~~ mS/cm) | 35.9 | 23.1 | 16.4 | 11.6 | |
| DISSOLVED OXYGEN (mg/L) | 1.08 | 1.21 | 1.15 | 2.55 | |
| ~~REDOX POTENTIAL~~ SALINITY % | 2.27 | 1.39 | 0.96 | 0.65 | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ____ ☐ CLOUDY ____ ☐ TURBID ____ ☐ ODOR ____ ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING / SAMPLING:
- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER
- ☐ ____

DECON FLUIDS USED:
- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ ____

WATER LEVEL EQUIPMENT USED:
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9912122XX | 8260 | No | HCl | 2-40 ml | ☑ | |
| 2. CP9912092XX | | | | | ☑ | |
| 3. CP9912056XX | | | | | ☑ | |
| 4. CP9912021XX | | | | | ☑ | |
| 5. CP9912011XX | | | | | ☑ | |

| NOTES | TIME | PID READING |
|---|---|---|
| (1) | 16:37 | 0.0 |
| (2) | 17:04 | 0.0 |
| (3) | 17:20 | 0.1 |
| (4) | 17:44 | 9.1 |
| (5) | LOW BATTERY ON PID - NO RESPONSE | |

⊛ purged these zones min. 3 times each

SIGNATURE: [signature] 5-10-99

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF ____

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP CHROME PLATING FACILITY | JOB NUMBER: 44411-2842.00 | DATE: 5-13-99

WELL ID: CP-99-13 | ACTIVITY | BOTTLE

TIME: START ____ END ____ | TIME ____

SAMPLE ISIS ID: CP9913

☐ QC SAMPLES COLLECTED — DUPLICATE ID ____ | MS ID ____ | MSD ID ____

## WATER LEVEL / WELL DATA

| | | | | | |
|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 144.7 bgs FT ~~(TOR)~~ | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT |
| PROTECTIVE CASING / WELL DIFFERENCE | FT | DEPTH TO WATER | ~ 7 bgs FT ~~(TOR)~~ | SCREEN LENGTH | 20' ~~FT~~ |
| WELL DIAMETER | IN | WELL MATERIAL | PVC, FILTER FABRIC (DACRON?) | | |

HEIGHT OF WATER COLUMN ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = ____ GAL/VOL

TOTAL VOLUME PURGED ____ GAL

AMBIENT AIR . 0.0 PPM | WELL MOUTH ____ PPM

## PURGE DATA

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | | | | | |
| TEMPERATURE (degreesC) | | | | | |
| pH (units) | | | | | |
| TURBIDITY (ntu) | | | | | |
| SPEC. COND. (uhmos/cm) | | | | | |
| DISSOLVED OXYGEN (mg/L) | | | | | |
| REDOX POTENTIAL | | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED ____
☐ CLOUDY ____
☐ TURBID ____
☐ ODOR ____
☐ OTHER (see notes)

PERFORMED

## EQUIPMENT DOCUMENTATION

| PURGING | SAMPLING | |
|---|---|---|
| | ☐ | PERISTALTIC PUMP |
| | ☐ | SUBMERSIBLE PUMP |
| | ☐ | BLADDER PUMP |
| | ☐ | PVC/SILICON TUBING |
| | ☐ | TEFLON/SILICON TUBING |
| | ☐ | WATTERA |
| | ☐ | IN LINE FILTER |
| | ☐ | PRESS/VAC FILTER |
| | ☐ | ____ |

DECON FLUIDS USED
☐ METHANOL
☐ ALQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ ____

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ ____

NUMBER OF FILTERS USED ____

SAMPLING

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| ☐ | | | | | ☐ | / / / |

## NOTES

SIGNATURE: ____

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]

PAGE 1 OF ____

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 44411-287200 | DATE: 5/18/99

WELL ID: CP-99-14 | ACTIVITY | BOTTLE

TIME: START 1200 END 1130 | TIME

SAMPLE ISIS ID: CP99114 | 5/18/99 | 5/19/99

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 45.4 FT ~~(TOR)~~ | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL | TOTAL VOLUME PURGED: GAL

AMBIENT AIR: PPM | WELL MOUTH: PPM

## PURGE DATA

CP99140422XX CP99140312XX CP99140182XX

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 0.25 | 5.0 | 5.0 | | |
| TEMPERATURE (degreesC) | 19.9 | 20.7 | 21.3 | | |
| pH (units) | 6.95 | 6.71 | 6.44 | | |
| TURBIDITY (ntu) | 230 | 999 | 645 | | |
| SPEC. COND. ~~(umhos/cm)~~ mS | 5.63 | 1.96 | 0.42 | | |
| DISSOLVED OXYGEN (mg/L) | 4.02 | 0.52 | 0.98 | | |
| ~~REDOX POTENTIAL~~ See units % | 0.29 | 0.09 | 0.01 | | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ____ ☐ CLOUDY ____ ☐ TURBID ____ ☐ ODOR ____ ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING / SAMPLING:
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
____

DECON FLUIDS USED:
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
____

WATER LEVEL EQUIPMENT USED:
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP99140422XX | 8260 | No | HCl | 2.40 ml | ☐ | |
| 2. CP99140312XX | | | | | ☐ | |
| 3. CP99140182XX | | | | | ☐ | |

| | time | PID |
|---|---|---|
| NOTES 1. CP99140422XX | 0910 | 2.3 |
| 2 CP99140312XX | 0940 | 1.6 |
| 3. CP99140182XX | 1100 | 0.3 |

Logged hole and grav. sample hole and approximately 15' apart. See log book page 101 and 102.

SIGNATURE: Glenn Darker

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

PAGE 1 OF ____

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 44411-284200 | DATE: 5/20/99

WELL ID: CP-99-15 | ACTIVITY | BOTTLE

TIME: START 1130 END 1556 | TIME

SAMPLE ISIS ID: CP99115

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 63.7 FT (~~TOR~~) BGS | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | 20 ~~ft~~ | WELL DIAMETER | IN | WELL MATERIAL | PVC Flush Fit |

HEIGHT OF WATER COLUMN ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = ____ GAL/VOL | TOTAL VOLUME PURGED ____ GAL

AMBIENT AIR 0.0 PPM | WELL MOUTH 0.0 PPM

## PURGE DATA

CP99115057xx CP99115047xx CP99115041xx CP99115032xx

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1.0 | 5.0 | 3.0 | 2.5 | |
| TEMPERATURE (degreesC) | 16.9 | 16.3 | 17.4 | ~~17.5~~ | |
| pH (units) | 6.28 | 7.05 | 7.44 | ~~7.0~~ | |
| TURBIDITY (ntu) | 278 | 36 | 55 | ~~4.0~~ | |
| SPEC. COND. (~~umhos~~ mS/cm) | ~~1.80~~ 17.0 | 4.40 | 2.08 | 0.019 | |
| DISSOLVED OXYGEN (mg/L) | 1.51 | 2.00 | 2.30 | | |
| ~~REDOX POTENTIAL~~ Salinity % | 1.00 | 0.22 | 0.10 | | |

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED ____
- ☐ CLOUDY ____
- ☐ TURBID ____
- ☐ ODOR ____
- ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING | SAMPLING
- ☐ PERISTALTIC PUMP
- ☐ SUBMERSIBLE PUMP
- ☐ BLADDER PUMP
- ☐ PVC/SILICON TUBING
- ☐ TEFLON/SILICON TUBING
- ☐ WATTERA
- ☐ IN LINE FILTER
- ☐ PRESS/VAC FILTER
- ☐ ____

DECON FLUIDS USED
- ☐ METHANOL
- ☐ LIQUINOX
- ☐ POTABLE WATER
- ☐ DEIONIZED WATER
- ☐ HEXANE
- ☐ NITRIC ACID
- ☐ ____

WATER LEVEL EQUIPMENT USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ KECK INTERFACE PROBE
- ☐ ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP99115059xx | w. Clyde | No | HCl | 2 x 40 ml | ☐ | ____/____/____/____ |
| 2. CP99115047xx | | | | | ☐ | ____/____/____/____ |
| 3. CP99115041xx | | | | | ☐ | ____/____/____/____ |
| 4. CP99115032xx | | | | | ☐ | ____/____/____/____ |

## NOTES

| | time | PID |
|---|---|---|
| 1. CP99115059xx | 1435 | 1.7 |
| 2. CP99115047xx | 1455 | 1.2 |
| 3. CP99115041xx | 1515 | 1.1 |
| 4. CP99115032xx | 1545 | 1.9 |

- Pumped dry 3 times
- Pumped dry 3 times

SIGNATURE: Glenn Cowles

RECEIVED BY: ____

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility
JOB NUMBER: 44411-284200
DATE: 5/21
WELL ID: CP-99-16
ACTIVITY TIME: START 0800 END
BOTTLE TIME:
SAMPLE ISIS ID: CP9916

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: 94.0 FT ~~(TOR)~~ bgs
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: 20' ~~FT~~
WELL DIAMETER: ~~IN~~
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

| | CP9916094xx | CP9916078xx | CP9916064xx | CP9916053xx | CP9916036xx |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.0 | 7.0 | 5.0 | 5.0 | 16.7 |
| TEMPERATURE (degreesC) | 16.1 | 16.1 | 15.9 | 15.7 | 16.7 |
| pH (units) | 6.12 | 6.41 | 6.36 | 6.35 | 6.82 |
| TURBIDITY (ntu) | 999 | 43 | 34 | 32 | 355 |
| SPEC. COND. (~~umhos~~ mS/cm) | 27.4 | 24.9 | 21.3 | 17.3 | 7.40 |
| DISSOLVED OXYGEN (mg/L) | 1.18 | 2.40 | 1.88 | 2.80 | 2.27 |
| ~~REDOX POTENTIAL~~ Salinity % | 1.69 | 1.52 | 1.27 | 1.01 | 0.50 |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING
☐
☐
☐
☐
☐
☐
☐
☐
☐

SAMPLING
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
☐

DECON FLUIDS USED
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9916094xx | W. Clyde | No | HCl | 2 x 40ml | ☐ | / / / |
| 2. CP9916078xx | | | | | ☐ | / / / |
| 3 CP9916064xx | | | | | ☐ | / / / |
| 4 CP9916053xx | | | | | ☐ | / / / |
| 5 CP9916036xx | | | | | ☐ | / / / |

NOTES

| | time | PID |
|---|---|---|
| 1. CP9916094xx | 1055 | 41.5 |
| 2. CP9916078xx | 1105 | 16.4 |
| 3 CP9916064xx | 1140 | 3.8 |
| 4 CP9916053xx | 1155 | 3.5 |
| 5 CP9916036xx | 1215 | |

~~xx~~ #4 = CP9916053xx

SIGNATURE: [signature]

RECEIVED BY:

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility
JOB NUMBER: 44411-2842
DATE: 5/21/99
WELL ID: CP-99-16
ACTIVITY TIME: START END
BOTTLE TIME:
SAMPLE ISIS ID: CP9916

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

CP9916029xx

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.0 | | | | |
| TEMPERATURE (degreesC) | ~~7.40~~ 18.8 | | | | |
| pH (units) | 7.40 | | | | |
| TURBIDITY (ntu) | 926 | | | | |
| SPEC. COND. (uhmos/cm) | 2.72 | | | | |
| DISSOLVED OXYGEN (mg/L) | 3.45 | | | | |
| ~~REDOX POTENTIAL~~ Salinity % | 0.13 | | | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING
SAMPLING
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER

DECON FLUIDS USED
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 6. CP9916029xx | Wclyde | No | HCl | 2x40ml | | |

NOTES

| | time | PID |
|---|---|---|
| 6. CP9916029xx | 1250 | 8.8 |

* Collected from end of tubing after pumping well dry twice with extremely slow recovery

SIGNATURE: [signature]

RECEIVED BY:

HARDING LAWSON ASSOCIATES

PAGE 1 OF ____

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CAEP Chrome Plating Facility | JOB NUMBER: 44411-28200 | DATE: 5/26/99

WELL ID: CP-99-17 | ACTIVITY | BOTTLE

TIME: START ____ END ____ | TIME ____

SAMPLE ISIS ID: CP9917

☐ QC SAMPLES COLLECTED | DUPLICATE ID | MS ID | MSD ID

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | FT (TOR) | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN ____ FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = ____ GAL/VOL

TOTAL VOLUME PURGED ____ GAL

AMBIENT AIR ____ PPM | WELL MOUTH ____ PPM

## PURGE DATA

CP9917063XX CP9917046XX CP9917032XX, CP9917 0XXXX

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 2.0 | 3.5 * | | – | |
| TEMPERATURE (degreesC) | 22.8 | ~~6.79~~ 23.1 | N/A | 22.6 | |
| pH (units) | 6.24 | 6.79 | | 6.50 | |
| TURBIDITY (ntu) | 235 | 100 | | 999 | |
| SPEC. COND. ~~(umhos/cm)~~ mS/cm | 16.4 | 10.7 | | 5.38 | |
| DISSOLVED OXYGEN (mg/L) | 1.23 | 3.70 | | 1.35 | |
| REDOX POTENTIAL | 0.96 | 0.60 | | 0.23 | |

SAMPLE OBSERVATIONS:
☐ CLEAR ☐ COLORED ____ ☐ CLOUDY ____ ☐ TURBID ____ ☐ ODOR ____ ☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING / SAMPLING:
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER
☐ ____

DECON FLUIDS USED:
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID
☐ ____

WATER LEVEL EQUIPMENT USED:
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE
☐ ____

NUMBER OF FILTERS USED ____

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9917063XX | 8260 | No | HCl | 2x40 ml | ☐ | |
| 2. CP9917046XX | | | | | ☐ | |
| 3 CP9917032XX | | | | | ☐ | |

| | time | PID headspace | trench BZ | Purge water | |
|---|---|---|---|---|---|
| 1 CP9917063XX | 1205 | 2.6 | 0.0 | 0.0 | |
| 2 CP9917046XX | 1233 | 54.2 | 0.0 | 0.0 | Purged dry 3x. |
| 3 CP9917032XX | 1401 | 262 | 0.0 | 0.0 | |
| 4 | 1415 | 282 | 19.0 | 20 | |

NOTES

SIGNATURE: ____

RECEIVED BY: ____

pulled V.E. tube in the trench B.Z. > 5 ppm.

HARDING LAWSON ASSOCIATES

PAGE 1 OF ___

# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility | JOB NUMBER: 41411-284200 | DATE: 5/25/99

WELL ID: CP-99-18 | ACTIVITY | BOTTLE

TIME: START ___ END ___ | TIME ___

SAMPLE ISIS ID: CP9918

[X] QC SAMPLES COLLECTED | DUPLICATE ID: CP9918013XD | MS ID: CP9918013MS | MSD ID: CP9918013MD

## WATER LEVEL / WELL DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MEASURED WELL DEPTH | 148 FT (~~TOR~~) bgs | HISTORICAL WELL DEPTH | FT (TOR) | PROTECTIVE CASING STICKUP (FROM GROUND) | FT | PROTECTIVE CASING / WELL DIFFERENCE | FT |
| DEPTH TO WATER | FT (TOR) | SCREEN LENGTH | FT | WELL DIAMETER | IN | WELL MATERIAL | |

HEIGHT OF WATER COLUMN ___ FT x [ ] 0.16 GAL/FT (2 IN) [ ] 0.65 GAL/FT (4 IN) [ ] 1.5 GAL/FT (6 IN) = ___ GAL/VOL | TOTAL VOLUME PURGED ___ GAL

AMBIENT AIR ___ PPM | WELL MOUTH ___ PPM

## PURGE DATA

CP9918148XX CP9918134XX CP9918100XX CP9918013XX CP9918073XX

| | | | | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 1.0 | 5.0 | 4.5 | 2.0 | 2.0 |
| TEMPERATURE (degreesC) | 21.6 | 21.6 | N.A | 22.5 ~~22.6~~ | 22.5 |
| pH (units) | 6.30 | 6.45 | | 6.55 | 6.25 |
| TURBIDITY (ntu) | 1.0 | 477 | | 337 | 28 |
| SPEC. COND. ~~(umhos/cm)~~ ms | 30.8 | 30.1 | | 0.99 | 20.1 |
| DISSOLVED OXYGEN (mg/L) | 4.60 | 1.85 | | 1.10 | 1.48 |
| ~~REDOX POTENTIAL~~ Salinity % | 1.93 | 1.87 | | 0.04 | 1.01 |

SAMPLE OBSERVATIONS:
[ ] CLEAR
[ ] COLORED ___
[ ] CLOUDY ___
[ ] TURBID ___
[ ] ODOR ___
[ ] OTHER (see notes)

## EQUIPMENT DOCUMENTATION

Sample CP9918013XX was collected after tripping Sample to clean out Sand. Could only advance to 13', will trip out and re-insert.

| PURGING | SAMPLING | DECON FLUIDS USED | WATER LEVEL EQUIPMENT USED |
|---|---|---|---|
| | PERISTALTIC PUMP | METHANOL | ELECTRIC COND. PROBE |
| | SUBMERSIBLE PUMP | LIQUINOX | FLOAT ACTIVATED |
| | BLADDER PUMP | POTABLE WATER | KECK INTERFACE PROBE |
| | PVC/SILICON TUBING | DEIONIZED WATER | ___ |
| | TEFLON/SILICON TUBING | HEXANE | |
| | WATTERA | NITRIC ACID | |
| | IN LINE FILTER | ___ | |
| | PRESS/VAC FILTER | | |
| | ___ | | |

NUMBER OF FILTERS USED ___

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 1. CP9918148XX | 8260 | No | HCl | 2x40ml | | |
| 2. CP9918134XX | | | | | | |
| 3. CP9918100XX | | | | | | |
| 4. CP9918013XX (tooh dupe ms/msD) | | | | | | |
| 5 CP9918073XX | | | | | | |

| NOTES | PID | Time | B.Z Soil | B.Z Trench |
|---|---|---|---|---|
| 1. CP9918148XX | 0.0 | 1200 | 0.0 | 0.0 |
| 2 CP9918134XX | 0.0 | 1250 | 0.0 | 0.0 |
| 3. CP9918100XX | 0.4 | 1325 | 0.0 | 0.0 |
| 4 CP9918013XX | 0.0 | 1620 | 0.0 | 0.0 |
| 5 CP9918073XX | 0.0 | 1720 | 0.0 | 0.0 |

will take samples at depth similar to CP-99-08.

SIGNATURE: Glenn R. Rubens

RECEIVED BY: ___

HARDING LAWSON ASSOCIATES

[redacted]



# FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: SAEP Chrome Plating Facility
JOB NUMBER: 44411-284200
DATE: 5/25/99
WELL ID: CP-99-18
ACTIVITY TIME: START END
BOTTLE TIME:
SAMPLE ISIS ID: CP9918

☐ QC SAMPLES COLLECTED
DUPLICATE ID:
MS ID:
MSD ID:

## WATER LEVEL / WELL DATA

MEASURED WELL DEPTH: FT (TOR)
HISTORICAL WELL DEPTH: FT (TOR)
PROTECTIVE CASING STICKUP (FROM GROUND): FT
PROTECTIVE CASING / WELL DIFFERENCE: FT
DEPTH TO WATER: FT (TOR)
SCREEN LENGTH: FT
WELL DIAMETER: IN
WELL MATERIAL:
HEIGHT OF WATER COLUMN: FT x ☐ 0.16 GAL/FT (2 IN) ☐ 0.65 GAL/FT (4 IN) ☐ 1.5 GAL/FT (6 IN) = GAL/VOL
TOTAL VOLUME PURGED: GAL
AMBIENT AIR: PPM
WELL MOUTH: PPM

## PURGE DATA

| | CP9918061XX | CP9918046XX | CP9918035XX | | |
|---|---|---|---|---|---|
| PURGE VOLUME (gallons) | 5.0 | 3.0 ~~Dry twice~~ | 1.0 | | |
| TEMPERATURE (degreesC) | 22.6 | 22.6 | 22.1 | | |
| pH (units) | 6.35 | 6.78 | 7.18 | | |
| TURBIDITY (ntu) | 3 | 815 | 416 | | |
| SPEC. COND. (~~umhos~~ mS/cm) | 20.2 | 15.5 | 10.3 | | |
| DISSOLVED OXYGEN (mg/L) | 1.43 | 2.80 | 2.90 | | |
| REDOX POTENTIAL | 1.21 | 0.91 | 0.58 | | |

SAMPLE OBSERVATIONS:
☐ CLEAR
☐ COLORED
☐ CLOUDY
☐ TURBID
☐ ODOR
☐ OTHER (see notes)

## EQUIPMENT DOCUMENTATION

PURGING
SAMPLING
☐ PERISTALTIC PUMP
☐ SUBMERSIBLE PUMP
☐ BLADDER PUMP
☐ PVC/SILICON TUBING
☐ TEFLON/SILICON TUBING
☐ WATTERA
☐ IN LINE FILTER
☐ PRESS/VAC FILTER

DECON FLUIDS USED
☐ METHANOL
☐ LIQUINOX
☐ POTABLE WATER
☐ DEIONIZED WATER
☐ HEXANE
☐ NITRIC ACID

WATER LEVEL EQUIPMENT USED
☐ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ KECK INTERFACE PROBE

NUMBER OF FILTERS USED

## ANALYTICAL PARAMETERS

| | METHOD NUMBER | FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | SAMPLE COLLECTED | SAMPLE BOTTLE ID NUMBERS |
|---|---|---|---|---|---|---|
| 6. CP9918061XX | 8260 | No | HCl | 40ml x 2 | | |
| 7. CP9918046XX (pumped dry twice) | | | | | | |
| 8. CP9918035XX (pumped dry 4 times) 1 gal. to be volume is 0.4gal.) | | | | | | |

NOTES

| | time | PID | BZ |
|---|---|---|---|
| 6. CP9918061XX | 1740 | 0.0 | 0.0 |
| 7. CP9918046XX | 1605 | 0.0 | 0.0 |
| 8 CP9918035XX | 1845 | | 0.0 |

SIGNATURE: [signature]
RECEIVED BY:

# PLATING FACILITY INTERIOR DECONTAMINATION – RISK-BASED CLEANUP GOALS

TABLE
RISK ASSESSMENT
RESIDENTIAL EXPOSURE
INDOOR BUILDING SURFACE DECONTAMINATION
BUILDING B-2 CHROMIUM PLATING FACILITY
STRATFORD ARMY ENGINE PLANT, STRATFORD, CONNECTICUT

| CPC | EPC | CANCER RISK | | | | HAZARD INDEX | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (mg/m2) | Oral | Inhalation* | Dermal | Total | Oral-Chr | Oral-Sub | Inh-Chr | Inh-Sub | Der-Chr | Der-Sub | Total |
| Chromium, Total | 210,000 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.20E+01 | 1.92E+01 | | | 1.95E+00 | 2.24E+00 | **33.11** |
| Chromium VI | 0.53 | 0.00E+00 | 6.48E-06 | 0.00E+00 | 6.48E-06 | 1.01E-02 | 1.61E-02 | 3.18E-02 | 5.10E-02 | 3.69E-03 | 4.25E-03 | **0.11** |
| **Total** | | **0E+00** | **6E-06** | **0E+00** | **6.48E-06** | **1E+01** | | **3E-02** | | **2E+00** | | **33.23** |

* EPC is multiplied by a resuspension factor of 1E-05

Source: Risk calculations taken from *Revised Indoor Risk Assessment for Mixed Use Scenario, Chemical Decontamination of Indoor Building Surfaces, U.S. Army Research Laboratory, Watertown, Massachusetts* (ABB Environmental Services, Inc, July 1996) and updated by R.F. Weston in 1997 as part of the Indoor Remediation of Building Surfaces.

TABLE A-1
RISK ASSESSMENT
COMMERCIAL EXPOSURE
INDOOR BUILDING SURFACE DECONTAMINATION
BUILDING B-2 CHROMIUM PLATING FACILITY
STRATFORD ARMY ENGINE PLANT, STRATFORD, CONNECTICUT

| CPC | EPC | CANCER RISK | | | | HAZARD INDEX | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (mg/m2) | Oral | Inhalation* | Dermal | Total | Oral | Inhalation* | Dermal | Total |
| Chromium, Total | 210,000 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.05E-01 | | 7.78E-01 | 0.98 |
| Chromium VI | 0.53 | 0.00E+00 | 1.49E-06 | 0.00E+00 | 1.49E-06 | 1.73E-04 | 3.50E-03 | 1.47E-03 | 0.01 |
| Total | | 0E+00 | 1E-06 | 0E+00 | 1.49E-06 | 2E-01 | 3E-03 | 8E-01 | 0.99 |

* EPC is multiplied by a resuspension factor of 1E-05

Source: Risk calculations taken from *Revised Indoor Risk Assessment for Mixed Use Scenario, Chemical Decontamination of Indoor Building Surfaces, U.S. Army Research Laboratory, Watertown, Massachusetts* (ABB Environmental Services, Inc, July 1996) and updated by R.F. Weston in 1997 as part of the Indoor Remediation of Building Surfaces.

TABLE A-2
RISK ASSESSMENT
RENOVATION WORKER EXPOSURE
INDOOR BUILDING SURFACE DECONTAMINATION
BUILDING B-2 CHROMIUM PLATING FACILITY
STRATFORD ARMY ENGINE PLANT, STRATFORD, CONNECTICUT

| CPC | EPC | CANCER RISK | | | | HAZARD INDEX | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (mg/m2) | Oral | Inhalation* | Dermal | Total | Oral | Inhalation* | Dermal | Total |
| Chromium, Total | 210,000 | 0.0E+00 | 0.0E+00 | 0.0E+00 | **0.00E+00** | 2.1E-01 | | 0.0E+00 | **0.21** |
| Chromium VI | 0.53 | 0.0E+00 | 1.2E-06 | 0.0E+00 | **1.24E-06** | 1.7E-04 | 7.3E-02 | 0.0E+00 | **0.07** |
| **Total** | | **0E+00** | **1E-06** | **0E+00** | **1.24E-06** | **2E-01** | **7E-02** | **0E+00** | **0.28** |

* EPC is multiplied by a resuspension factor of 1E-04

Source: Risk calculations taken from *Revised Indoor Risk Assessment for Mixed Use Scenario, Chemical Decontamination of Indoor Building Surfaces, U.S. Army Research Laboratory, Watertown, Massachusetts* (ABB Environmental Services, Inc, July 1996) and updated by R.F. Weston in 1997 as part of the Indoor Remediation of Building Surfaces.

| Population | ORAL | | | INHALATION | | | DERMAL | | |
|---|---|---|---|---|---|---|---|---|---|
| | Subchronic | Chronic | Lifetime | Subchronic | Chronic | Lifetime | Subchronic | Chronic | Lifetime |
| Commercial | 0.00E+00 | 9.78E-07 | 3.49E-07 | 0.00E+00 | 1.88E-02 | 6.71E-03 | 0.00E+00 | 9.26E-05 | 3.31E-05 |
| Renovation | 9.78E-07 | 0.00E+00 | 1.40E-08 | 3.91E-02 | 0.00E+00 | 5.59E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Resident | 9.13E-05 | 5.71E-05 | 9.72E-06 | 2.74E-01 | 1.71E-01 | 2.91E-02 | 2.67E-04 | 2.32E-04 | 9.19E-05 |

| Chemical | Oral Subchronic RfD | Oral Chronic RfD | Oral Slope Factor | Inhalation Subchronic RfD | Inhalation Chronic RfD | Inhalation Slope Factor | Dermal Subchronic RfD | Dermal Chronic RfD | Dermal Slope Factor | noncancer ABS-s | cancer ABS-c |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dinitrotoluene | 2.0E-03 | 2.0E-03 | 6.8E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.0E-03 | 2.0E-03 | 6.8E-01 | 1.3E-01 | 1.3E-01 |
| 2-Methylnaphthalene | 4.0E-02 | 4.0E-02 | 0.0E+00 | 2.0E-02 | 2.0E-02 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 0.0E+00 | 1.0E-01 | 1.0E-01 |
| 4,4'-DDD | 0.0E+00 | 0.0E+00 | 2.4E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.4E-01 | 2.0E-01 | 2.0E-01 |
| 4,4'-DDE | 0.0E+00 | 0.0E+00 | 3.4E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.4E-01 | 2.0E-01 | 2.0E-01 |
| 4,4'-DDT | 5.0E-04 | 5.0E-04 | 3.4E-01 | 0.0E+00 | 0.0E+00 | 3.4E-01 | 5.0E-04 | 5.0E-04 | 3.4E-01 | 2.0E-01 | 2.0E-01 |
| Acenaphthene | 6.0E-01 | 6.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 6.0E-01 | 6.0E-02 | 0.0E+00 | 2.0E-01 | 2.0E-01 |
| Acenaphthylene | 4.0E-02 | 4.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 0.0E+00 | 1.8E-01 | 1.8E-01 |
| Aldrin | 3.0E-05 | 3.0E-05 | 1.7E+01 | 0.0E+00 | 0.0E+00 | 1.7E+01 | 3.0E-05 | 3.0E-05 | 1.7E+01 | 2.5E-01 | 2.5E-01 |
| Aluminum | 1.0E+00 | 1.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.0E+00 | 1.0E-01 | 0.0E+00 | 1.0E-03 | 1.0E-03 |
| Anthracene | 3.0E+00 | 3.0E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.0E+00 | 3.0E-01 | 0.0E+00 | 2.9E-01 | 2.9E-01 |
| Antimony | 4.0E-04 | 4.0E-04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-04 | 4.0E-04 | 0.0E+00 | 1.0E-01 | 1.0E-01 |
| Arsenic | 3.0E-04 | 3.0E-04 | 1.5E+00 | 8.6E-07 | 8.6E-07 | 1.5E+01 | 3.0E-04 | 3.0E-04 | 1.8E+00 | 3.0E-02 | 3.0E-02 |
| Barium | 7.0E-02 | 7.0E-02 | 0.0E+00 | 1.4E-03 | 1.4E-04 | 0.0E+00 | 7.0E-02 | 7.0E-02 | 0.0E+00 | 1.0E-03 | 1.0E-03 |
| Benzo(a)Anthracene | 4.0E-02 | 4.0E-02 | 7.3E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 7.3E-01 | 1.8E-01 | 2.0E-01 |
| Benzo(a)Pyrene | 4.0E-02 | 4.0E-02 | 7.3E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 7.3E+00 | 1.8E-01 | 2.0E-01 |
| Benzo(b)Fluoranthene | 4.0E-02 | 4.0E-02 | 7.3E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 7.3E-01 | 1.8E-01 | 2.0E-01 |
| Benzo(g,h,i)perylene | 4.0E-02 | 4.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 0.0E+00 | 1.8E-01 | 1.8E-01 |
| Benzo(k)Fluoranthene | 4.0E-02 | 4.0E-02 | 7.3E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 7.3E-02 | 1.8E-01 | 1.0E-02 |
| Beryllium | 5.0E-03 | 5.0E-03 | 4.3E+00 | 2.9E-05 | 2.9E-05 | 8.4E+00 | 5.0E-03 | 5.0E-03 | 8.6E+02 | 3.0E-02 | 3.0E-02 |
| bis(2-Ethylhexyl)phthalate | 2.0E-02 | 2.0E-02 | 1.4E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.0E-02 | 2.0E-02 | 1.4E-02 | 2.0E-02 | 2.0E-02 |
| Butylbenzylphthalate | 2.0E+00 | 2.0E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.0E+00 | 2.0E-01 | 0.0E+00 | 2.5E-01 | 2.5E-01 |
| Cadmium | 5.0E-04 | 5.0E-04 | 0.0E+00 | 5.7E-06 | 5.7E-06 | 6.3E+00 | 5.0E-04 | 5.0E-04 | 0.0E+00 | 1.4E-01 | 1.4E-01 |
| Chromium VI | 3.0E-03 | 3.0E-03 | 0.0E+00 | 2.9E-05 | 2.9E-05 | 4.2E+01 | 3.0E-03 | 3.0E-03 | 0.0E+00 | 9.0E-02 | 9.0E-02 |
| Chromium, Total | 1.0E+00 | 1.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.0E+00 | 1.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 |
| Chrysene | 4.0E-02 | 4.0E-02 | 7.3E-03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 7.3E-03 | 1.8E-01 | 2.0E-01 |
| Cobalt | 6.0E-02 | 1.8E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 6.0E-03 | 1.8E-02 | 0.0E+00 | 1.0E-03 | 1.0E-03 |
| Cyanide | 2.0E-02 | 2.0E-02 | 0.0E+00 | 2.9E-04 | 2.0E-03 | 0.0E+00 | 2.0E-02 | 2.0E-02 | 0.0E+00 | 3.0E-01 | 3.0E-01 |
| Di-n-butylphthalate | 1.0E+00 | 1.0E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.0E+00 | 1.0E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| Di-n-octylphthalate | 2.0E-02 | 2.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.0E-02 | 2.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| Dibenz(a,h)Anthracene | 4.0E-02 | 4.0E-02 | 7.3E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 7.3E+00 | 8.0E-02 | 9.0E-02 |
| Dieldrin | 5.0E-05 | 5.0E-05 | 1.6E+01 | 0.0E+00 | 0.0E+00 | 1.6E+01 | 5.0E-05 | 5.0E-05 | 1.6E+01 | 2.5E-01 | 2.5E-01 |
| Diisopropylmethylphosphonate | 8.0E-02 | 8.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 8.0E-02 | 8.0E-02 | 0.0E+00 | 1.0E-01 | 1.0E-01 |
| 1,3-Dinitrobenzene | 1.0E-03 | 1.0E-04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.0E-03 | 1.0E-04 | 0.0E+00 | 1.0E-02 | 1.0E-02 |
| 2,4-Dinitrotoluene | 2.0E-03 | 2.0E-03 | 6.8E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.0E-03 | 2.0E-03 | 6.8E-01 | 1.3E-01 | 1.3E-01 |
| Endosulfan I | 6.0E-03 | 6.0E-03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 6.0E-03 | 6.0E-03 | 0.0E+00 | 1.0E-02 | 1.0E-02 |
| Endosulfan II | 6.0E-03 | 6.0E-03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 6.0E-03 | 6.0E-03 | 0.0E+00 | 1.0E-02 | 1.0E-02 |
| Endrin | 3.0E-04 | 3.0E-04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.0E-04 | 3.0E-04 | 0.0E+00 | 2.5E-01 | 2.5E-01 |
| Endrin Ketone | 3.0E-04 | 3.0E-04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.0E-04 | 3.0E-04 | 0.0E+00 | 1.0E-02 | 1.0E-02 |
| Fluoranthene | 4.0E-01 | 4.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-01 | 4.0E-02 | 0.0E+00 | 2.0E-01 | 2.0E-01 |
| Fluorene | 4.0E-01 | 4.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-01 | 4.0E-02 | 0.0E+00 | 2.0E-01 | 2.0E-01 |
| Heptachlor | 5.0E-04 | 5.0E-04 | 4.5E+00 | 2.0E-04 | 2.0E-04 | 4.5E+00 | 5.0E-04 | 5.0E-04 | 4.5E+00 | 2.0E-01 | 2.0E-01 |

| Chemical | Oral Subchronic RfD | Oral Chronic RfD | Oral Slope Factor | Inhalation Subchronic RfD | Inhalation Chronic RfD | Inhalation Slope Factor | Dermal Subchronic RfD | Dermal Chronic RfD | Dermal Slope Factor | noncancer ABS-s | cancer ABS-c |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Heptachlor Epoxide | 1.3E-05 | 1.3E-05 | 9.1E+00 | 0.0E+00 | 0.0E+00 | 9.1E+00 | 1.3E-05 | 1.3E-05 | 9.1E+00 | 2.0E-01 | 2.0E-01 |
| Indeno(1,2,3-c,d)Pyrene | 4.0E-02 | 4.0E-02 | 7.3E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 7.3E-01 | 1.8E-01 | 2.0E-01 |
| Isodrin | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| Lindane | 3.0E-03 | 3.0E-04 | 1.3E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.0E-03 | 3.0E-04 | 1.3E+00 | 1.0E-02 | 1.0E-02 |
| Mercury | 3.0E-04 | 3.0E-04 | 0.0E+00 | 8.6E-05 | 8.6E-05 | 0.0E+00 | 3.0E-04 | 3.0E-04 | 0.0E+00 | 5.0E-02 | 5.0E-02 |
| Methoxychlor | 5.0E-03 | 5.0E-03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 5.0E-03 | 5.0E-03 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| Naphthalene | 4.0E-02 | 4.0E-02 | 0.0E+00 | 2.0E-02 | 2.0E-02 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 0.0E+00 | 1.0E-01 | 1.0E-01 |
| Nickel | 2.0E-02 | 2.0E-02 | 0.0E+00 | 2.9E-04 | 2.9E-04 | 8.4E-01 | 2.0E-02 | 2.0E-02 | 0.0E+00 | 3.5E-01 | 3.5E-01 |
| Nitrite/Nitrate | 1.6E+00 | 1.6E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.6E+00 | 1.6E+00 | 0.0E+00 | 1.0E-03 | 1.0E-03 |
| 2-Nitrotoluene | 1.0E-01 | 1.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.0E-01 | 1.0E-02 | 0.0E+00 | 1.0E-02 | 1.0E-02 |
| 3-Nitrotoluene | 1.0E-01 | 1.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.0E-01 | 1.0E-02 | 0.0E+00 | 1.0E-02 | 1.0E-02 |
| 4-Nitrotoluene | 1.0E-01 | 1.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.0E-01 | 1.0E-02 | 0.0E+00 | 1.0E-02 | 1.0E-02 |
| Aroclor-1254 | 2.0E-05 | 2.0E-05 | 2.0E+00 | 5.7E-06 | 5.7E-06 | 2.0E+00 | 2.0E-05 | 2.0E-05 | 2.0E+00 | 6.0E-02 | 6.0E-02 |
| Aroclor-1260 | 2.0E-05 | 2.0E-05 | 2.0E+00 | 5.7E-06 | 5.7E-06 | 2.0E+00 | 2.0E-05 | 2.0E-05 | 2.0E+00 | 6.0E-02 | 6.0E-02 |
| Phenanthrene | 4.0E-02 | 4.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-02 | 4.0E-02 | 0.0E+00 | 1.8E-01 | 1.8E-01 |
| Pyrene | 3.0E-01 | 3.0E-02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.0E-01 | 3.0E-02 | 0.0E+00 | 2.0E-01 | 2.0E-01 |
| RDX | 3.0E-03 | 3.0E-03 | 1.1E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.0E-03 | 3.0E-03 | 1.1E-01 | 1.0E-02 | 1.0E-02 |
| Silver | 5.0E-03 | 5.0E-03 | 0.0E+00 | 4.6E-05 | 4.0E-05 | 0.0E+00 | 5.0E-03 | 5.0E-03 | 0.0E+00 | 2.5E-01 | 2.5E-01 |
| Thiodiglycol | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| Vanadium | 7.0E-03 | 7.0E-03 | 0.0E+00 | 2.9E-04 | 2.9E-04 | 0.0E+00 | 7.0E-03 | 7.0E-03 | 0.0E+00 | 1.0E-03 | 1.0E-03 |

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-15-98 Time: 1200 Sampling Crew: G. Rustad / E. Romano (CH)

Wipe Sample ID: WS-001-B-XX

Sample Type (floor, wall, composite, etc.): Beam Composite

Sample Area (100cm², 200 cm², etc.): 400 $cm^2$

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Certain areas had rust on beams and were dusty.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | — |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | — |
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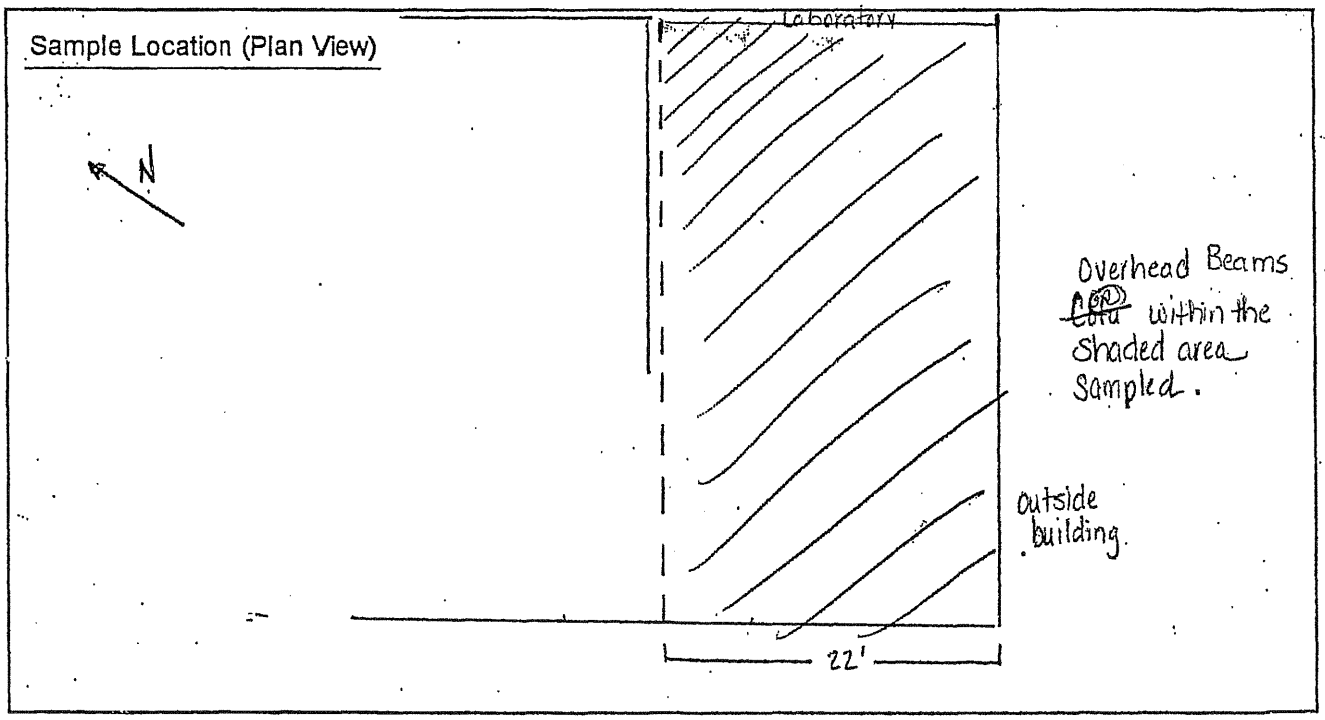
Sample Location (Plan View)



# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-15-98 Time: 1345 Sampling Crew: G. Rustad / F. Romano (CH)

Wipe Sample ID: WS-002-B-XX

Sample Type (floor, wall, composite, etc.): Beam Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Areas with rust and dust were present

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | — |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | — |
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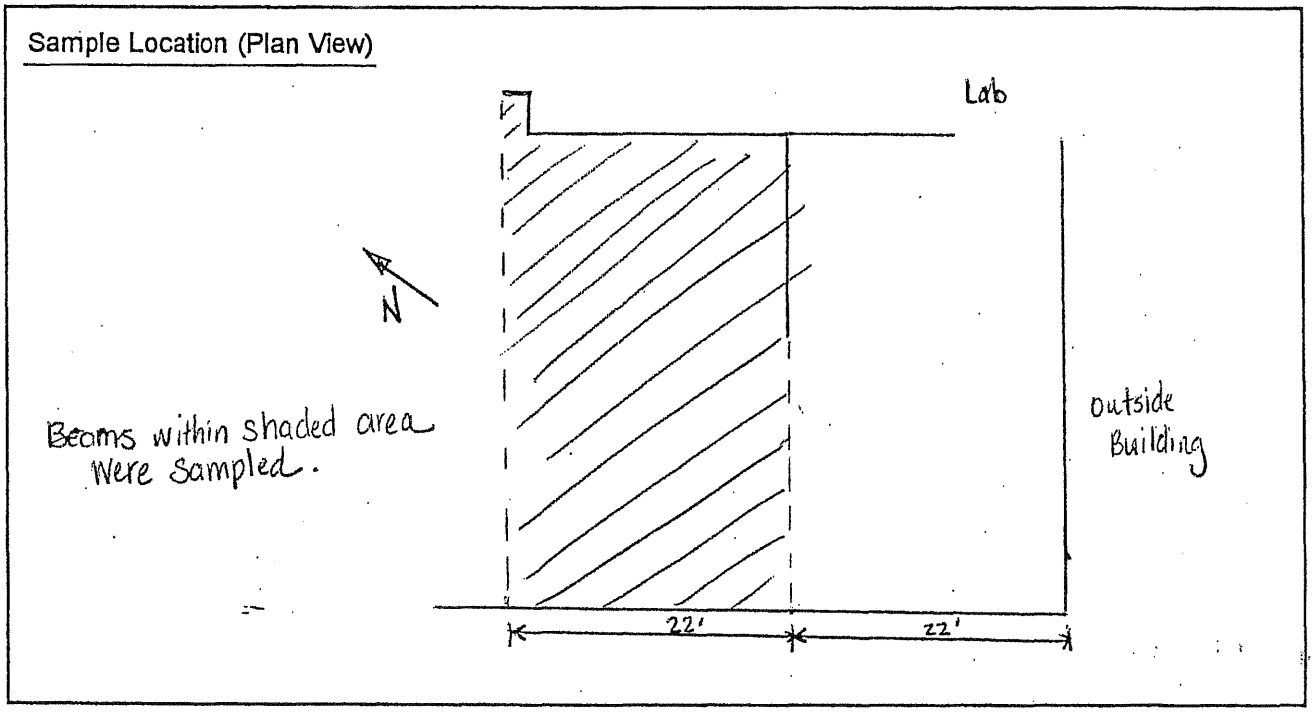
Sample Location (Plan View)



# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-15-98 Time: ~~GP~~ 1400 Sampling Crew: G. Rustad / F. Romano (CH)

Wipe Sample ID: WS-003-B-XX

Sample Type (floor, wall, composite, etc.): Beam Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Areas with rust and dust were present

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | — |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | — |
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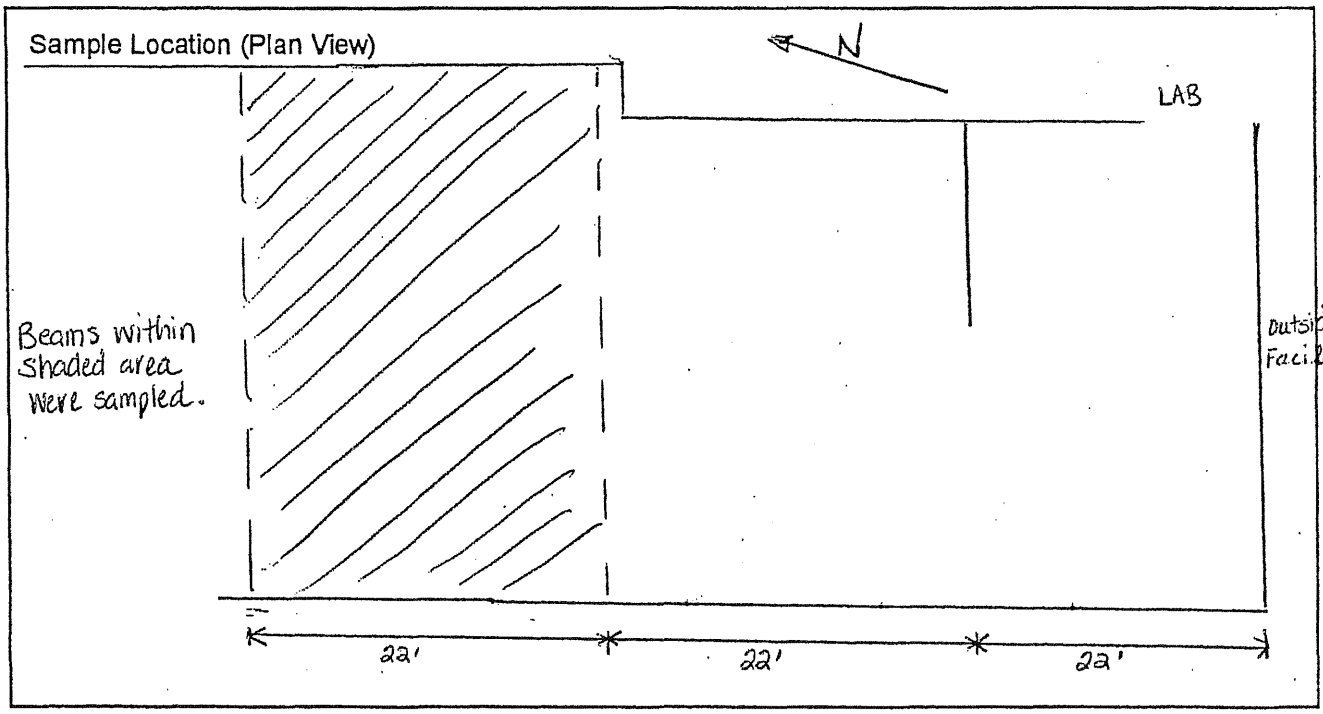
Sample Location (Plan View)



# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-15-98 Time: 1410 Sampling Crew: G. Rustad / F. Romano (CH)

Wipe Sample ID: WS-004-B-XX, WS-004-B-XD, WS-004-B-MS, WS-004-B-MD

Sample Type (floor, wall, composite, etc.): Beam Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Areas of rust and dust were present

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | — |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | — |
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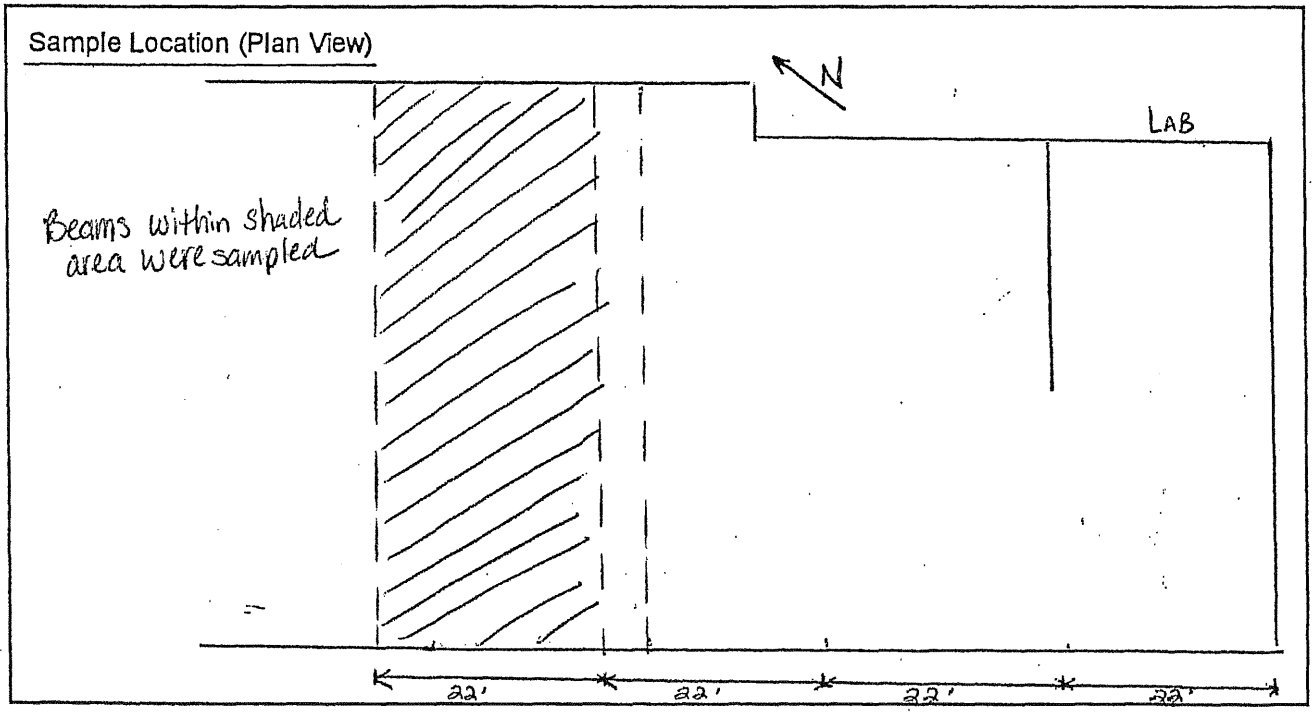
Sample Location (Plan View)



Dust

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-16-98 Time: 0930 Sampling Crew: G. Rustad

~~Wipe~~ Dust Sample ID: CD-98-03

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): N/A

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Yellow staining in roughened areas of concrete

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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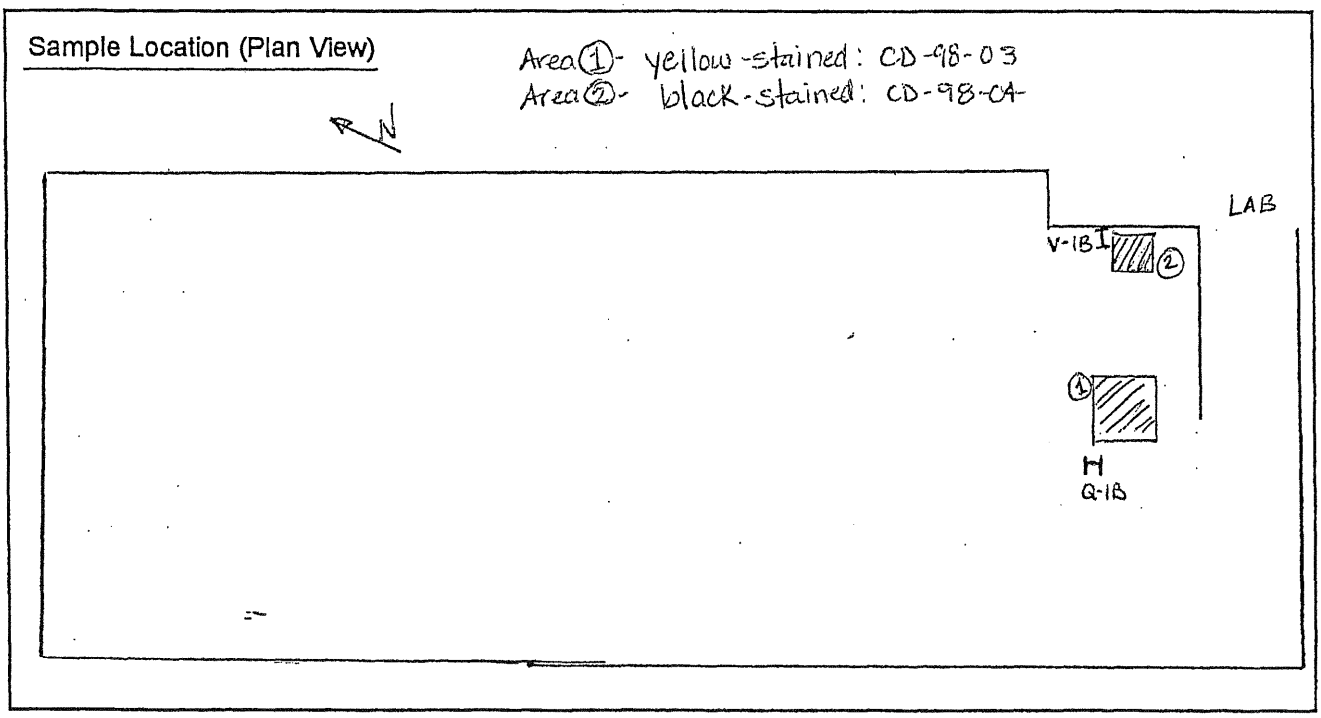
Sample Location (Plan View)

Area ① - yellow-stained: CD-98-03
Area ② - black-stained: CD-98-04



DUST

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-16-98 Time: 0950 Sampling Crew: G. Rustad

~~Wipe~~ Dust Sample ID: CD-98-04

Sample Type (floor, wall, composite, etc.): floor composite

Sample Area (100cm², 200 cm², etc.): N/A

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Black staining on concrete surface

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
| [ ] | | | |
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Sample Location (Plan View)

See Sample Record for CD-98-03.

W9810021

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-16-98 Time: 1250 Sampling Crew: G. Rustad / F. Romano (CH)

Wipe Sample ID: WS-005-B-XX

Sample Type (floor, wall, composite, etc.): Beam composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Areas of rust and dust were present.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | — |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | — |
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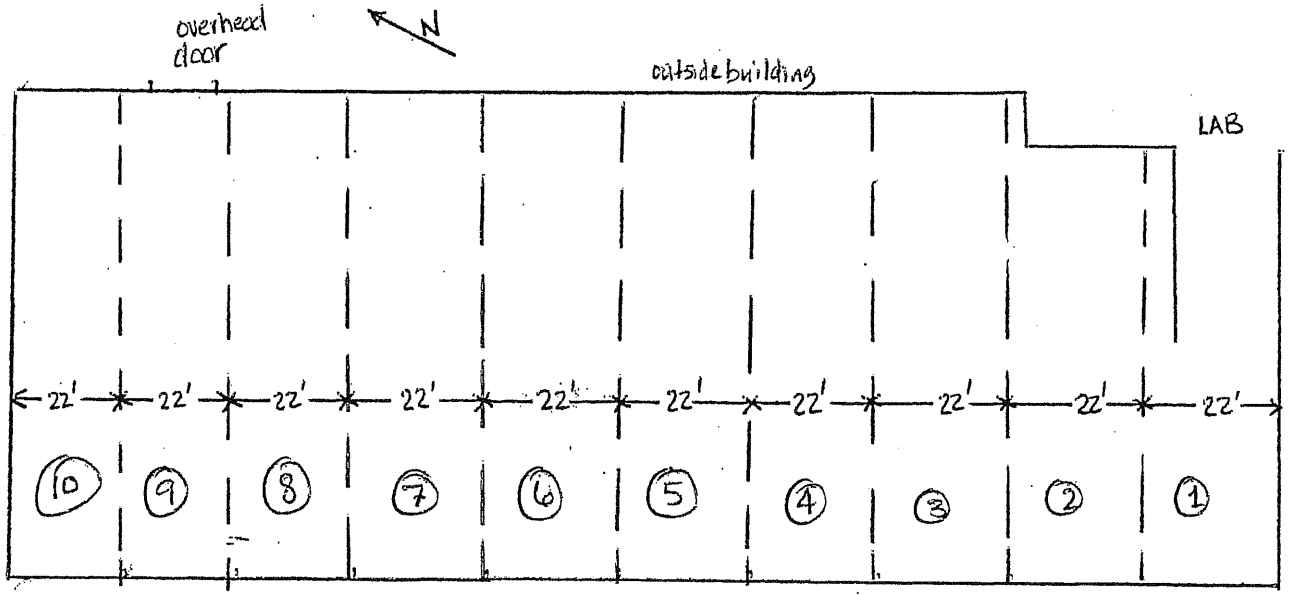
Sample Location (Plan View)




Sample from beams in area (5)

W9810021

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-16-98 Time: 1305 Sampling Crew: G. Rustad / F. Romano (CH)

Wipe Sample ID: WS-006-B-XX

Sample Type (floor, wall, composite, etc.): ~~@ Floor~~ @ Beam Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Areas of rust and dust were present.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | — |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | — |
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Sample Location (Plan View)

See Sample Record for WP-005-B-XX

Sample for this record from the beams in area ⑥

W9810021

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-16-98 Time: 1320 Sampling Crew: G. Rustad / F. Romano (CH)

Wipe Sample ID: WS-007-B-XX

Sample Type (floor, wall, composite, etc.): Beam composite

Sample Area (100cm², 200 cm², etc.): 400 $cm^2$

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Areas of dust and rust present.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | – |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | – |
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Sample Location (Plan View)

See Sample Record for WP-005-B-XX

Sample for this record collected from the beams in Area (7)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-16-98 Time: 1335 Sampling Crew: G. Rustad / F. Romano (CH)

Wipe Sample ID: WS-008-B-XX

Sample Type (floor, wall, composite, etc.): Beam Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Areas of rust and brown/black dust were present.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

- See Sample Record for Sample WS-005-B-XX
- Sample for this record was collected from beams in Area (8)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-16-98 Time: 1350 Sampling Crew: G. Rustad / F. Romano (C.H)

Wipe Sample ID: WS-009-B-XX

Sample Type (floor, wall, composite, etc.): Beam composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Areas of rust and brown/black dust. Also an area near the overhead door contained a yellow stain. This area was wiped.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

See the Sample Record for Sample WS-~~009~~ 005 (GC)-B-XX

Sample for this record was collected from beams in Area (9)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-16-98 Time: 1410 Sampling Crew: G. Rustad / F. Romano (CH)

Wipe Sample ID: WS-010-B-XX

Sample Type (floor, wall, composite, etc.): Beam composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Areas of rust and brown/black dust were present.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | — |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | — |
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Sample Location (Plan View)

- See the Sample Record for WS-005-B-XX.
- Sample for this record was collected from beams in Area (10)

W9810021

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 0830 Sampling Crew: G. Rustad

Wipe Sample ID: WS-029-W-XX; WS-029-W-XD; WS-029-W-MS; WS-029-W-MD

Sample Type (floor, wall, composite, etc.): Wall Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete with Paint

Sample Observations (color/staining, odor, surface condition, etc.): 3 locations painted, 1 bare concrete.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [x] Total Chromium | 6010 | Distilled Water | — |
| [x] Hexavalent Chromium | 7195/7196 | Distilled Water | — |
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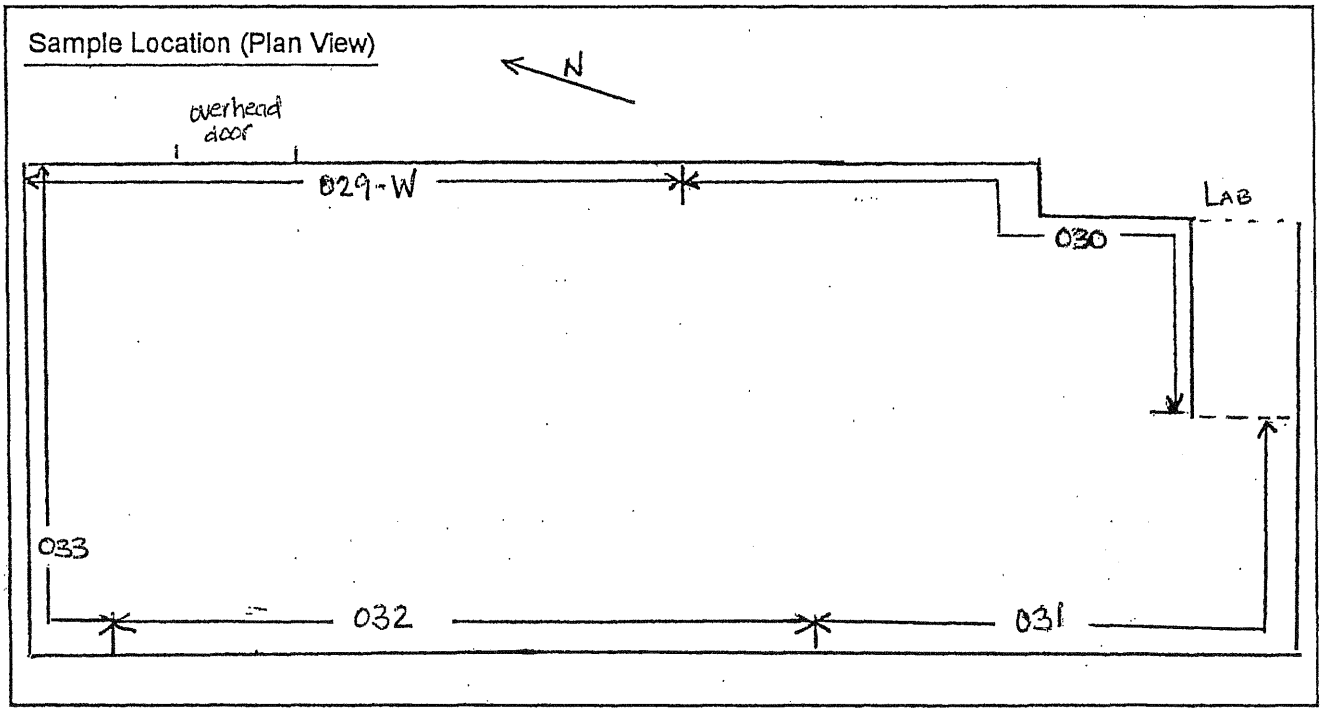
Sample Location (Plan View)



# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 0855 Sampling Crew: G. Rustad

Wipe Sample ID: WS-030-W-XX

Sample Type (floor, wall, composite, etc.): Wall Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete with Paint

Sample Observations (color/staining, odor, surface condition, etc.): Painted concrete & brick at 3 location - 1 brick with no paint

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

- See Sample Record for WS-029-W
- Sample for this Record collected from the wall area for 030.

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 0910 Sampling Crew: G. Rustad

Wipe Sample ID: WS-031-W-XX

Sample Type (floor, wall, composite, etc.): Wall Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete with Paint

Sample Observations (color/staining, odor, surface condition, etc.): Some brown dirt present - painted surfaces - brick and concrete

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [x] Total Chromium | 6010 | Distilled Water | |
| [x] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

- See Sample Record for WS-029-W
- Sample for this Record collected from the wall area for 031.

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 0935 Sampling Crew: G. Rustad

Wipe Sample ID: WS-032-W-XX

Sample Type (floor, wall, composite, etc.): Wall Composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Concrete with Paint

Sample Observations (color/staining, odor, surface condition, etc.): Painted concrete, some brown dirt in areas

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

- See Sample Record for WS-029-W
- Sample for this Record collected from the wall area for 032

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 0950 Sampling Crew: G. Rustad

Wipe Sample ID: WS-033-W-XX

Sample Type (floor, wall, composite, etc.): Wall Composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Concrete with Paint

Sample Observations (color/staining, odor, surface condition, etc.): Painted and unpainted. Last sampling area contained yellow staining on the concrete

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

- See Sample Record for WS-029-W.
- Sample for this Record collected from the wall area for 033.

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1100 Sampling Crew: G. Rustad

Wipe Sample ID: WS-011-F-XX; WS-011-F-XD; WS-011-F-MS; WS-011-F-MD

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Yellow staining in several pitted and roughened areas on the floor

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

W9810021

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1115 Sampling Crew: G. Rustad

Wipe Sample ID: WS-012-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): 1 location contained black staining on a raised surface off the concrete.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1130 Sampling Crew: G. Rustad

Wipe Sample ID: WS-013-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete (x3) and Steel (x1)

Sample Observations (color/staining, odor, surface condition, etc.): 1 sample located on the cover for a sump.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | – |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | – |
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Sample Location (Plan View)

W9810021

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1345 Sampling Crew: G. Rustad

Wipe Sample ID: WS-014-F-XX; WS-014-F-XD; WS-014-F-MS; WS-014-F-MD

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Some areas of light yellow staining.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1400 Sampling Crew: G. Rustad

Wipe Sample ID: WS-015-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Areas of heavy yellow staining in & rough concrete and near sumps.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1415 Sampling Crew: G. Rustad

Wipe Sample ID: WS-016-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Areas of black staining on concrete surface (smooth)

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [x] Total Chromium | 6010 | Distilled Water | |
| [x] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1430 Sampling Crew: G. Rustad

Wipe Sample ID: WS-017-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Broken concrete near lift, no staining.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1440 Sampling Crew: G. Rustad

Wipe Sample ID: WS-018-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): 1 (4) location near hydraulic lift. Also sampled a black stain on smooth concrete.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1450 Sampling Crew: G. Rustad

Wipe Sample ID: WS-019-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 $cm^2$

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): One location near water dripping from a pipe near the cyanide room. Another from greenish-blue-stained concrete.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1500 Sampling Crew: G. Rustad

Wipe Sample ID: WS-020-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): No unusual areas.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-18-98 Time: 0945 Sampling Crew: G. Rustad

Wipe Sample ID: WS-021-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): No unusual areas

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [x] Total Chromium | 6010 | Distilled Water | |
| [x] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

W9810021

# WIPE SAMPLE RECORD

Site: Stratford Army Engine Plant  Building No.: Building B-2 Chromium Plating Facility

Date: 12-18-98  Time: 0952  Sampling Crew: G. Rustad

Wipe Sample ID: WS-022-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): No unusual areas

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

W9810021

# WIPE SAMPLE RECORD

Site: Stratford Army Engine Plant Building No.: Building B-2 Chromium Plating Facility

Date: 12-18-98 Time: 1000 Sampling Crew: G. Rustad

Wipe Sample ID: WS-023-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Area of greenish staining near I-beam. Also black staining near wall (northeastern).

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

W9810021

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-18-98 Time: 1007 Sampling Crew: G. Rustad

Wipe Sample ID: WS-024-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Areas of black staining (minimal)

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-18-98 Time: 1015 Sampling Crew: G. Rustad

Wipe Sample ID: WS-025-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): No unusual areas

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-18-98 Time: 1030 Sampling Crew: G. Rustad

Wipe Sample ID: WS-026-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Area of yellow staining on raised concrete in southernmost corner

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
| [ ] | | | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-18-98 Time: 1037 Sampling Crew: G. Rustad

Wipe Sample ID: WS - 027 - F - XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Yellow staining on - broken concrete

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
| [ ] | | | |
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Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-18-98 Time: 1045 Sampling Crew: G. Rustad

Wipe Sample ID: WS- 028-F-XX

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Yellow and black staining. Sample stain that is heaviest.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
| [ ] | | | |
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Sample Location (Plan View)

DUST

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1615 Sampling Crew: G. Rustad

Dust
~~Wipe~~ Sample ID: CD-98-05

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): N/A

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Black staining and surface coating in this area. Area near one end of proposed trench.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

W9810021

DUST

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1630 Sampling Crew: G. Rustad

~~Wipe~~ Dust Sample ID: CD-98-06

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): N/A

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Areas of heavy black coating on concrete overlying yellow staining. Dust is yellow in color. In area of proposed extraction well.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

W9810021

DUST

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-17-98 Time: 1730 Sampling Crew: G. Rustad

~~Wipe~~ Dust Sample ID: CD-98-07

Sample Type (floor, wall, composite, etc.): Floor Composite

Sample Area (100cm², 200 cm², etc.): N/A

Surface Material: Concrete

Sample Observations (color/staining, odor, surface condition, etc.): Yellow staining in raised area of concrete. Proposed area for trench.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | |
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Sample Location (Plan View)

W9810021

# WIPE SAMPLE RECORD

Site: Stratford Army Engine Plant  Building No.: Building B-2 Chromium Plating Facility

Date: 12-18-98  Time: 1100  Sampling Crew: G. Rustad

Wipe Sample ID: WS-035-C-XX

Sample Type (floor, wall, composite, etc.): Column Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Black stains and rust on columns

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | – |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | – |
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Sample Location (Plan View)

From columns in lines 4B and 5 (northern end of building)

–

W9810021

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-18-98 Time: 1110 Sampling Crew: G. Rustad

Wipe Sample ID: WS-036-C-XX

Sample Type (floor, wall, composite, etc.): Column Composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Rust on painted columns.

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | - |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | - |
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Sample Location (Plan View)

From columns in lines 4A and 3B

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-18-98 Time: 1120 Sampling Crew: G. Rustad

Wipe Sample ID: WS-037-C-xx

Sample Type (floor, wall, composite, etc.): Column Composite

Sample Area (100cm², 200 cm², etc.): 400cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Black staining on painted columns

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | - |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | - |
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Sample Location (Plan View)

From columns in lines 3A and 3

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: 12-18-98 Time: 1130 Sampling Crew: G. Rustad

Wipe Sample ID: WS-038-C-XX

Sample Type (floor, wall, composite, etc.): Column Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Rust on columns. Moderate black staining

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [x] Total Chromium | 6010 | Distilled Water | - |
| [x] Hexavalent Chromium | 7195/7196 | Distilled Water | - |
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Sample Location (Plan View)

From columns in lines 2B and 2A

# WIPE SAMPLE RECORD

Site: Stratford Army Engine Plant  Building No.: Building B-2 Chromium Plating Facility

Date: 12-18-98  Time: 1140  Sampling Crew: G. Rustad

Wipe Sample ID: WS-039-C-XX

Sample Type (floor, wall, composite, etc.): Column Composite

Sample Area (100cm², 200 cm², etc.): 400 cm²

Surface Material: Steel

Sample Observations (color/staining, odor, surface condition, etc.): Rust on columns and paint on one column

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [X] Total Chromium | 6010 | Distilled Water | – |
| [X] Hexavalent Chromium | 7195/7196 | Distilled Water | – |
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Sample Location (Plan View)

From columns in line 1B and South

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# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: _____ Time: _____ Sampling Crew: _____

Wipe Sample ID: _____

Sample Type (floor, wall, composite, etc.): _____

Sample Area (100cm², 200 cm², etc.): _____

Surface Material: _____

Sample Observations (color/staining, odor, surface condition, etc.): _____

_____

_____

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [ ] Total Chromium | 6010 | Distilled Water | _____ |
| [ ] Hexavalent Chromium | 7195/7196 | Distilled Water | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |

Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: _____ Time: _____ Sampling Crew: _____

Wipe Sample ID: _____

Sample Type (floor, wall, composite, etc.): _____

Sample Area (100cm², 200 cm², etc.): _____

Surface Material: _____

Sample Observations (color/staining, odor, surface condition, etc.): _____

_____

_____

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [ ] Total Chromium | 6010 | Distilled Water | _____ |
| [ ] Hexavalent Chromium | 7195/7196 | Distilled Water | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |

Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: _____ Time: _____ Sampling Crew: _____

Wipe Sample ID: _____

Sample Type (floor, wall, composite, etc.): _____

Sample Area (100cm², 200 cm², etc.): _____

Surface Material: _____

Sample Observations (color/staining, odor, surface condition, etc.): _____

_____

_____

| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [ ] Total Chromium | 6010 | Distilled Water | _____ |
| [ ] Hexavalent Chromium | 7195/7196 | Distilled Water | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |

Sample Location (Plan View)

# WIPE SAMPLE RECORD

Site: **Stratford Army Engine Plant** Building No.: **Building B-2 Chromium Plating Facility**

Date: _____ Time: _____ Sampling Crew: _____

Wipe Sample ID: _____

Sample Type (floor, wall, composite, etc.): _____

Sample Area (100cm², 200 cm², etc.): _____

Surface Material: _____

Sample Observations (color/staining, odor, surface condition, etc.): _____

_____

_____

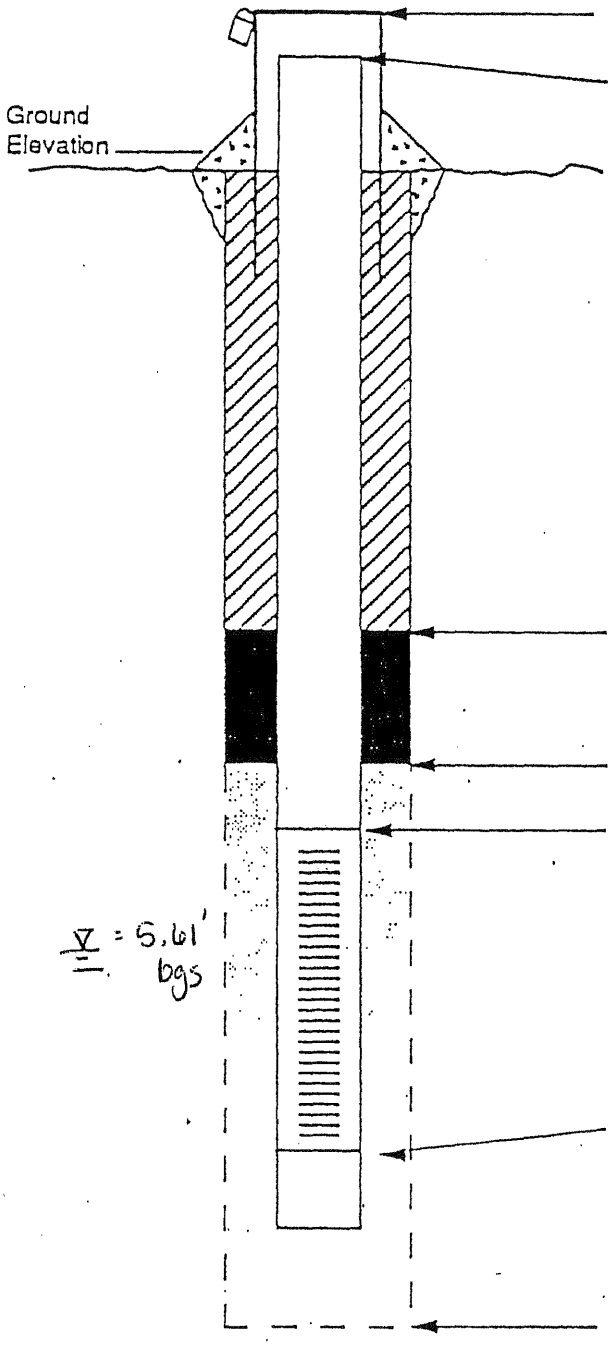
| Analytical Parameters: | Method Number: | Wetting Solution: | Sample Reference No.: |
|---|---|---|---|
| [ ] Total Chromium | 6010 | Distilled Water | _____ |
| [ ] Hexavalent Chromium | 7195/7196 | Distilled Water | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |
| [ ] _____ | _____ | _____ | _____ |

Sample Location (Plan View)

# MONITORING WELL AND PIEZOMETER CONSTRUCTION DIAGRAMS

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome (SP-99-07) Driller P. Craine
Project No. 2842-00 Boring No. MWCR-99-01 Drilling Method Terraprobe
Date Installed 1-8-99 Development Method
Field Geologist G. Rustad




Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 0.5 feet
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 1.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 3.5 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 slot - 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/Fine Sand

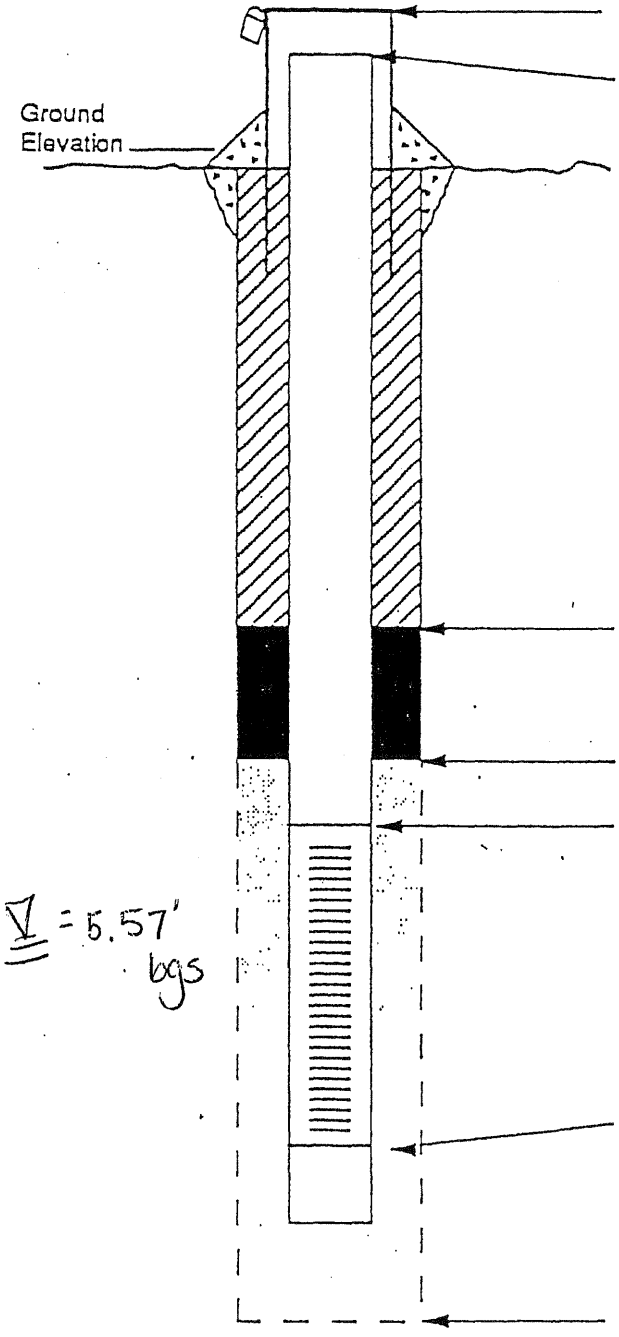
Elevation of Bottom of Screen:
Depth of Bottom of Screen: 8.5 feet
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 8.5 feet

Hach Kit Test (6'-8'): Total Cr = 0.3 mg/L, Hex Cr = 0 mg/L

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome (SP-99-09) Driller P. Craine
Project No. 02842-00 Boring No. MWCR-99-02 Drilling Method Terraprobe
Date Installed 1-9-99 Development Method
Field Geologist G. Rustad




Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A
Diameter of Borehole: 2 1/8 inch
Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC
Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 1.0 foot
Type of Seal:

Elevation of Top of Sand:
Depth of Top of Sand: 1.5 feet
Elevation of Top of Screen:
Depth of Top of Screen: 3.30 feet

Type of Screen: PVC SCH 40
Slot Size x Length: 10 Slot - 5 feet
ID of Screen: 1 inch
Type of Sandpack: Cave-in / Fine Sand

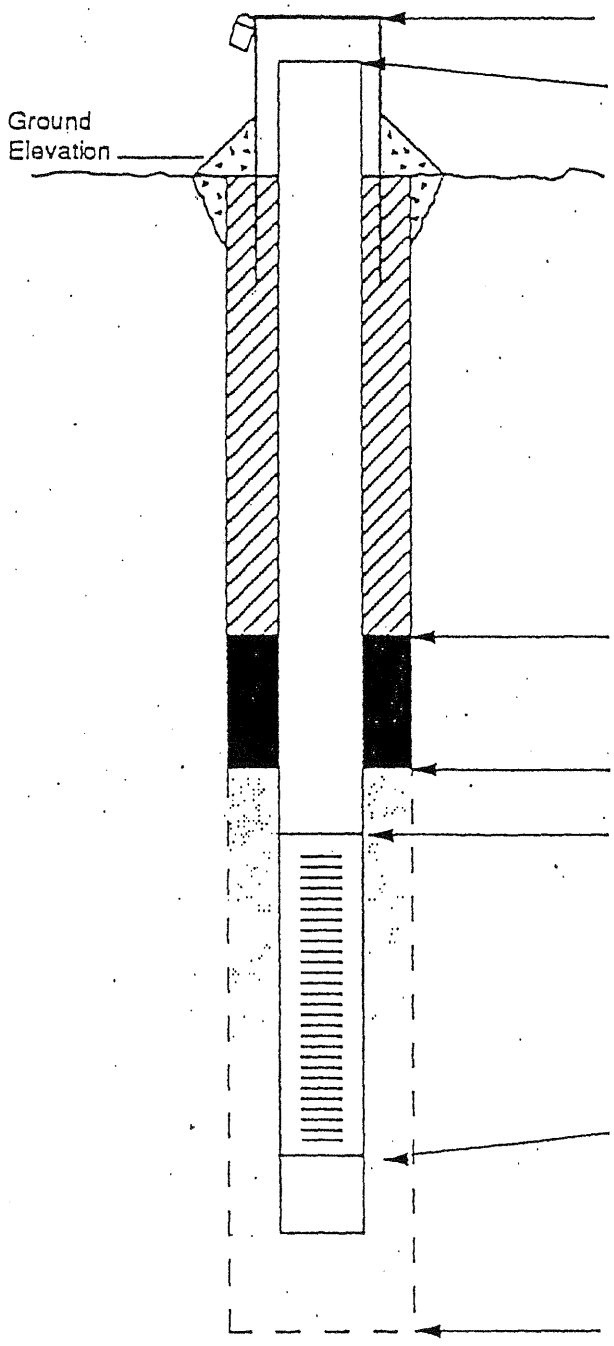
Elevation of Bottom of Screen:
Depth of Bottom of Screen: 8.30 feet
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 8.30 feet

Hach Kit Test (6'-8'): Total Cr = 0.15 mg/L, Hex Cr = 0 mg/L

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP chrome
Project No. 02842-00
Boring No. PZ-99-04I
Date Installed 2-10-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terraprobe
Development Method




Elevation of Top of Surface Casing:
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:

Diameter of Borehole:

Riser Pipe ID: 1 INCH
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: CEMENT

Elevation of Top of Seal:
Depth of Top of Seal: 2 FEET bgs
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand:
Depth of Top of Sand: 14 FEET
Elevation of Top of Screen:
Depth of Top of Screen: 30

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010 INCH X 5 FEET
ID of Screen: 1 INCH

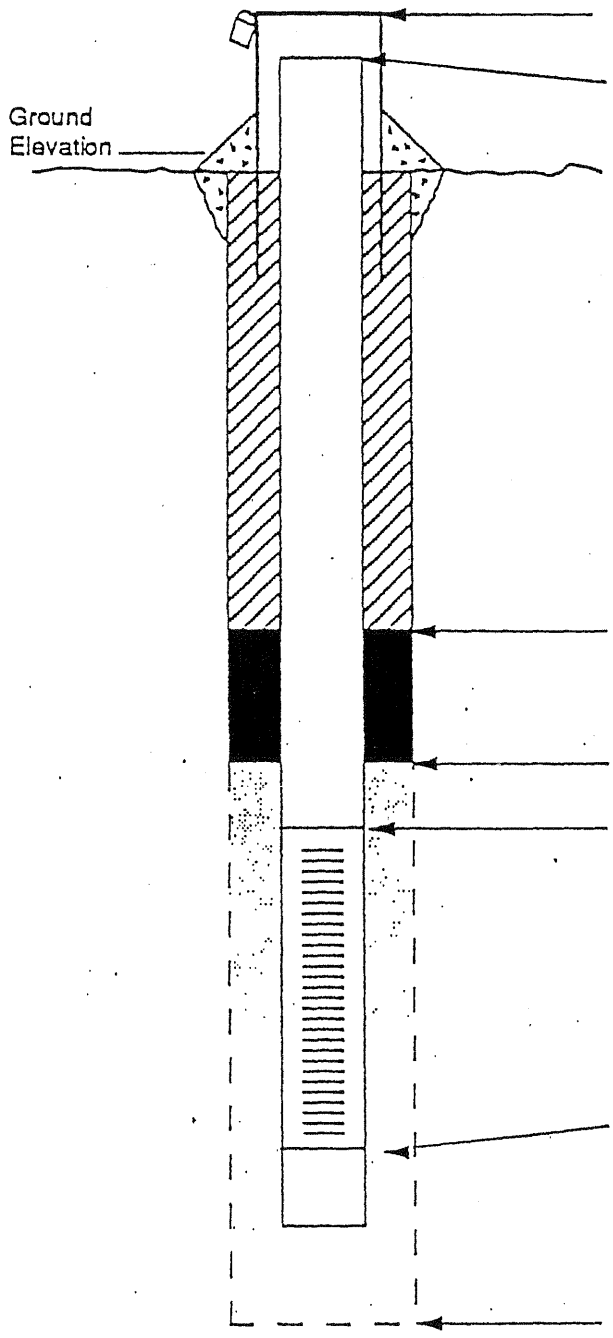
Type of Sandpack: CAVE-IN

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 35
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 35.1

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-99-12I
Date Installed 2-10-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terraprobe
Development Method _____




Elevation of Top of Surface Casing: _____
Stick-up of Casing Above Ground Surface: _____
Elevation of Top of Riser Pipe: _____
Type of Surface Seal: _____
Type of Surface Casing: _____

ID of Surface Casing: _____

Diameter of Borehole: _____

Riser Pipe ID: 1 INCH
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Cement

Elevation of Top of Seal: _____
Depth of Top of Seal: 2.0 feet bgs
Type of Seal: Bentonite chips

Elevation of Top of Sand: _____
Depth of Top of Sand: 12.0 feet bgs
Elevation of Top of Screen: _____
Depth of Top of Screen: 16.15 feet bgs

Type of Screen: SCH 40 PVC
Slot Size x Length: _____
ID of Screen: 1 INCH

Type of Sandpack: CAVE-IN

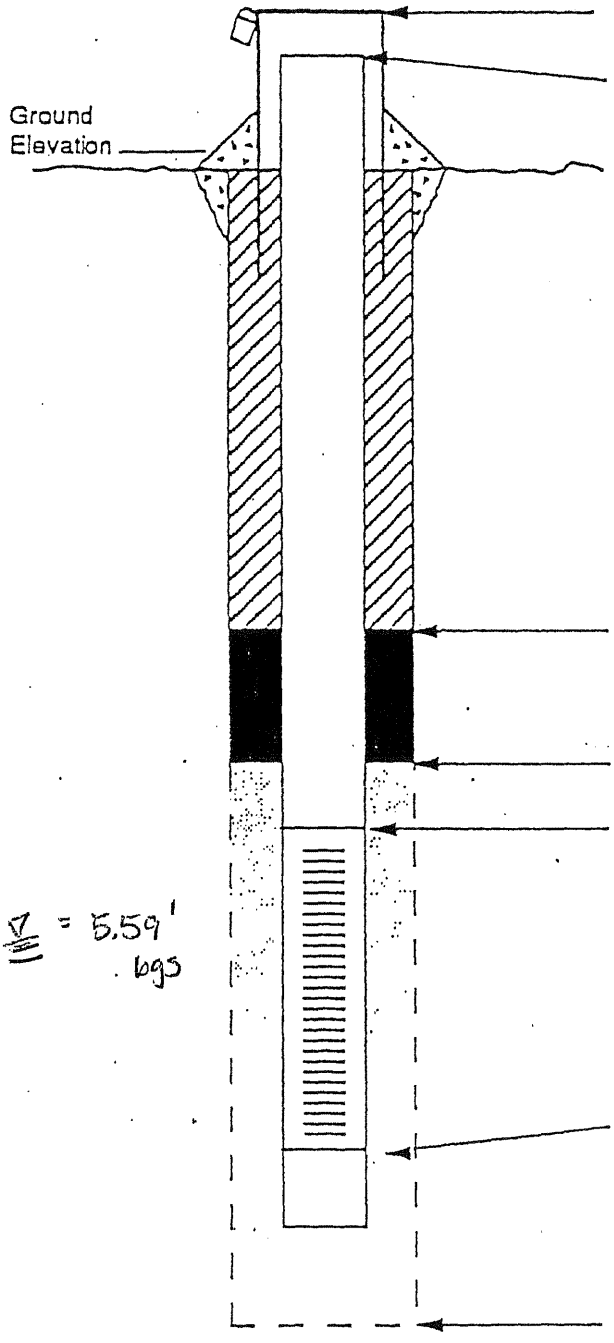
Elevation of Bottom of Screen: _____
Depth of Bottom of Screen: 21.15 feet bgs
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole: ~~21.15 ft~~ (a)
Depth of Bottom of Borehole: 21.15 feet bgs

(6) 21500

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 2842-00
Boring No. PZ-PILOT-01
Date Installed 1-10-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terra-probe
Development Method




Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe: _____
Type of Surface Seal: _____
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal: _____
Depth of Top of Seal: 0.5 foot
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand: _____
Depth of Top of Sand: 1.0 foot
Elevation of Top of Screen: _____
Depth of Top of Screen: 2.20 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in / Fine Sand

Elevation of Bottom of Screen: _____
Depth of Bottom of Screen: 7.20 feet
Depth of Sediment Sump with Plug: NA

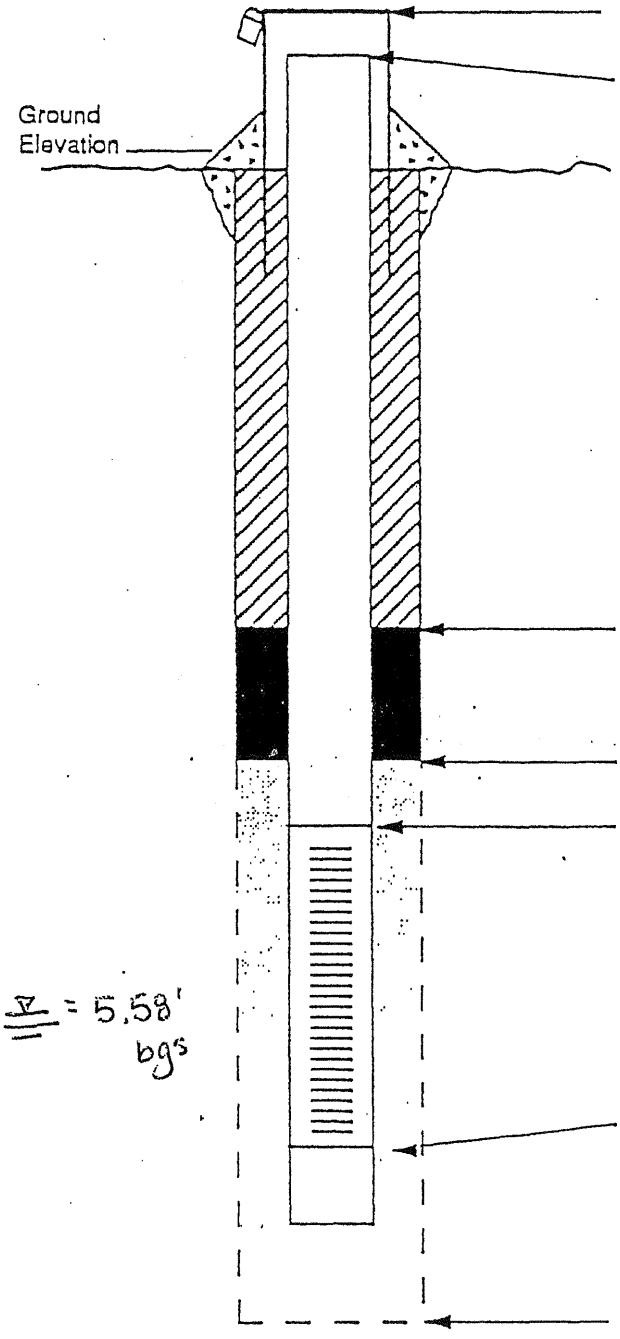
Elevation of Bottom of Borehole: _____
Depth of Bottom of Borehole: 7.20 feet

Hach Test (5'-7' bgs): Total Cr = 5 mg/L, Hex Cr = >1.5 mg/L

(c) 085120

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-PILOT-02
Date Installed 1-10-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terraprobe
Development Method




Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A
Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 0.5 foot
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 1.0 foot
Elevation of Top of Screen:
Depth of Top of Screen: 2.18 feet

Type of Screen: Sch 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/Fine Sand

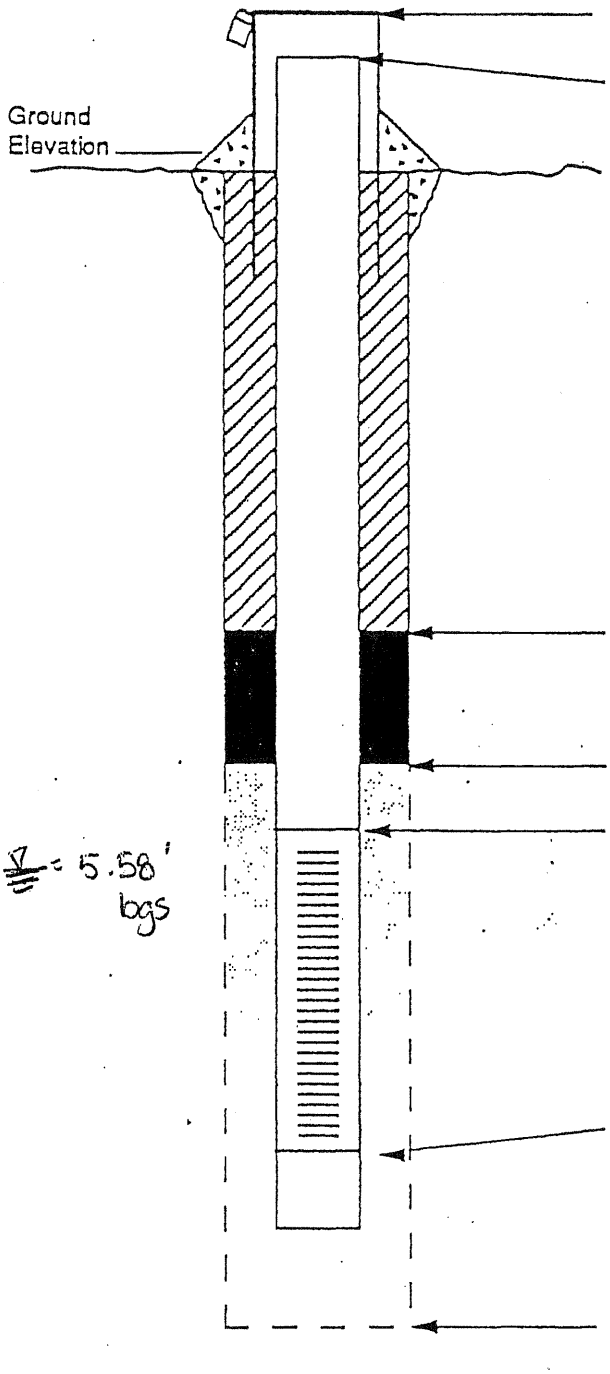
Elevation of Bottom of Screen:
Depth of Bottom of Screen: 7.18 feet
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 7.18 feet

Hach Kit Test (5'-7' bgs): Total Cr = 13.5 mg/L, Hex = >1.5 mg/L

# MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP Chrome
Project No.: 02842-00
Boring No.: PZ-PILOT-03
Date Installed: 1-10-99
Field Geologist: G. Rustad
Driller: P. Craine
Drilling Method: Terraprobe
Development Method:




Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 1.0 foot
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand:
Depth of Top of Sand: 2.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 2.80 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/Fine Sand

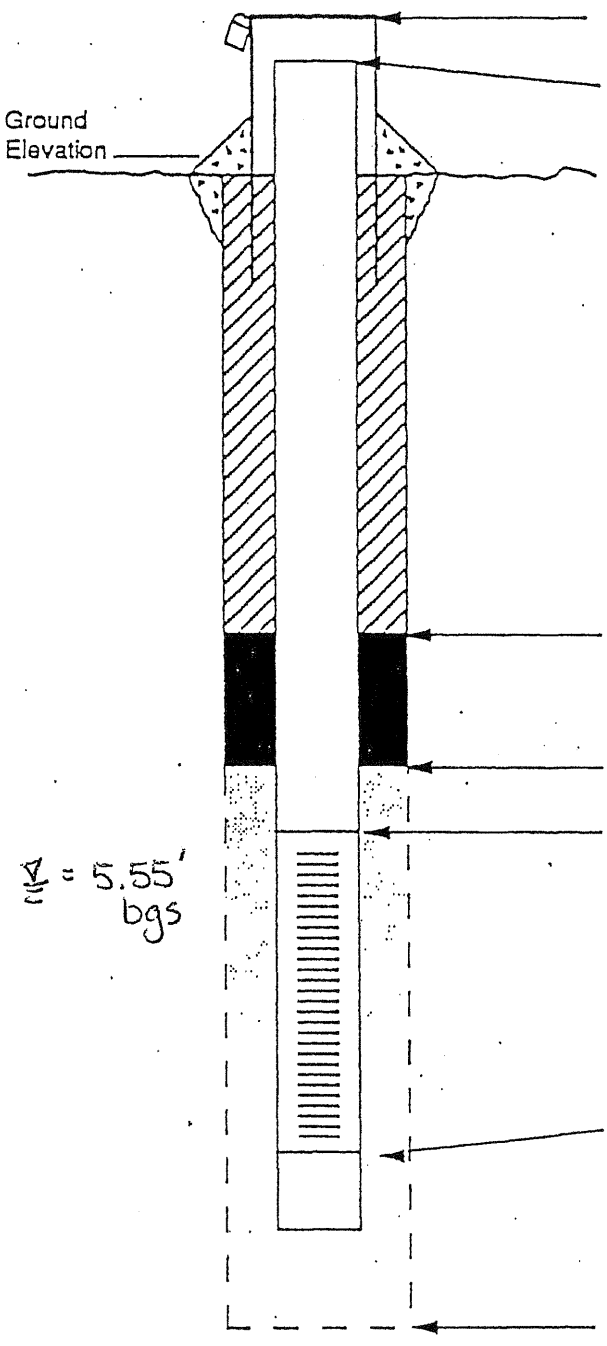
Elevation of Bottom of Screen:
Depth of Bottom of Screen: 7.80 feet
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 7.80 feet

Hach Kit Test (6'-8' bgs): Total Cr = 22.5 mg/L, Hex Cr = >1.5 mg/L

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-PILOT-04
Date Installed 1-9-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terraprobe
Development Method




Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe: _____
Type of Surface Seal: _____
Type of Surface Casing: N/A

ID of Surface Casing: N/A
Diameter of Borehole: 2 1/8 inch
Riser Pipe ID: 1 inch
Type of Riser Pipe: Sch 40 PVC
Type of Backfill: Portland Cement

Elevation of Top of Seal: _____
Depth of Top of Seal: 1.0 foot
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand: _____
Depth of Top of Sand: 2.0 feet
Elevation of Top of Screen: _____
Depth of Top of Screen: 4.45 feet
Type of Screen: Sch 40 PVC
Slot Size x Length: 10 slot x 5 feet
ID of Screen: 1 inch
Type of Sandpack: Cave-in/Fine Sand

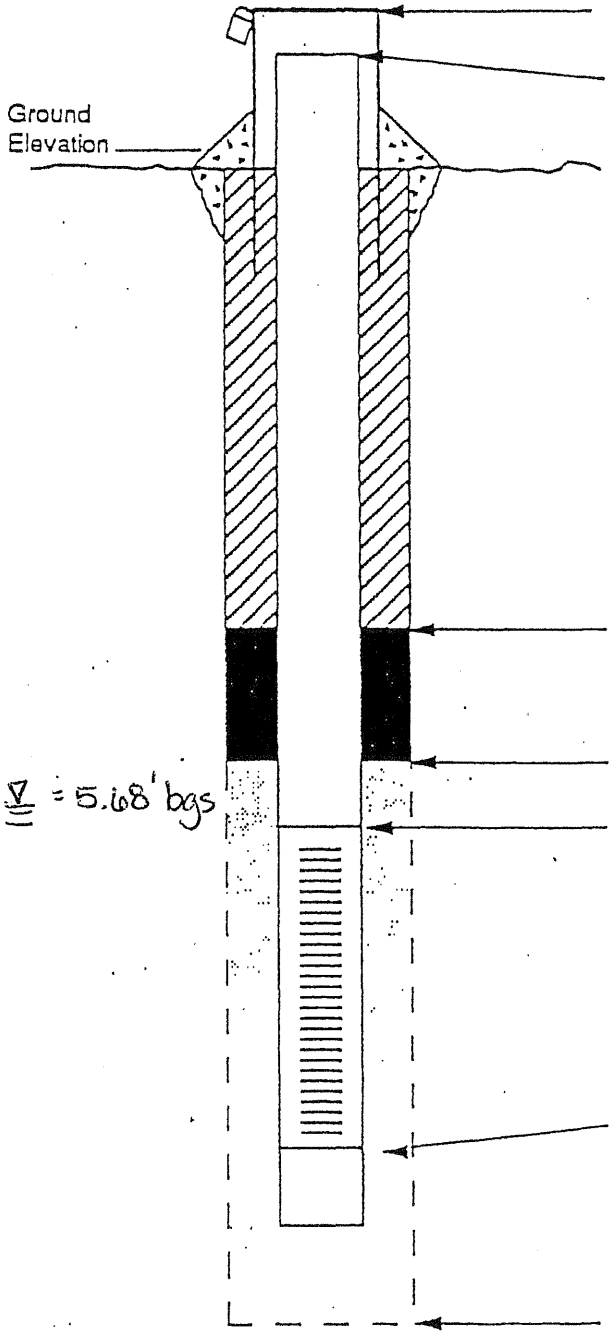
Elevation of Bottom of Screen: _____
Depth of Bottom of Screen: 9.45 feet
Depth of Sediment Sump with Plug: _____

Elevation of Bottom of Borehole: _____
Depth of Bottom of Borehole: 9.45 feet

Hach Test (7'-9' bgs): Total Cr = 13.5 mg/L, hex Cr = > 1.5 mg/L

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-PILOT-05
Date Installed 1-9-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terraprobe
Development Method




Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe: _____
Type of Surface Seal: _____
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal: _____
Depth of Top of Seal: 2.5 feet
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand: _____
Depth of Top of Sand: 3.5 feet
Elevation of Top of Screen: _____
Depth of Top of Screen: 6.23 feet

Type of Screen: Sch 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in / Fine Sand

Elevation of Bottom of Screen: _____
Depth of Bottom of Screen: 11.23 feet
Depth of Sediment Sump with Plug: N/A

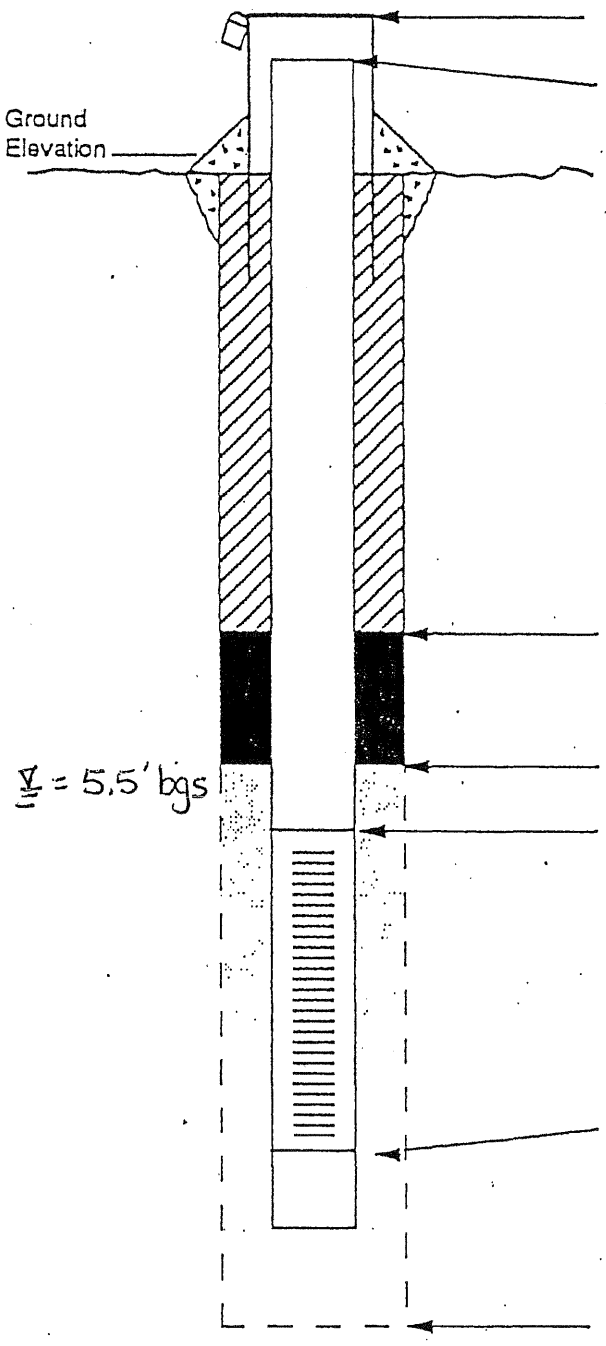
Elevation of Bottom of Borehole: _____
Depth of Bottom of Borehole: 11.23 feet

NOTES: Hach Test Kit: Total Cr = 18 mg/L, hex Cr = >1.5 mg/L
(7'-11' bgs)

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP/ Chrome
Project No. 2842-00
Boring No. PZ-PILOT-06
Date Installed 1-9-99
Field Geologist

Driller P. Craine
Drilling Method Terraprobe
Development Method




Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 4.5 feet
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand:
Depth of Top of Sand: 6.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 8.25 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/ Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 13.25 feet
Depth of Sediment Sump with Plug: N/A

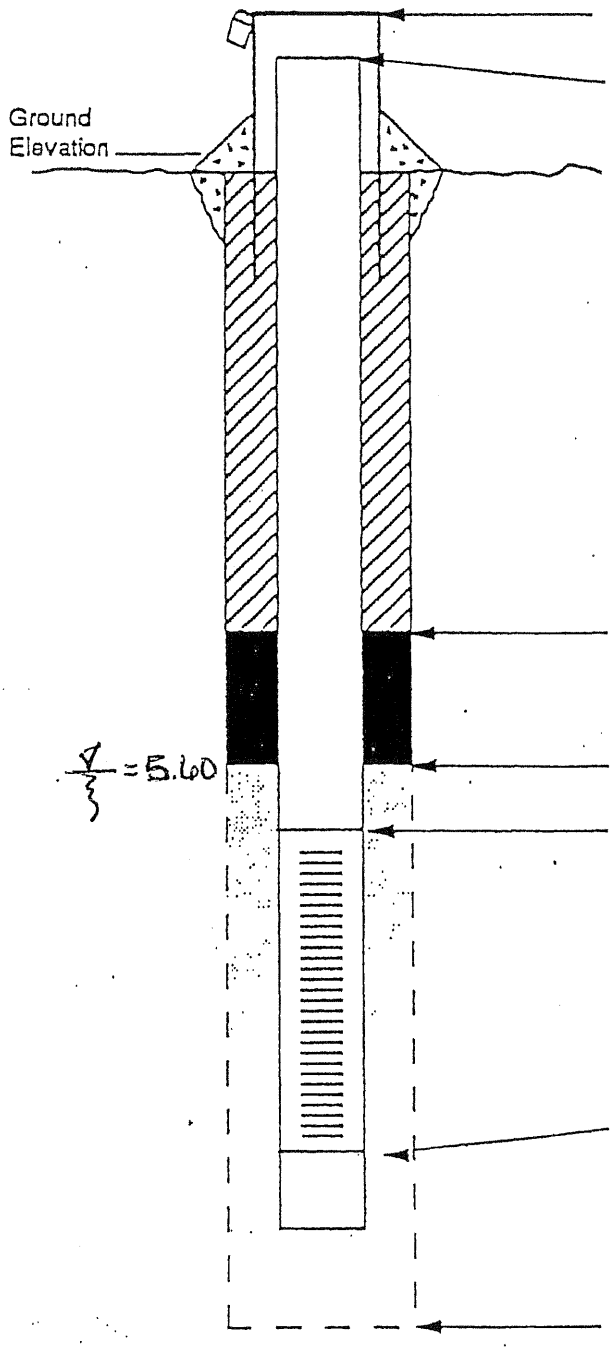
Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 13.25 feet

NOTES:
Hach Kit: 9'-13' bgs: Total Cr = 7 mg/L, Hex Cr = > 1.5 mg/L

See boring log for PZ-PILOT-06

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 2842-00
Boring No. PZ-PILOT-07
Date Installed 1-9-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terraprobe
Development Method




Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe: _____
Type of Surface Seal: _____
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal: _____
Depth of Top of Seal: 4.5 feet
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand: _____
Depth of Top of Sand: 5.5 feet bgs
Elevation of Top of Screen: _____
Depth of Top of Screen: 10.3 feet bgs

Type of Screen: Sch 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in

Elevation of Bottom of Screen: _____
Depth of Bottom of Screen: 15.3 feet
Depth of Sediment Sump with Plug: N/A

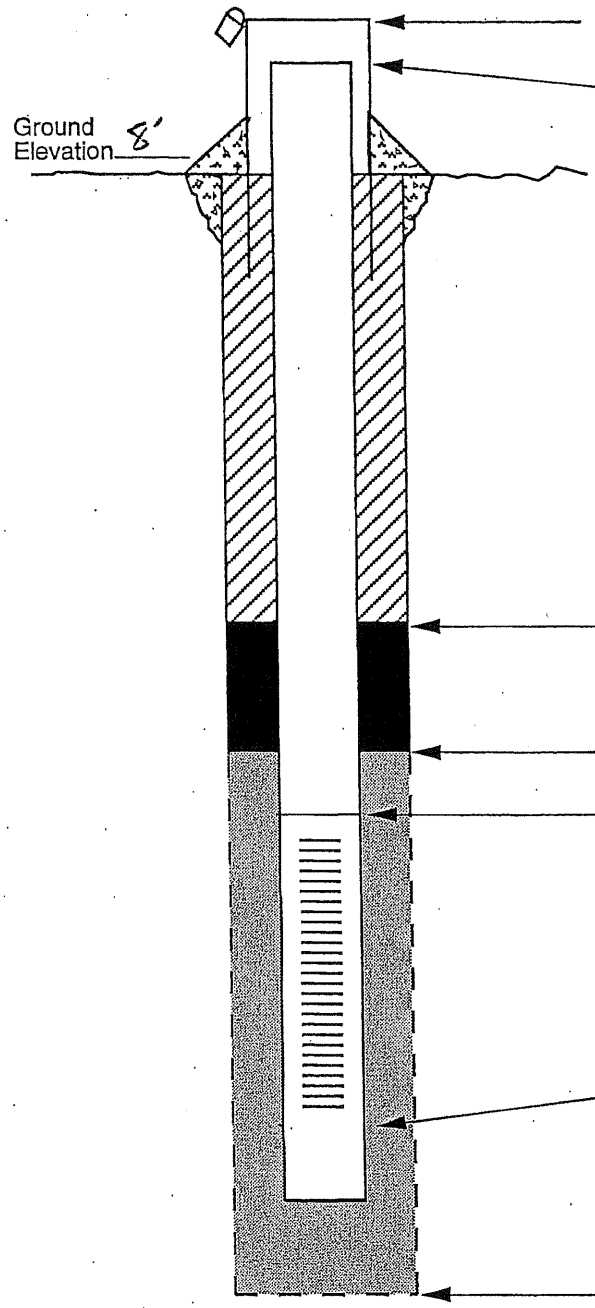
Elevation of Bottom of Borehole: _____
Depth of Bottom of Borehole: 15.3 feet

Notes:

Hach Kit: 10'-12'bgs : Total Chrome = 9 mg/L , Hex Chrome = >1.5 mg/L
17'-19'bgs : Total Chrome = 7 mg/L , Hex Chrome = >1.5 mg/L

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP | Study Area OU-2 | Driller NFE
Project No. 47254 | Boring No. EW-99-01 | Drilling Method HSA 6 5/8"
Date Installed 8-25-99 | Development Method Pump & Surge
Field Geologist Mike Lounsbury




Elevation of Top of Surface Casing: _____
Stick-up of Casing Above Ground Surface: _____
Elevation of Top of Riser Pipe: _____
Type of Surface Seal: _____
Type of Surface Casing: CONCRETE

ID of Surface Casing: 6"
Diameter of Borehole: ≈ 10"
Riser Pipe ID: 4"
Type of Riser Pipe: SCH 40 PVC
Type of Backfill: CONCRETE

Elevation of Top of Seal: 6
Depth of Top of Seal: 2'
Type of Seal: BENTONITE PELLETS

Elevation of Top of Sand: -6.5
Depth of Top of Sand: 14.5
Elevation of Top of Screen: -11.5
Depth of Top of Screen: 19.5

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.020" x 20'
ID of Screen: 4"

Type of Sandpack: SILICA SAND

Elevation of Bottom of Screen: -31.5
Depth of Bottom of Screen: 39.5
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -34'
Depth of Bottom of Borehole: ~~50~~ 42'

Harding Lawson Associates

9807021D(a) L 2

# MONITORING WELL CONSTRUCTION DIAGRAM

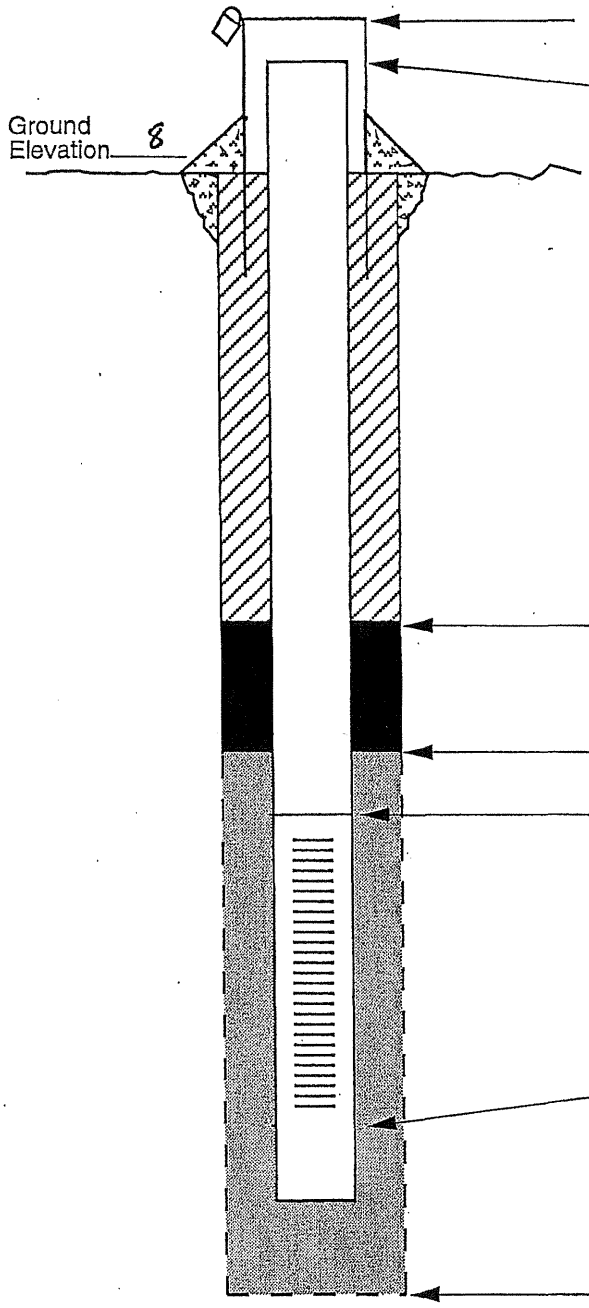
Project SAEP | Study Area 04-2 | Driller NFE

Project No. 47254 | Boring No. PZ-99-01A | Drilling Method HSA 6 5/8"

Date Installed 8-23-99 | Development Method PUMP & SURGE

Field Geologist MIKE LAWSBURY

1 OF 3 NESTED PIEZOMETERS




Elevation of Top of Surface Casing: 8.01

Stick-up of Casing Above Ground Surface: —

Elevation of Top of Riser Pipe: 7.78

Type of Surface Seal: CONCRETE

Type of Surface Casing: FLUSH ROAD BOX

ID of Surface Casing: 8"

Diameter of Borehole: ~10"

Riser Pipe ID: 1"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: —

Elevation of Top of Seal: 6.8

Depth of Top of Seal: 1.2'

Type of Seal: BENT. CHIPS

Elevation of Top of Sand: 5

Depth of Top of Sand: 3'

Elevation of Top of Screen: 4

Depth of Top of Screen: 4'

Type of Screen: Sch 40 PVC

Slot Size x Length: 0.010"X5'

ID of Screen: 1"

Type of Sandpack: SILICA #2 FROM 11' TO 3'

Elevation of Bottom of Screen: -1

Depth of Bottom of Screen: 9'

Depth of Sediment Sump with Plug: —

NATURAL CAVE TO 52'

FILTER SAND FROM 52' TO 58'

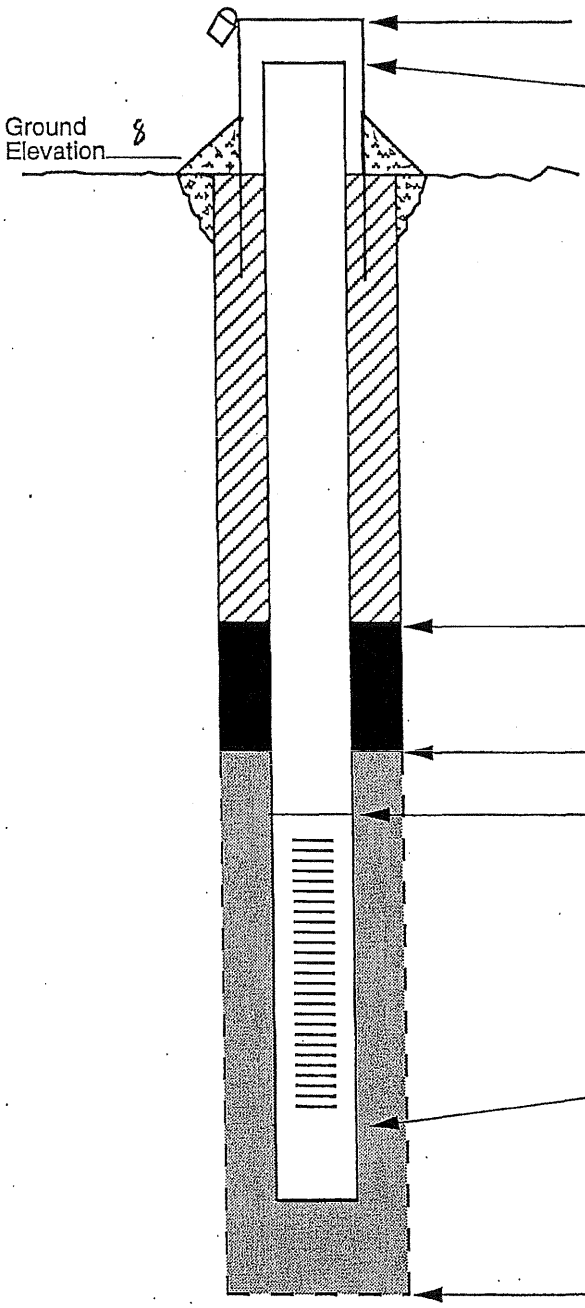
Elevation of Bottom of Borehole: -52

Depth of Bottom of Borehole: 60'

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP | Study Area OU-2 | Driller NFE
Project No. 47254 | Boring No. PZ-99-01B | Drilling Method HSA 6 5/8"
Date Installed 8-23-99 | Development Method PUMP & SURGE
Field Geologist MIKE LOUNSBURY

2 OF 3 NESTED PIEZOMETERS




Elevation of Top of Surface Casing: 8.01
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe: 7.83
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:
Diameter of Borehole:
Riser Pipe ID: SEE PZ-99-01A
Type of Riser Pipe:
Type of Backfill:

Elevation of Top of Seal: -3
Depth of Top of Seal: 11'
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -17
Depth of Top of Sand: 25'
Elevation of Top of Screen: -22
Depth of Top of Screen: 30'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

Type of Sandpack: SILICA #2

Elevation of Bottom of Screen: -27
Depth of Bottom of Screen: 35'
Depth of Sediment Sump with Plug:
DEPTH BOTTOM OF SAND 37'

Elevation of Bottom of Borehole: -52
Depth of Bottom of Borehole: 60'

Harding Lawson Associates

9807021D(a) L 2

# MONITORING WELL CONSTRUCTION DIAGRAM

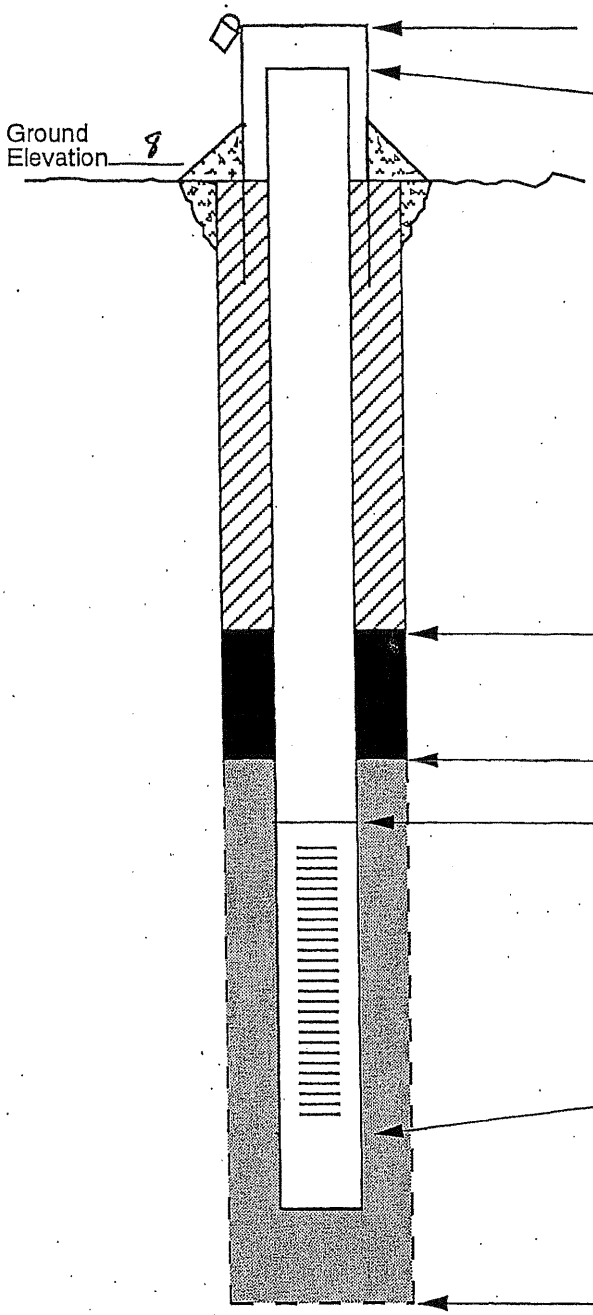
Project SAEP | Study Area 011-2 | Driller NFE

Project No. 47254 | Boring No. PZ-99-01C | Drilling Method HSA 6 5/8"

Date Installed 8-23-99 | Development Method PUMP & SURGE

Field Geologist M. LOUNSBURY

3 OF 3 NESTED PIEZOMETERS




Elevation of Top of Surface Casing: 8.01

Stick-up of Casing Above Ground Surface: —

Elevation of Top of Riser Pipe: 7.78

Type of Surface Seal: —

Type of Surface Casing: —

ID of Surface Casing: —

Diameter of Borehole: SEE PZ-99-01A & B

Riser Pipe ID: —

Type of Riser Pipe: —

Type of Backfill: —

Elevation of Top of Seal: -29

Depth of Top of Seal: 37'

Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -32

Depth of Top of Sand: 40'

Elevation of Top of Screen: -37

Depth of Top of Screen: 45'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 5'

ID of Screen: 1"

Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -42

Depth of Bottom of Screen: 50'

Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -52

Depth of Bottom of Borehole: 60'

NATURAL CAVE TO 52'

FILTER SAND FROM 52' TO 50'

# MONITORING WELL CONSTRUCTION DIAGRAM

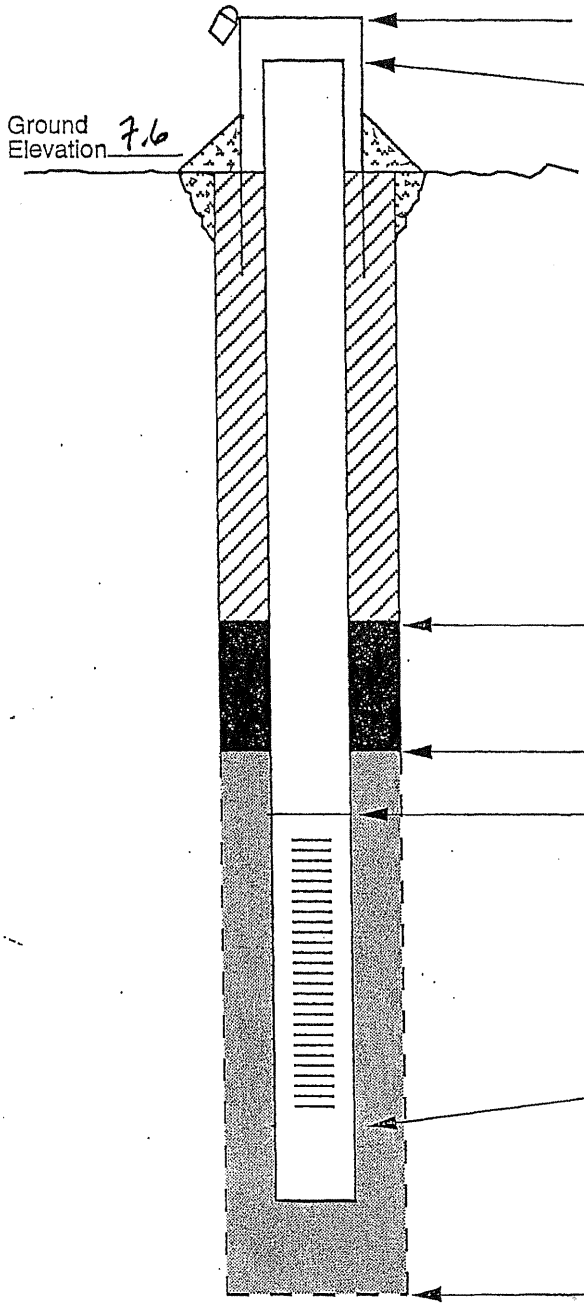
Project SAEP | Study Area OU-2 | Driller NFE

Project No. 47254 | Boring No. PZ-99-02-A | Drilling Method HSA - 6 5/8" ID

Date Installed 8-18-99 | Development Method PUMP & SURGE

Field Geologist Tom Longley

1 of 3 NESTED PIEZOMETERS




Elevation of Top of Surface Casing: 7.56

Stick-up of Casing Above Ground Surface: —

Elevation of Top of Riser Pipe: 7.36

Type of Surface Seal: CONCRETE

Type of Surface Casing: FLUSH ROAD BOX

ID of Surface Casing: 8"

Diameter of Borehole: ~ 10"

Riser Pipe ID: 1"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: —

Elevation of Top of Seal: 5.6

Depth of Top of Seal: 2'

Type of Seal: BENT. CHIPS

Elevation of Top of Sand: 4.6

Depth of Top of Sand: 3

Elevation of Top of Screen: 3.6

Depth of Top of Screen: 4

Type of Screen: Sch 40 PVC

Slot Size x Length: 0.010" X 5"

ID of Screen: 1" I.D.

Type of Sandpack: Silica #2 GRADE

Elevation of Bottom of Screen: -1.4

Depth of Bottom of Screen: 9'

Depth of Sediment Sump with Plug: —

Depth Bottom of Sand: 11'

Elevation of Bottom of Borehole: -44.4

Depth of Bottom of Borehole: 52

# MONITORING WELL CONSTRUCTION DIAGRAM

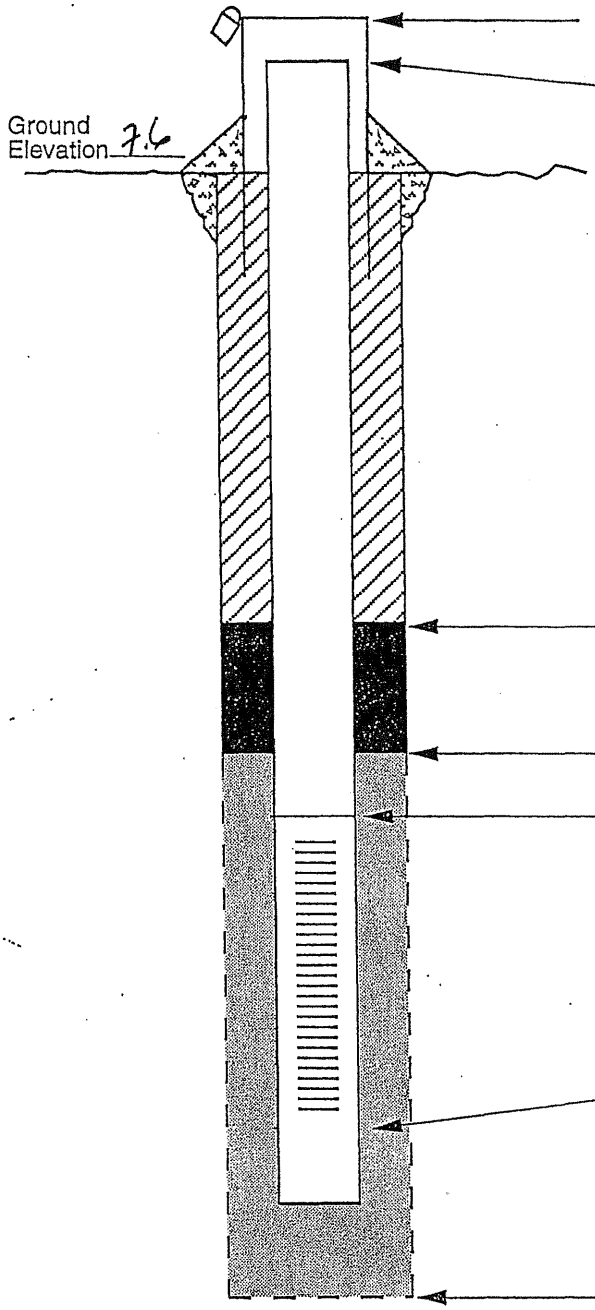
Project SAEP | Study Area OU-2 | Driller NFE

Project No. 47254 | Boring No. PZ-99-02-B | Drilling Method HSA - 6 5/8" ID

Date Installed 8-18-99 | Development Method PUMP & SURGE

Field Geologist Tom Longley

2 of 3 NESTED PIEZOMETERS




Elevation of Top of Surface Casing: 7.56

Stick-up of Casing Above Ground Surface: ____

Elevation of Top of Riser Pipe: 7.37

Type of Surface Seal: ____

Type of Surface Casing: ____

ID of Surface Casing: ____

Diameter of Borehole: ____

See PZ-99-02-A

Riser Pipe ID: ____

Type of Riser Pipe: ____

Type of Backfill: ____

Elevation of Top of Seal: -3.4

Depth of Top of Seal: 11

Type of Seal: BENT. CHIPS

Elevation of Top of Sand: -17.4

Depth of Top of Sand: 25

Elevation of Top of Screen: -22.4

Depth of Top of Screen: 30

Type of Screen: Sch 40 PVC

Slot Size x Length: 0.010" x 5'

ID of Screen: 1"

Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -27.4

Depth of Bottom of Screen: 35

Depth of Sediment Sump with Plug: —

Depth Bottom of Sand 37'

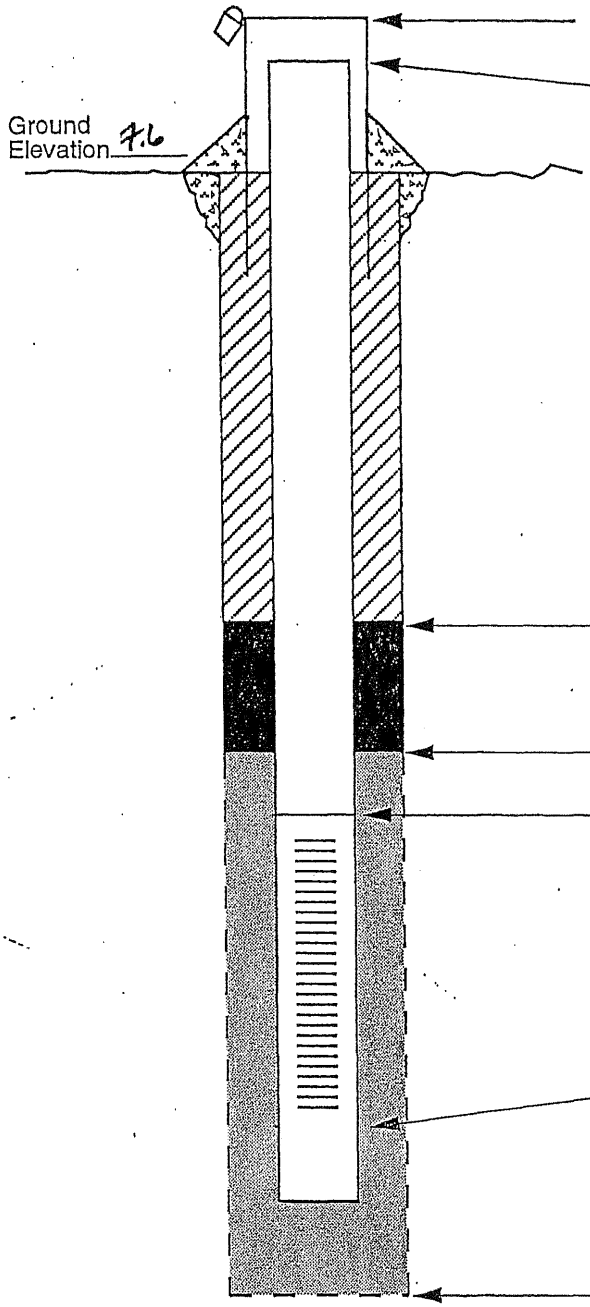
Elevation of Bottom of Borehole: -44.4

Depth of Bottom of Borehole: 52

# MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP | Study Area: OU-2 | Driller: NFE
Project No.: 47254 | Boring No.: PZ-99-02-C | Drilling Method: HSA - 6 5/8" ID
Date Installed: 8-18-99 | Development Method: PUMP & SURGE
Field Geologist: Tom Longley

3 of 3 NESTED PIEZOMETERS




Elevation of Top of Surface Casing: 7.56
Stick-up of Casing Above Ground Surface: ____
Elevation of Top of Riser Pipe: 7.38
Type of Surface Seal: ____
Type of Surface Casing: ____
ID of Surface Casing: ____ — see PZ-99-02-B & A
Diameter of Borehole: ____
Riser Pipe ID: ____
Type of Riser Pipe: ____
Type of Backfill: ____

Elevation of Top of Seal: -29.4
Depth of Top of Seal: 37
Type of Seal: BENT. CHIPS

Elevation of Top of Sand: -32.4
Depth of Top of Sand: 40'

Elevation of Top of Screen: -37.4
Depth of Top of Screen: 45'

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

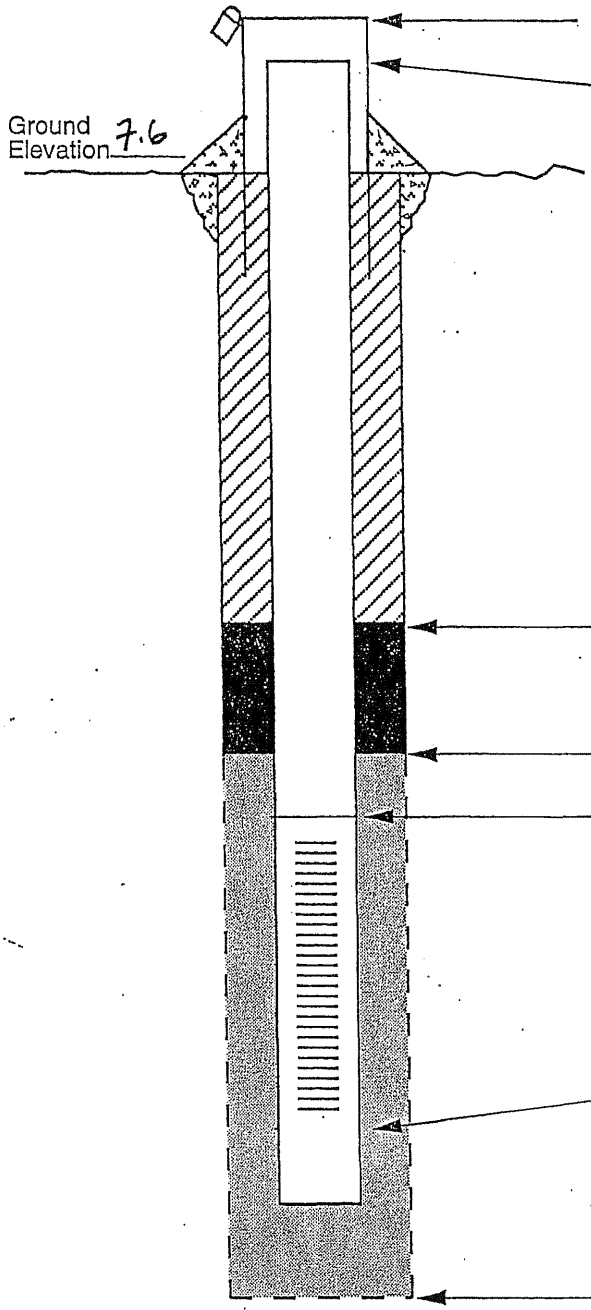
Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -42.4
Depth of Bottom of Screen: 50
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -44.4
Depth of Bottom of Borehole: 52

# MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP | Study Area | Driller NFE - DAN FINEHAM
Project No. 47254 | Boring No. PZ-99-03 | Drilling Method HSA
Date Installed 8-17-99 | Development Method PUMP & SURGE
Field Geologist TOM LONGLEY




Elevation of Top of Surface Casing: 7.63
Stick-up of Casing Above Ground Surface: —
Elevation of Top of Riser Pipe: 7.35
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH-TO-GROUND ROAD BOX

ID of Surface Casing: 8"
Diameter of Borehole: ~6" (3¼" HSA)
Riser Pipe ID: 1"
Type of Riser Pipe: SCH 40 PVC
Type of Backfill: —

Elevation of Top of Seal: 6.4
Depth of Top of Seal: 14"
Type of Seal: BENT. PELLET

Elevation of Top of Sand: 4.6
Depth of Top of Sand: 3'
Elevation of Top of Screen: 3.6
Depth of Top of Screen: 4'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -1.4
Depth of Bottom of Screen: 9'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -34.4
Depth of Bottom of Borehole: 42'

# GRAIN SIZE ANALYSIS

## G-1 GRAIN SIZE TESTING RESULTS

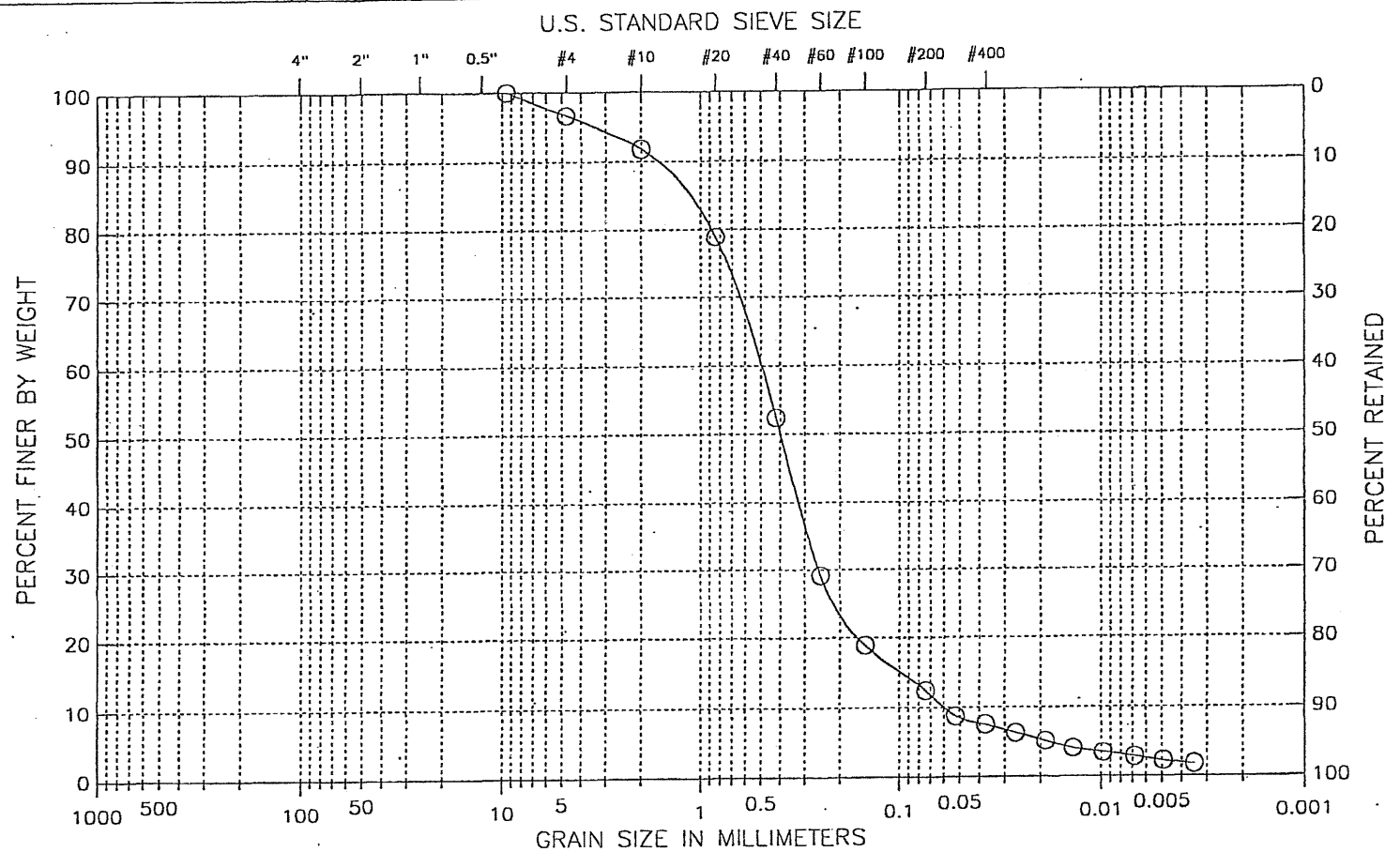
## G-2 ESTIMATED HYDRAULIC CONDUCTIVITIES FROM GRAIN SIZE

# GRAIN SIZE TESTING RESULTS

GeoTesting Express • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

Boring No. : ---
Sample No.: PZ06GS000XX
Test Method ASTM D 422
Filename : 000XX

Project : Stratford Army Engine Plant Chrome
Project No.: GTX-2131
Location: ---
Date : Tue Feb 02 1999




Classification :

Remarks :
---

Visual Description :
Moist, dark yellowish brown silty sand

Figure 1

# GEOTECHNICAL LABORATORY TEST DATA

Project : Stratford Army Engine Plant Chrome
Project No. : GTX-2131
Boring No. : ---
Sample No. : PZ06GS000XX
Location : ---
Depth : ---
Test Date : 01/28/99
Test Method : ASTM D 422
Filename : 000XX
Elevation : ---
Tested by : gsg
Checked by : gtt
Soil Description : Moist, dark yellowish brown silty sand
Remarks : ---

## HYDROMETER

Hydrometer ID : dist125
Weight of air-dried soil = 76 gm
Specific Gravity = 2.65

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

| Elapsed Time (min) | Reading | Temperature (deg. C) | Corrected Reading | Particle Size (mm) | Percent Finer (%) | Adjusted Particle Size |
|---|---|---|---|---|---|---|
| 1.00 | 12.00 | 18.50 | 7.23 | 0.053 | 9 | 0.053 |
| 2.00 | 11.00 | 18.50 | 6.23 | 0.037 | 8 | 0.037 |
| 4.00 | 10.00 | 18.50 | 5.23 | 0.027 | 6 | 0.027 |
| 8.00 | 9.00 | 18.50 | 4.23 | 0.019 | 5 | 0.019 |
| 15.00 | 8.00 | 19.00 | 3.31 | 0.014 | 4 | 0.014 |
| 30.00 | 7.50 | 19.00 | 2.81 | 0.010 | 3 | 0.010 |
| 62.00 | 7.00 | 19.00 | 2.31 | 0.007 | 3 | 0.007 |
| 120.00 | 6.50 | 19.00 | 1.81 | 0.005 | 2 | 0.005 |
| 240.00 | 6.00 | 19.50 | 1.40 | 0.003 | 2 | 0.003 |

## FINE SIEVE SET

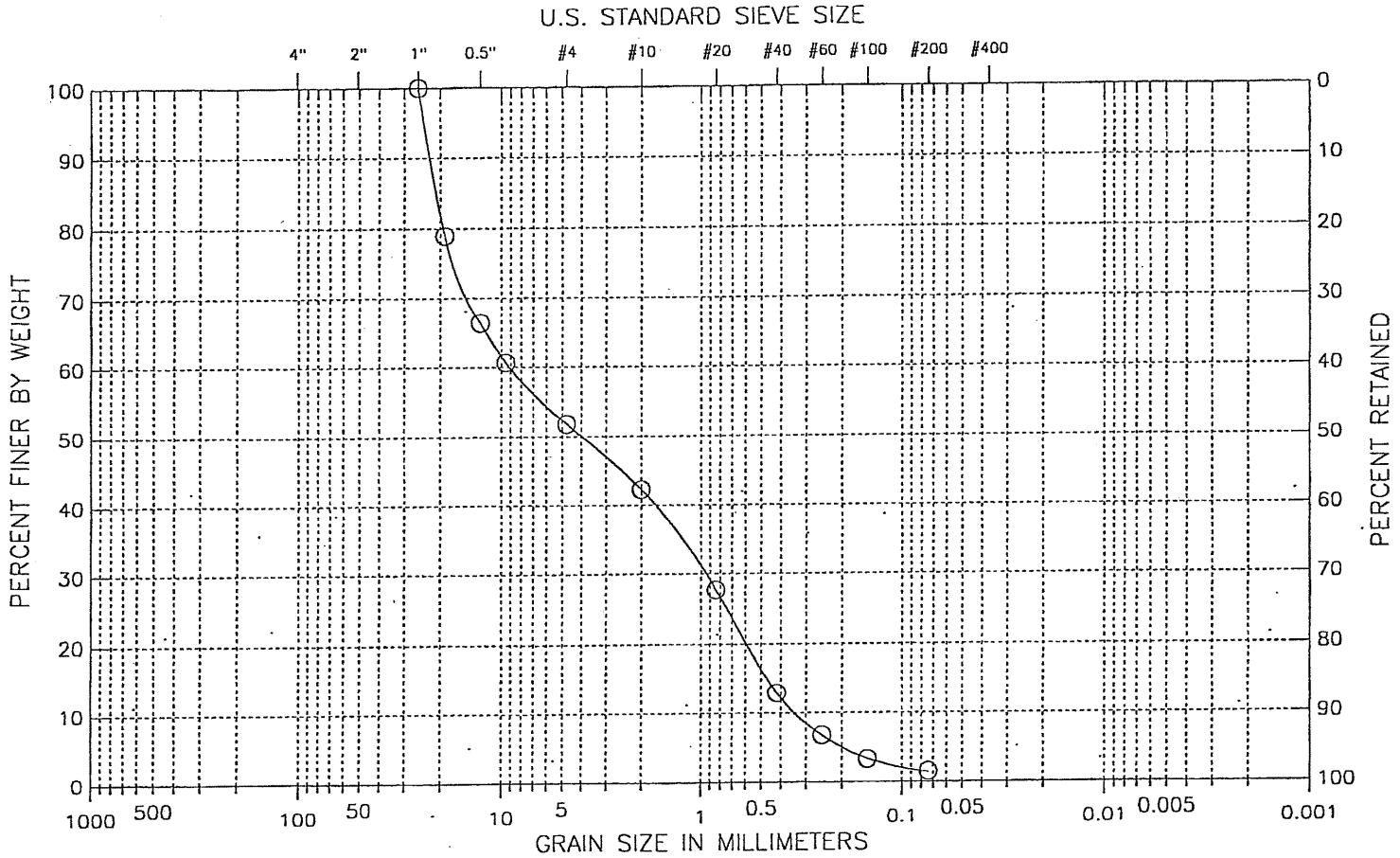
| Sieve Mesh | Sieve Openings Inches | Millimeters | Weight Retained (gm) | Cumulative Weight Retained (gm) | Percent Finer (%) |
|---|---|---|---|---|---|
| 0.375" | 0.374 | 9.51 | 0.00 | 0.00 | 100 |
| #4 | 0.187 | 4.75 | 5.63 | 5.63 | 97 |
| #10 | 0.079 | 2.00 | 8.04 | 13.67 | 92 |
| #20 | 0.033 | 0.84 | 21.46 | 35.13 | 79 |
| #40 | 0.017 | 0.42 | 43 95 | 79.08 | 52 |
| #60 | 0.010 | 0.25 | 38.60 | 117.68 | 29 |
| #100 | 0.006 | 0.15 | 16.95 | 134.63 | 19 |
| #200 | 0.003 | 0.07 | 10.75 | 145.38 | 12 |
| Pan | | | 20.72 | 166.10 | 0 |

Total Dry Weight of Sample = 175.47

D85 : 1.2702 mm
D60 : 0.5128 mm
D50 : 0.3982 mm
D30 : 0.2548 mm
D15 : 0.0972 mm
D10 : 0.0590 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-2-4(0)
AASHTO Group Name : Silty Gravel and Sand

| | | |
|---|---|---|
| | Boring No. : ---<br>Sample No.: PZ06GS004XX<br>Test Method ASTM D 422<br>Filename : 004XX | Project : Stratford Army Engine Plant Chrome<br>Project No.: GTX-2131<br>Location: ---<br>Date : Tue Feb 02 1999 |




Classification :
(SP) Poorly graded sand with gravel
Visual Description :.
Moist, dark olive brown sand with gravel

Remarks :
Hydrometer not required, fines < 10%

Figure 2

GeoTesting Express • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

GEOTECHNICAL LABORATORY TEST DATA

Project : Stratford Army Engine Plant Chrome
Project No. : GTX-2131
Boring No. : ---
Sample No. : PZ06GS004XX
Location : ---
Depth : ---
Test Date : 01/28/99
Test Method : ASTM D 422
Filename : 004XX
Elevation : ---
Tested by : gsg
Checked by : gtt
Soil Description : Moist, dark olive brown sand with gravel
Remarks : Hydrometer not required, fines < 10%

FINE SIEVE SET

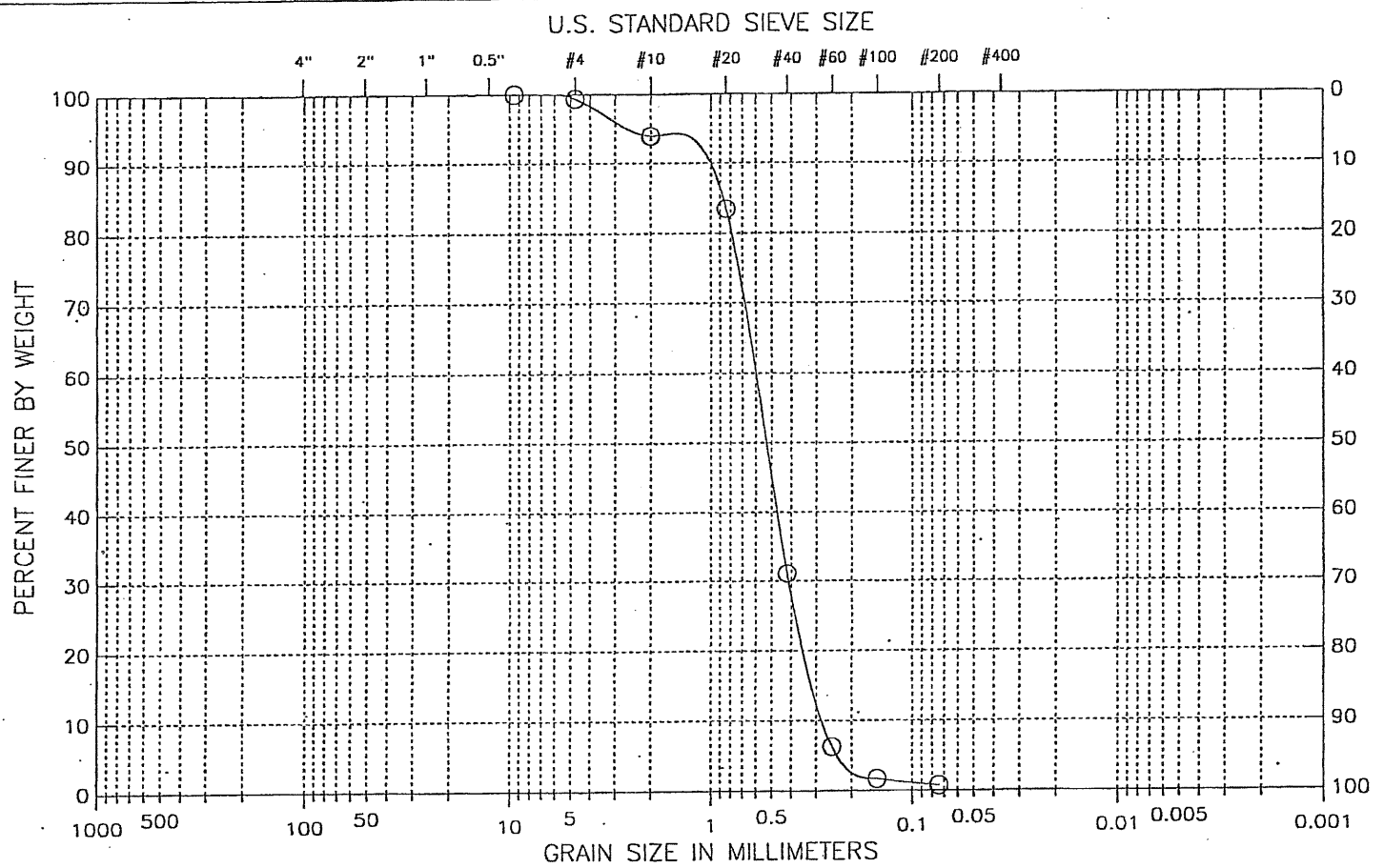
| Sieve Mesh | Sieve Openings Inches | Millimeters | Weight Retained (gm) | Cumulative Weight Retained (gm) | Percent Finer (%) |
|---|---|---|---|---|---|
| 1" | 1.012 | 25.70 | 0.00 | 0.00 | 100 |
| 0.75" | 0.748 | 19.00 | 41.40 | 41.40 | 79 |
| 0.5" | 0.500 | 12.70 | 24.53 | 65.93 | 66 |
| 0.375" | 0.374 | 9.51 | 11.46 | 77.39 | 61 |
| #4 | 0.187 | 4.75 | 17.38 | 94.77 | 52 |
| #10 | 0.079 | 2.00 | 18.77 | 113.54 | 42 |
| #20 | 0.033 | 0.84 | 28.63 | 142.17 | 28 |
| #40 | 0.017 | 0.42 | 29.21 | 171.38 | 13 |
| #60 | 0.010 | 0.25 | 12.04 | 183.42 | 7 |
| #100 | 0.006 | 0.15 | 6.75 | 190.17 | 3 |
| #200 | 0.003 | 0.07 | 3.60 | 193.77 | 1 |
| Pan | | | 2.94 | 196.71 | 0 |

Total Dry Weight of Sample = 205.67

D85 : 20.7224 mm
D60 : 9.0310 mm
D50 : 4.0266 mm
D30 : 0.9629 mm
D15 : 0.4638 mm
D10 : 0.3291 mm

Soil Classification
ASTM Group Symbol : SP
ASTM Group Name : Poorly graded sand with gravel
AASHTO Group Symbol : A-1-a(0)
AASHTO Group Name : Stone Fragments, Gravel and Sand

| | | |
|---|---|---|
| | Boring No. : ---<br>Sample No.: PZ06GS010XX<br>Test Method ASTM D 422<br>Filename : 010XX | Project : Stratford Army Engine Plant Chrome<br>Project No.: GTX-2131<br>Location: ---<br>Date : Tue Feb 02 1999 |




Classification :
(SP) Poorly graded sand
Visual Description :
Moist, dark grayish brown sand

Remarks :
Hydrometer not required, fines < 10%

Figure 3

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GEOTECHNICAL LABORATORY TEST DATA

Project : Stratford Army Engine Plant Chrome
Project No. : GTX-2131
Boring No. : ---
Sample No. : PZ06GS010XX
Location : ---
Depth : ---
Test Date : 01/28/99
Test Method : ASTM D 422
Filename : 010XX
Elevation : ---
Tested by : gsg
Checked by : gtt
Soil Description : Moist, dark grayish brown sand
Remarks : Hydrometer not required, fines < 10%

FINE SIEVE SET

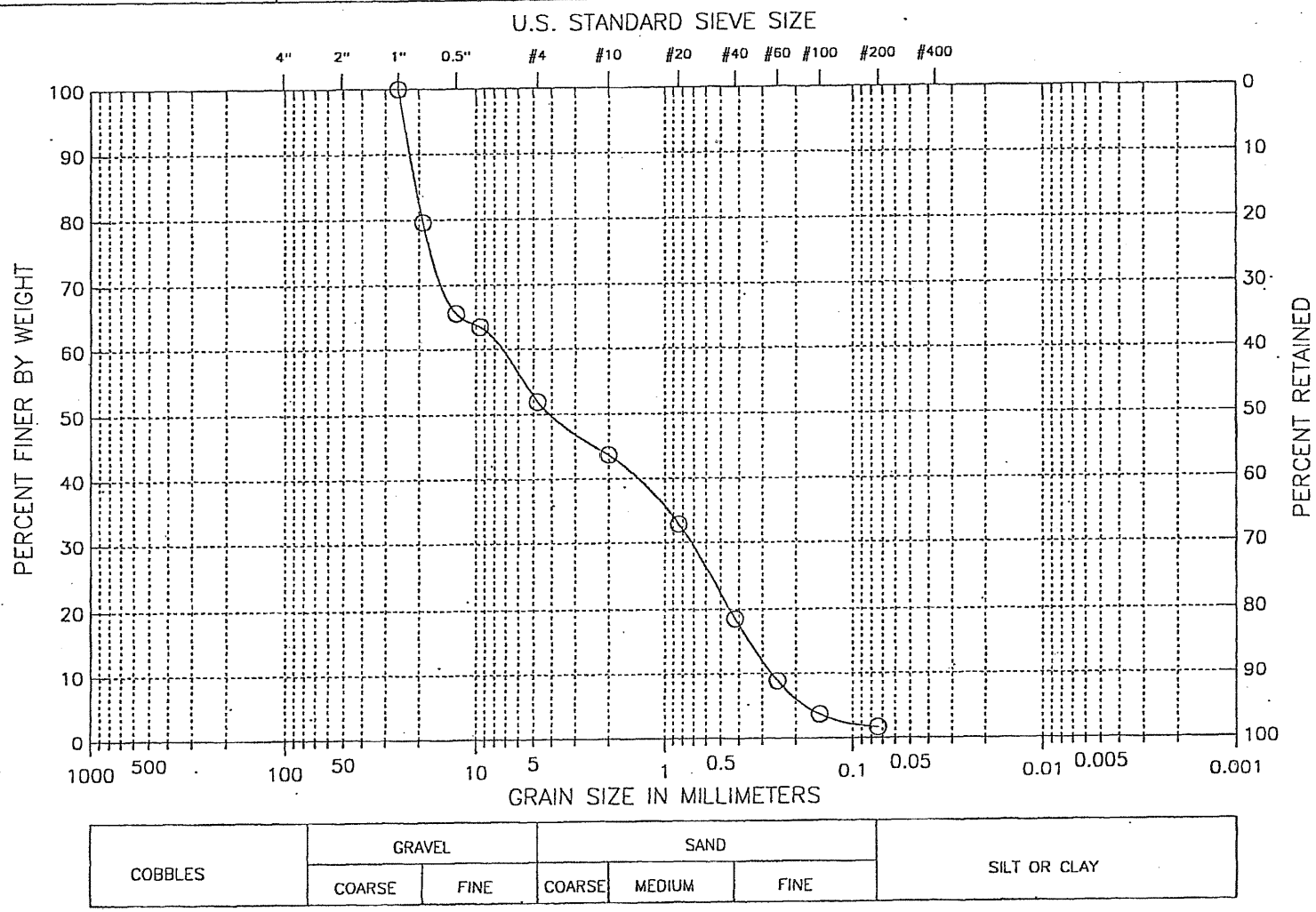
| Sieve Mesh | Sieve Openings Inches | Millimeters | Weight Retained (gm) | Cumulative Weight Retained (gm) | Percent Finer (%) |
|---|---|---|---|---|---|
| 0.375" | 0.374 | 9.51 | 0.00 | 0.00 | 100 |
| #4 | 0.187 | 4.75 | 0.75 | 0.75 | 99 |
| #10 | 0.079 | 2.00 | 6.62 | 7.37 | 94 |
| #20 | 0.033 | 0.84 | 12.73 | 20.10 | 84 |
| #40 | 0.017 | 0.42 | 63.87 | 83.97 | 31 |
| #60 | 0.010 | 0.25 | 30.23 | 114.20 | 6 |
| #100 | 0.006 | 0.15 | 5.65 | 119.85 | 2 |
| #200 | 0.003 | 0.07 | 1.15 | 121.00 | 1 |
| Pan | | | 0.84 | 121.84 | 0 |

Total Dry Weight of Sample = 130.73

D85 : 0.9521 mm
D60 : 0.6160 mm
D50 : 0.5396 mm
D30 : 0.4106 mm
D15 : 0.3001 mm
D10 : 0.2703 mm

Soil Classification
ASTM Group Symbol : SP
ASTM Group Name : Poorly graded sand
AASHTO Group Symbol : A-1-b(0)
AASHTO Group Name : Stone Fragments, Gravel and Sand

| | | |
|---|---|---|
| | Boring No. : ---<br>Sample No: SPPILOTO4A004G<br>Test Method ASTM D 422<br>Filename : 004GS | Project : Stratford Army Engine Plant Chrome<br>Project No.: GTX-2131<br>Location: ---<br>Date : Tue Feb 02 1999 |




Classification :
(SP) Poorly graded sand with gravel
Visual Description :
Moist, dark olive brown sand with gravel

Remarks :
Hydrometer not required, fines < 10%

Figure 4

GeoTesting Express • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

GEOTECHNICAL LABORATORY TEST DATA

Project : Stratford Army Engine Plant Chrome
Project No. : GTX-2131
Boring No. : ---
Sample No. : SPPILOTO4A004G
Location : ---
Depth : ---
Test Date : 01/28/99
Test Method : ASTM D 422
Filename : 004GS
Elevation : ---
Tested by : gsg
Checked by : gtt
Soil Description : Moist, dark olive brown sand with gravel
Remarks : Hydrometer not required, fines < 10%

FINE SIEVE SET

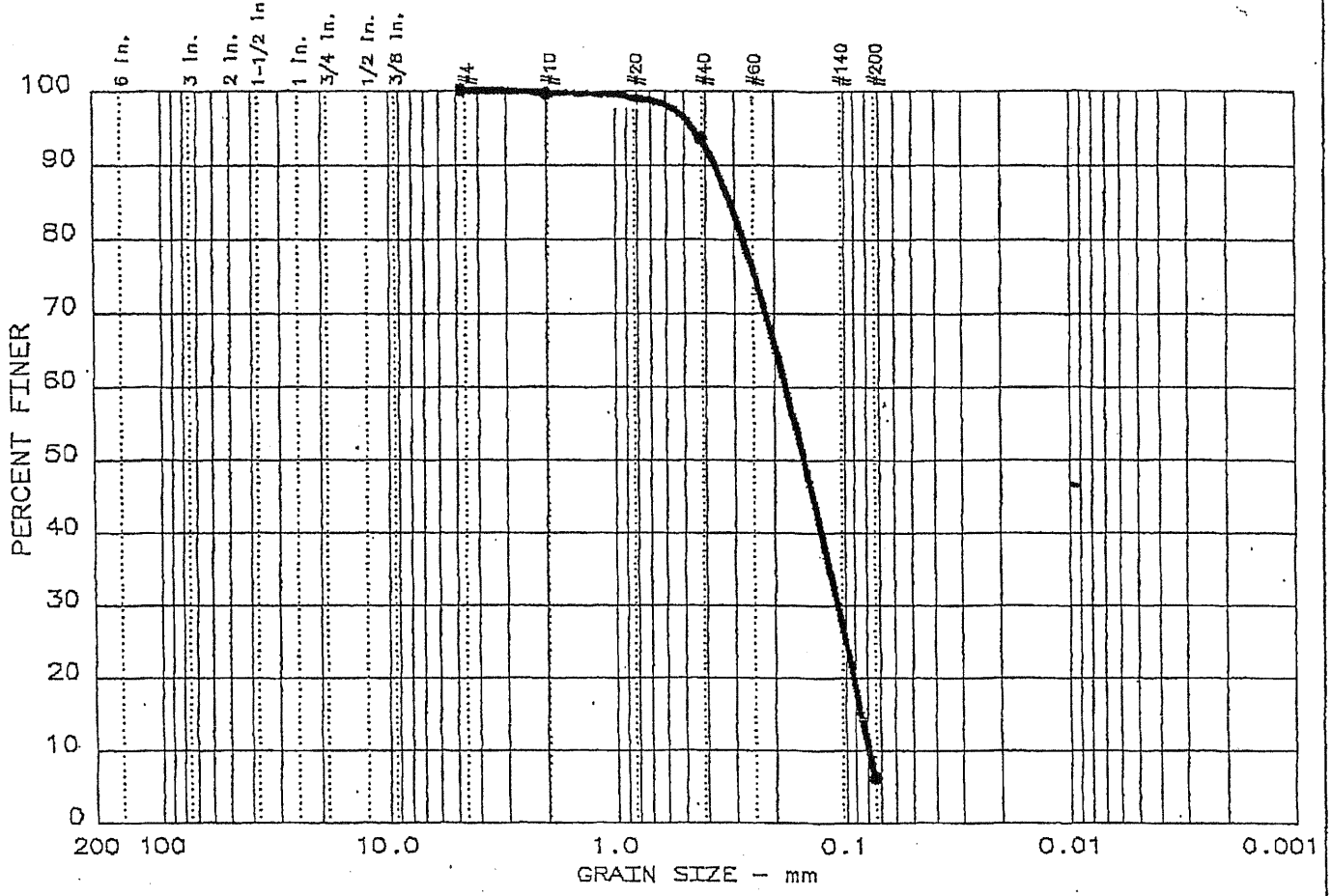
| Sieve Mesh | Sieve Openings Inches | Millimeters | Weight Retained (gm) | Cumulative Weight Retained (gm) | Percent Finer (%) |
|---|---|---|---|---|---|
| 1" | 1.012 | 25.70 | 0.00 | 0.00 | 100 |
| 0.75" | 0.748 | 19.00 | 36.22 | 36.22 | 80 |
| 0.5" | 0.500 | 12.70 | 24.92 | 61.14 | 66 |
| 0.375" | 0.374 | 9.51 | 3.66 | 64.80 | 63 |
| #4 | 0.187 | 4.75 | 20.55 | 85.35 | 52 |
| #10 | 0.079 | 2.00 | 14.67 | 100.02 | 44 |
| #20 | 0.033 | 0.84 | 19.05 | 119.07 | 33 |
| #40 | 0.017 | 0.42 | 25.60 | 144.67 | 18 |
| #60 | 0.010 | 0.25 | 17.03 | 161.70 | 9 |
| #100 | 0.006 | 0.15 | 9.31 | 171.01 | 4 |
| #200 | 0.003 | 0.07 | 3.59 | 174.60 | 2 |
| Pan | | | 2.90 | 177.50 | 0 |

Total Dry Weight of Sample = 186.7

D85 : 20.5828 mm
D60 : 7.7130 mm
D50 : 3.8871 mm
D30 : 0.7308 mm
D15 : 0.3477 mm
D10 : 0.2653 mm

Soil Classification
ASTM Group Symbol : SP
ASTM Group Name : Poorly graded sand with gravel
AASHTO Group Symbol : A-1-a(0)
AASHTO Group Name : Stone Fragments, Gravel and Sand

# GRAIN SIZE DISTRIBUTION TEST REPORT




| | % +3" | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|---|
| ● | 0.0 | 0.0 | 93.8 | 6.2 | |
| | | | | | |
| | | | | | |

| | LL | PI | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | | | 0.31 | 0.18 | 0.15 | 0.107 | 0.0846 | 0.0784 | 0.82 | 2.3 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| ● BROWN MICACEOUS FINE SAND, LITTLE SILT. | SP-SM | A-3 |

PZ9902007XX

CLIENT CODE: 48143

002 D1HT7-1-11

[STRIBUTION TEST REPORT

APPLIED CONSTRUCTION TECH., INC.

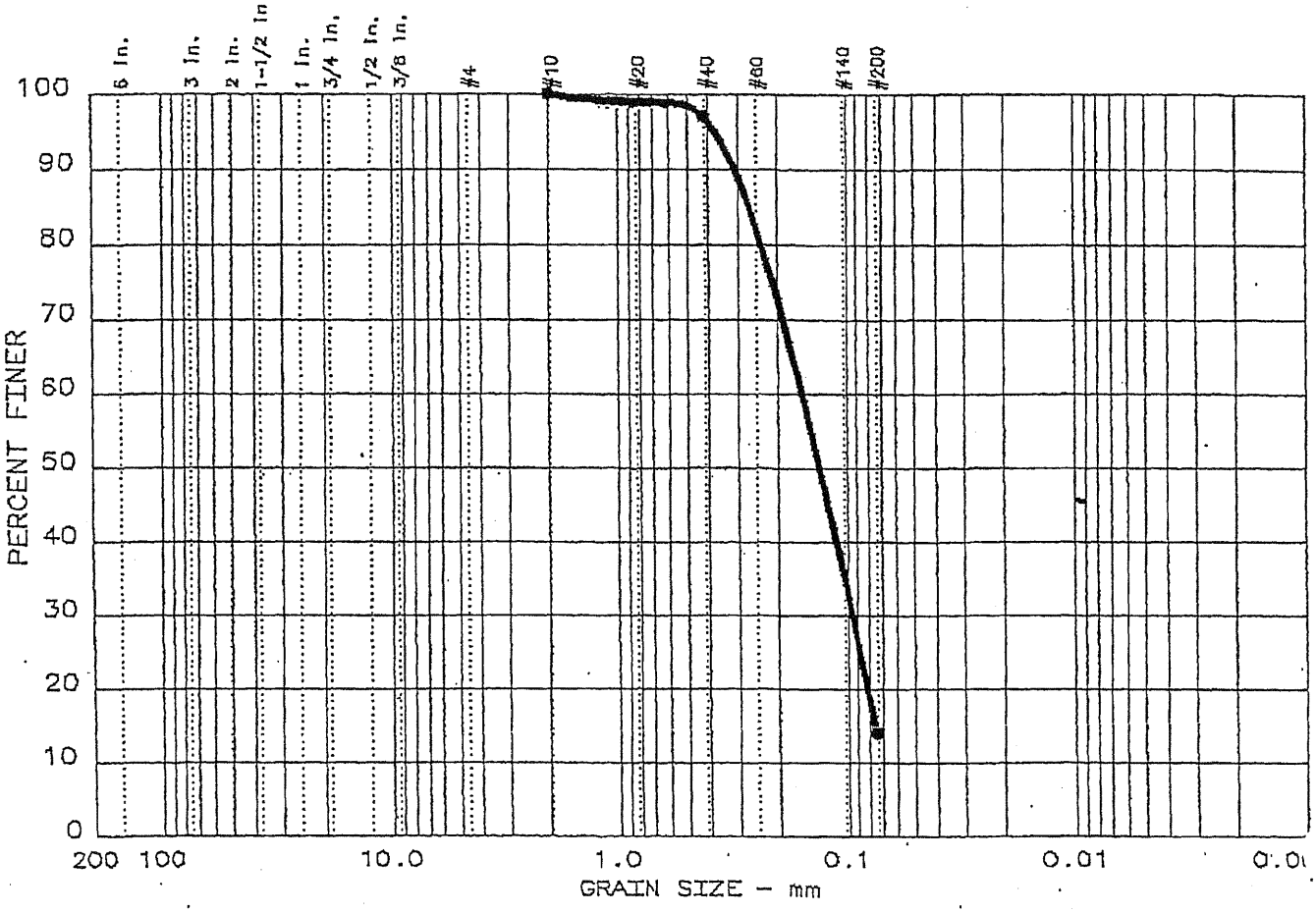
Remarks:

CLIENT: QUANTERRA, INC.

JAR SAMPLES RECEIVED ON 8/19/99

Figure No. 1-G

# GRAIN SIZE DISTRIBUTION TEST REPORT




| | % +3" | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|---|
| ● | 0.0 | 0.0 | 85.9 | 14.1 | |
| | | | | | |
| | | | | | |

| | LL | PI | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | | | 0.26 | 0.15 | 0.13 | 0.094 | 0.0750 | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| ● BROWN MICACEOUS FINE SAND WITH SILT. | SM | |

PZ9902032XX

CLIENT CODE: 48143

004 D1HTC-1-10

Remarks:

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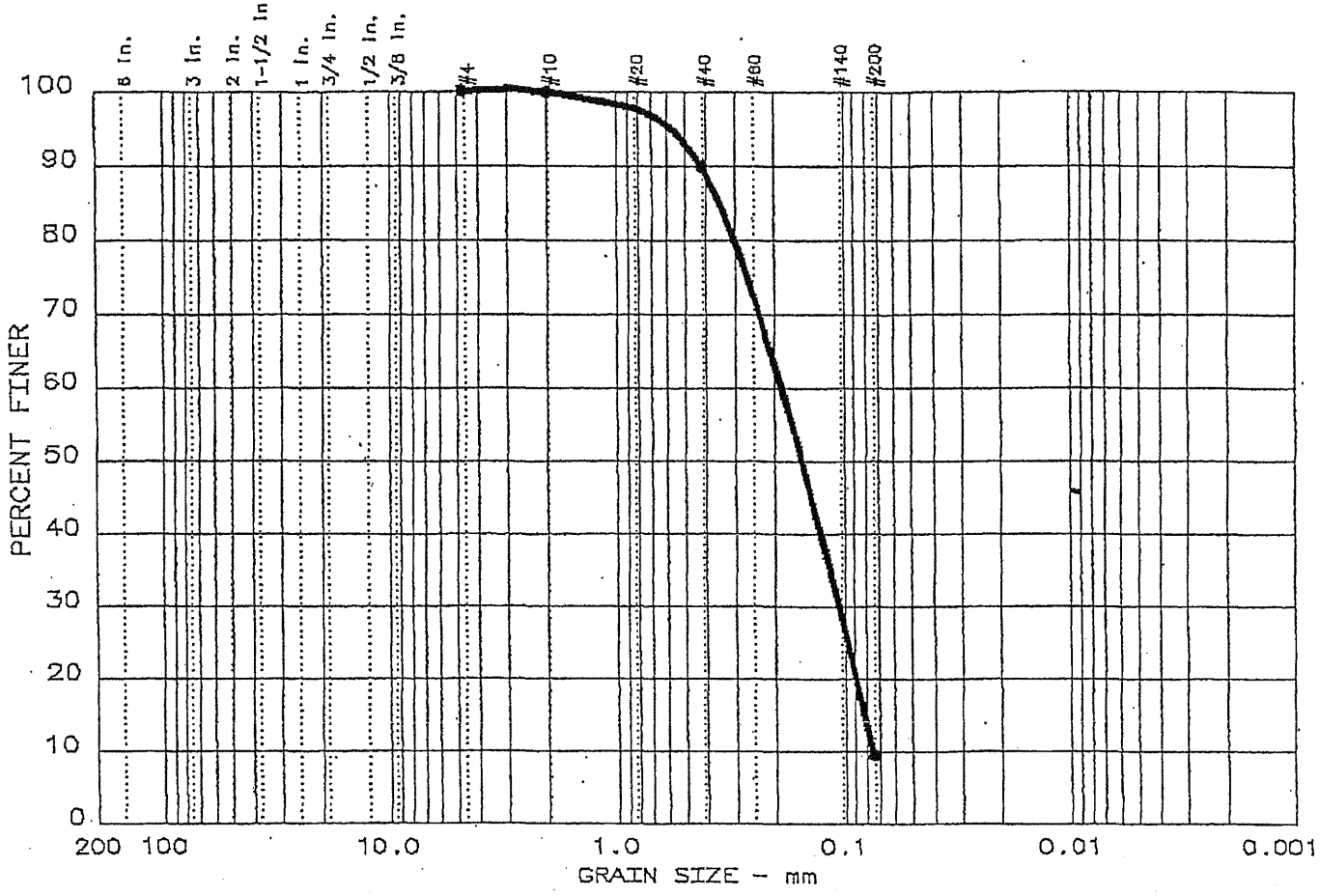
APPLIED CONSTRUCTION TECH., INC.

Figure No. 2-G

# GRAIN SIZE DISTRIBUTION TEST REPORT




| | % +3" | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|---|
| ● | 0.0 | 0.0 | 90.5 | 9.5 | |
| | | | | | |
| | | | | | |

| | LL | PI | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | | | 0.35 | 0.19 | 0.15 | 0.105 | 0.0813 | 0.0746 | 0.80 | 2.5 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| ● BROWN FINE MICACEOUS FINE SAND, LITTLE SILT. | SP-SM | A-3 |

P2990205 2XX

CLIENT CODE: 48143

005 D1HTD-1-11

[STRIBUTION TEST REPORT

APPLIED CONSTRUCTION TECH., INC.

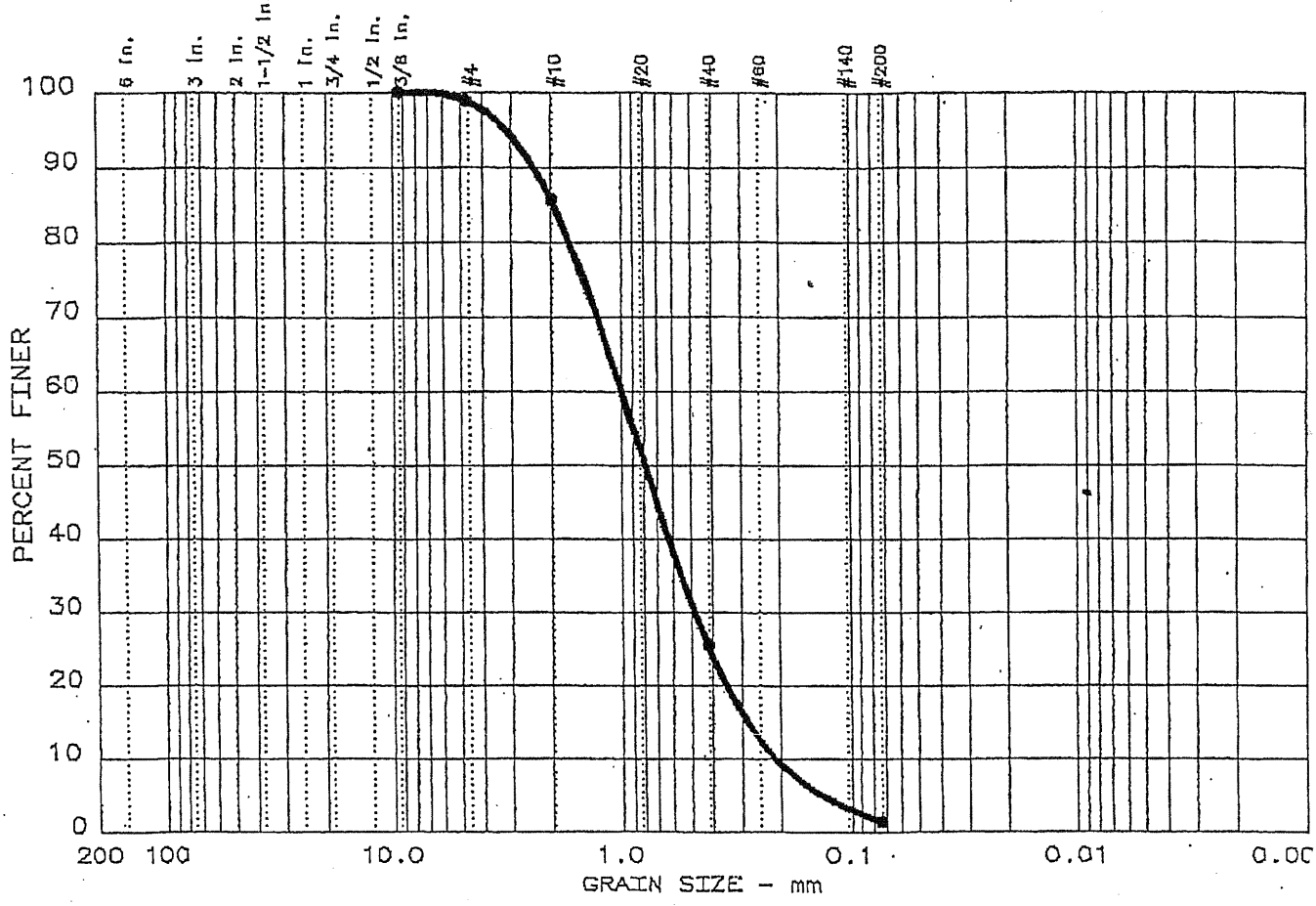
Remarks:

CLIENT: QUANTERRA, INC.

JAR SAMPLES RECEIVED ON 8/19/99

Figure No. 3-G

# GRAIN SIZE DISTRIBUTION TEST REPORT




| | % +3" | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|---|
| ● | 0.0 | 1.1 | 97.5 | 1.4 | |
| | | | | | |
| | | | | | |

| | LL | PI | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | | | 1.95 | 1.00 | 0.79 | 0.479 | 0.2786 | 0.2089 | 1.10 | 4.8 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| ● BROWN MICACEOUS MEDIUM SAND. | SP | A-1-b |

PZ990301 2XX

CLIENT CODE: 48143

)06 D1HTG-1-11

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Remarks:

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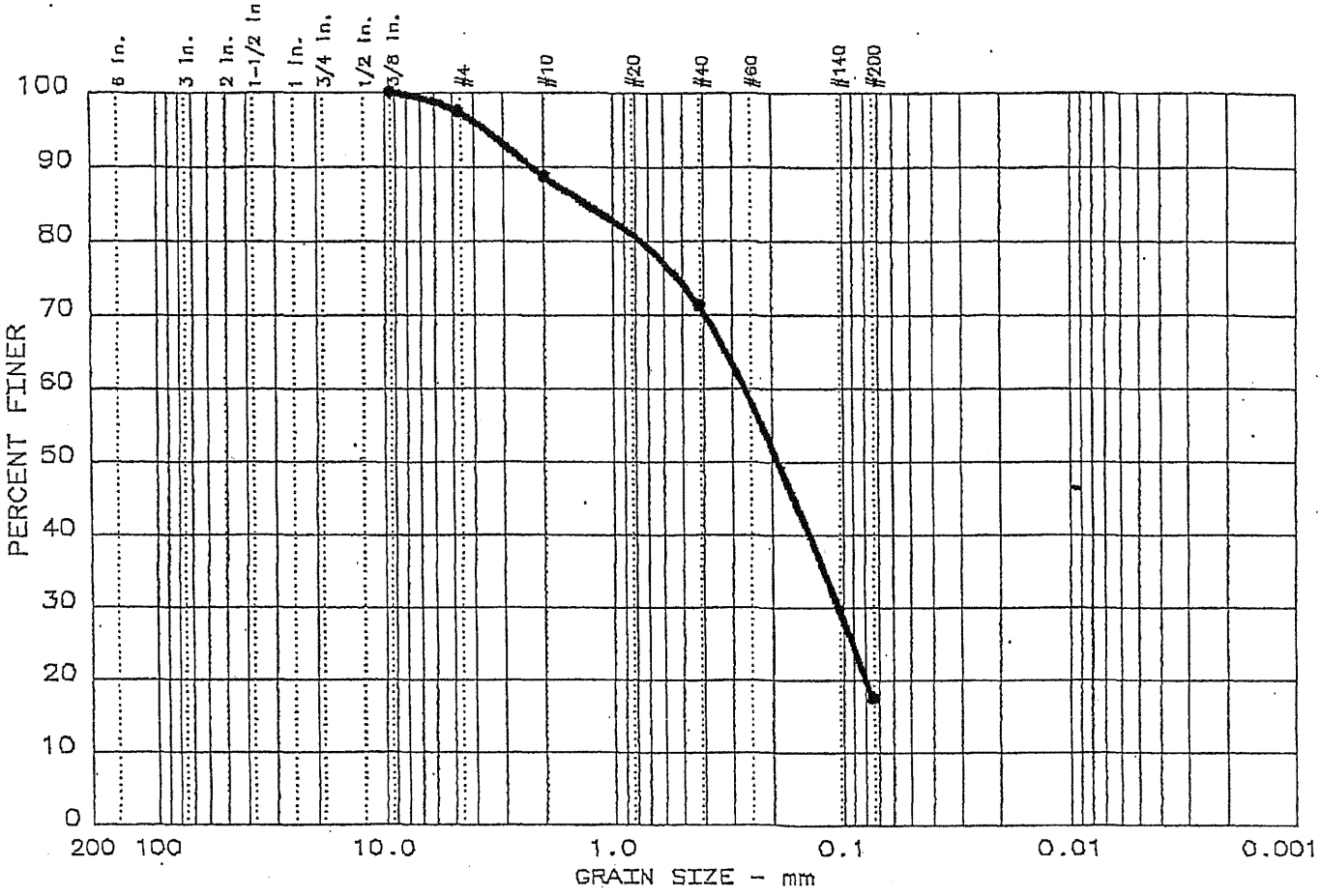
Figure No. 4-G

# GRAIN SIZE DISTRIBUTION TEST REPORT




| | % +3" | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|---|
| ● | 0.0 | 2.6 | 79.9 | 17.5 | |
| | | | | | |
| | | | | | |

| | LL | PI | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | | | 1.30 | 0.26 | 0.19 | 0.104 | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| ● BROWN MICACEOUS BROWN FINE SAND, WITH SILT. | SM | |

PZ9903032XX

CLIENT CODE: 48143

008 D1HTM-1-11

____ _ISTRIBUTION TEST REPORT

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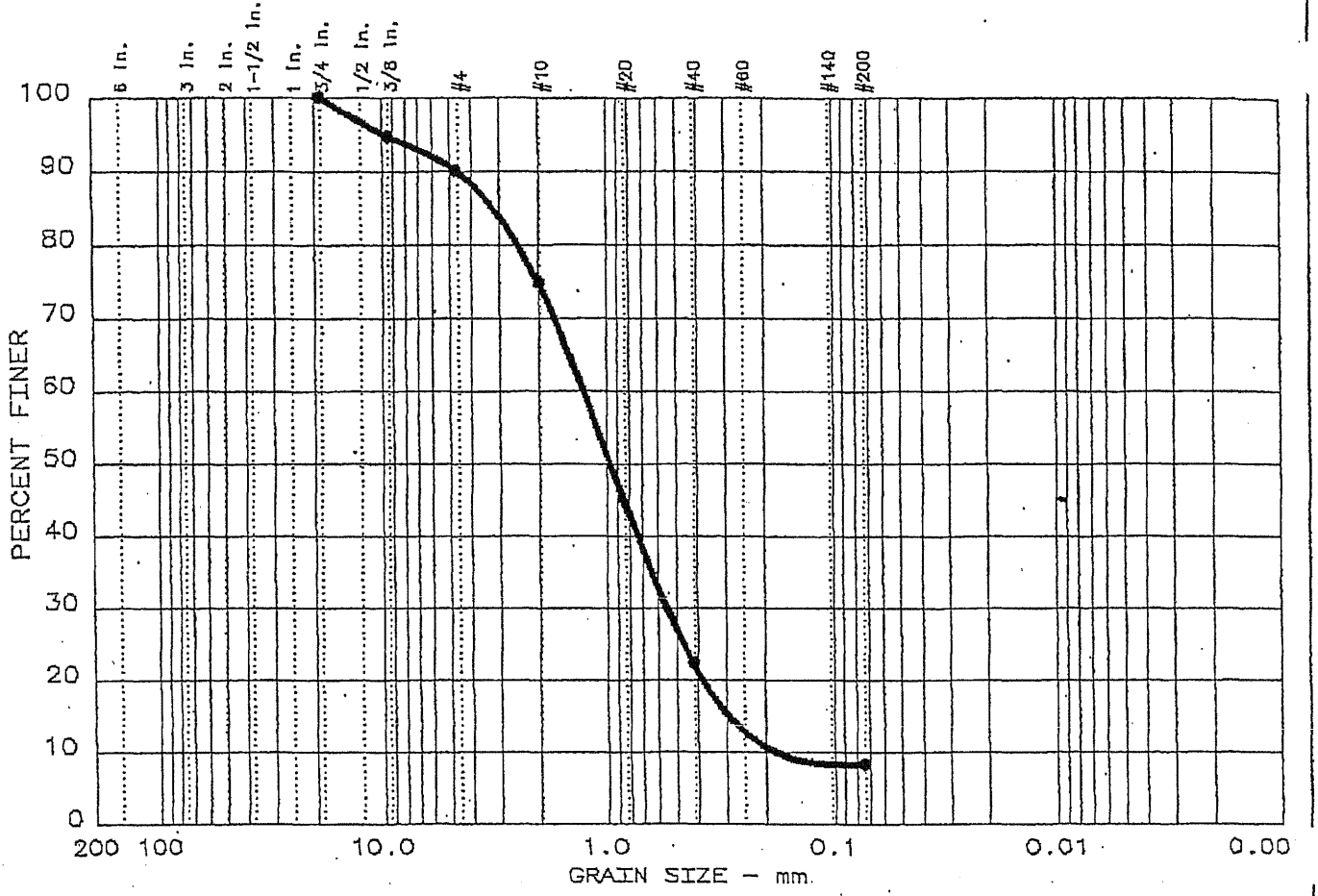
Remarks:

CLIENT: QUANTERRA, INC.

JAR SAMPLES RECEIVED ON 8/19/99

Figure No. 5-G

# GRAIN SIZE DISTRIBUTION TEST REPORT




| | % +3" | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|---|
| ● | 0.0 | 9.9 | 81.7 | 8.4 | |
| | | | | | |
| | | | | | |

| | LL | PI | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | | | 3.16 | 1.26 | 0.96 | 0.546 | 0.2867 | 0.1789 | 1.33 | 7.0 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| ● BROWN MICACEOUS WELL GRADED SAND, WITH SILT. | SW-SM | A-1-b |

PZ9901012XX

CLIENT CODE: 48143

002 D1M61-1-20

Date: 9/1/99

Remarks:

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GRAIN SIZE DISTRIBUTION TEST REPORT

APPLIED CONSTRUCTION TECH., INC.

Figure No. 6-G

# ESTIMATED HYDRAULIC CONDUCTIVITIES FROM GRAIN SIZE

## ESTIMATES OF HYDRAULIC CONDUCTIVITY FROM GRAIN-SIZE

Hydraulic conductivities of sandy sediments may be estimated from grain-size distribution curves by utilizing the Hazen method (Fetter, 1988). The method is applicable to sands where the effective grain size ($D_{10}$) is between approximately 0.1 and 3.0 millimeters. The Hazen approximation is

$$K = C\,(D_{10})^2$$

Where

| | |
|---|---|
| $K$ | is hydraulic conductivity in cm/sec |
| $D_{10}$ | is the effective grain size in cm |
| $C$ | is the textural coefficient based on the following: |

| | |
|---|---|
| Very fine sand, poorly sorted | 40-80 |
| Fine sand with appreciable fines | 40-80 |
| Medium sand, well sorted | 80-120 |
| Coarse sand, poorly sorted | 80-120 |
| Coarse sand, well sorted, clean | 120-150 |

A total of ten samples was collected for grain size analysis at SAEP during the OU 2 pre-design investigation fieldwork. The grain-size distribution curves are presented as Appendix G-1. The following is a listing of the samples, their interpreted textural coefficient, their effective grain sizes in $cm^2$, and their estimated hydraulic conductivities using the Hazen method.

| Exploration ID | Sample ID | Sample Depth (feet bgs) | $C$ | $(D_{10})^2$ | $K$ (cm/sec) | $K$ (ft/min) |
|---|---|---|---|---|---|---|
| SP-PILOT-04 | SPPILOT04A004A004G | 4-8 | 100 | 0.0007038 | $7.0 \times 10^{-2}$ | $1.4 \times 10^{-1}$ |
| PZ-99-01 | PZ9901012XX | 10-12 | 100 | 0.00032 | $3.2 \times 10^{-2}$ | $6.3 \times 10^{-2}$ |
| PZ-99-02 | PZ9902027XX | 25-27 | 60 | 0.0000614 | $3.7 \times 10^{-3}$ | $7.3 \times 10^{-3}$ |
| PZ-99-02 | PZ9902032XX (1) | 30-32 | 60 | 0.000036 | $2.2 \times 10^{-3}$ | $4.3 \times 10^{-3}$ |
| PZ-99-02 | PZ9902052XX | 50-52 | 60 | 0.0000556 | $3.3 \times 10^{-3}$ | $6.5 \times 10^{-3}$ |
| PZ-99-03 | PZ9903012XX | 10-12 | 100 | 0.0004363 | $4.3 \times 10^{-2}$ | $8.5 \times 10^{-2}$ |
| PZ-99-03 | PZ9903032XX (1) | 30-32 | 60 | 0.0000302 | $1.8 \times 10^{-3}$ | $3.5 \times 10^{-3}$ |
| PZ-PILOT-06 | PZ06GS000XX | 0-4 | 80 | 0.0000348 | $2.8 \times 10^{-3}$ | $5.5 \times 10^{-3}$ |
| PZ-PILOT-06 | PZ06GS004XX | 4-8 | 100 | 0.001083 | $1.1 \times 10^{-1}$ | $2.1 \times 10^{-1}$ |
| PZ-PILOT-06 | PZ06GS010XX | 10-12 | 80 | 0.0007306 | $5.8 \times 10^{-2}$ | $1.1 \times 10^{-1}$ |

(1) = the $D_{10}$ values were not provided on the grain-size curves but were estimated by extending the curve

Source: Fetter, C.W., 1988. "Applied Hydrogeology", second edition; Macmillan Publishing Company; New York, New York.

# PIEZOMETRIC CONE PENETRATION TESTING REPORT

# PIEZOMETRIC CONE PENETRATION TESTING WITH SOIL ELECTRICAL CONDUCTIVITY MEASUREMENTS AND GROUNDWATER SAMPLING STRATFORD ARMY ENGINE PLANT STRATFORD, CONNECTICUT

Prepared for:

Harding Lawson Associates
511 Congress Street
Portland, Maine 04101

Prepared by:

*STRATIGRAPHICS*
The Geotechnical Data Acquisition Corporation
439 Taylor Avenue
Glen Ellyn, Illinois 60137
Phone: (630) 790-4610

June, 1999
99-120-050

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APPENDIX D - GPS Measurements

## 1.0 INTRODUCTION

STRATIGRAPHICS, The Geotechnical Data Acquisition Corporation, performed geo-environmental cone penetrometer exploration at the Stratford Army Engine Plant in Stratford, Connecticut. Piezometric Cone Penetration Tests with soil Electrical Conductivity measurement (CPTU-EC) soundings were performed to provide data on subsurface soil conditions to Harding Lawson Associates (HLA). Groundwater samples were collected for analysis by HLA.

The work was performed from May 5 through May 26, 1999 and totaled 15 days of field work. Seventeen CPTU-EC soundings were performed to depths ranging from 38.5 to 162.4 ft, for a total of 1792.4 ft of data. Thirty eight pore water pressure dissipation tests were performed to provide estimates of soil hydraulic conductivity. Eighty seven groundwater samples were collected at depths ranging from 8.8 to 159.1 ft. The total groundwater sampling footage was 5600 ft.

This report includes CPTU-EC sounding logs, and tabulations of recorded data and correlated geotechnical parameters. The pore water pressure dissipation test data are summarized on Table 1. The sampling program is summarized on Table 3. Details of penetrometer exploration techniques are included in the main body of the report, both for this study and for penetrometer uses in general. Discussion of geotechnical data correlation are included in Appendix A.

## 2.0 PENETROMETER EQUIPMENT AND DATA ACQUISITION

2.1 Procedure The Cone Penetration Test (CPT) consists of smoothly and continuously pushing a small diameter, instrumented probe (penetrometer) deep into the ground while a computer data acquisition system displays and records the soil response to penetration (Figure 1). In geotechnical terms, the CPT penetrometer models a foundation pile under plunging failure load conditions. CPT data are used to develop continuous, high resolution profiles of in situ soil conditions rapidly, accurately and economically.

The soil resistance to penetration, acting on the tip and along the sides of the penetrometer, is measured during CPT (Figure 1a). CPT soil resistance measurements are accurate and highly repeatable. The measurements can be used for the evaluation of stratigraphy and various geotechnical parameters. Performance of CPT is specified by ASTM Standard D3441.

A pressure transducer is added to the CPT penetrometer to acquire hydrogeologic data (Saines and others, 1989) and is called a Piezometric Cone Penetration Test (CPTU). A soil electrical conductivity sensor is added to the penetrometer (CPTU-EC) to acquire qualitative moisture information in vadose zone soils, and general groundwater quality data (Strutynsky and others, 1991, 1998). Penetrometer groundwater, soil, and soil gas samplers are used for direct sampling (Strutynsky and Sainey, 1990, Strutynsky and others, 1998). Recent advances in penetrometer instrumentation include a natural gamma sensor, induced UV fluorescence for detection of hydrocarbons and other compounds, and shear wave velocity and stress controlled testing for low and high strain soil deformation evaluation.

The penetrometer is mounted at the end of a string of sounding rods. A hydraulic ram is used to push the penetrometer and rod string into the ground at a constant rate of 4 ft per minute. Electronic signals from the downhole sensors are transmitted by a cable, strung through the sounding rods, to the computer data acquisition system. Measurements are displayed and recorded for immediate definition of subsurface conditions. Downhole equipment can be automatically steam cleaned during retrieval at the end of a test. Open hole can be grouted using a bentonite clay grout.

Large 3 axle trucks are used to carry the 2 penetrometer systems used by STRATIGRAPHICS. Truck weight and ballast serve to counteract the thrust of the hydraulic ram. The enclosed rig work area allows all-weather operations. Computers, samplers, electrical power, lighting, compressed air, steam cleaner, grout pump, and water tank are all included on each rig, providing for self-contained operations. Other systems for mounting on drill rigs can be used in areas with poor access or for overseas projects.

Lightning detection systems are mounted on the rigs to monitor dangerous weather conditions, that can affect safety and productivity. STRATIGRAPHICS is currently in the process of mounting differential, carrier phase, post processed Global Positioning Systems (GPS) on its rigs, to allow surveying exploration points to an accuracy of about 5 to 15 cm.

No borehole is required during exploration because penetrometers are directly thrust into the soil from the ground surface. Pressures of over 3 million pounds per square foot can be applied to the tip of the penetrometer for penetration of most soils finer than medium gravel. Asphalt pavements up to 6 inches thick can usually be penetrated by penetrometer methods without predrilling. Site disturbance is reduced since no borehole cuttings or drilling fluids are generated during penetrometer operations. Personnel exposure to possibly contaminated soil is significantly less than exposures during drilling and sampling operations. Penetrometer downhole equipment is readily decontaminated during retrieval, when contaminated soils are encountered .

Four hundred to thirteen hundred feet of CPT (with no time dependent piezometric, gamma or shear wave velocity measurements) can be performed in one day, depending on site access. Depths of more than 180 ft can be achieved, depending on site stratigraphy. Where soils are exceptionally dense or gravelly, ar uninstrumented prepunch tool can be used to probe the subsurface. Information obtained using the prepunch tool can be similar to that obtained during mechanical (Dutch) cone testing, especially where friction on the sounding rods is minimal. Dynamic driving can be used in conjunction with the thrust of the hydraulic ram to aid in prepunching of very dense or gravelly soils.

2.1.1 Signal Conditioning and Recording CPT data are acquired using a 16 bit (resolution of 1 part in 32,768) analog to digital data logger and field computer. Test data are graphically displayed for immediate evaluation of subsurface conditions. Field sounding logs are provided at the end of each test. Data are recorded on disk for data processing and long term storage.

2.2 Soil Shear Resistance Measurements The resistance of a soil to penetration is measured on the tip and along the sides of the CPT penetrometer (Figure 1a). The conical tip of the penetrometer has a projected cross-sectional area of 15 square centimeters (2.3 square inches), and a diameter of 1.7 inches. The soil resistance acting on the cone tip reflects the deep bearing capacity of a soil, and is termed cone end bearing or tip resistance. The friction between the soil and the penetrometer is measured along a cylindrical sleeve mounted behind the cone tip. The sleeve has a surface area of 200 square centimeters (31.0 square inches), a length of 5.8 inches, and a diameter slightly larger than the cone tip. The soil friction measurement is termed friction sleeve resistance. Two strain gage loadcells are used to measure the tip and sleeve resistances (Strutynsky and others, 1985). The tip measurement has a resolution of about 2 to 4 inches. The sleeve measurement has a resolution of about 6 inches.

2.3 Piezometric Measurements A fluid pressure transducer is used to measure the soil pore water pressure response to penetration. The CPTU piezometric measurement has a layer detection limit of about 1 inch and an accuracy of about +/- 0.5 ft of water pressure. The advance of the penetrometer causes a volumetric distortion of the soil, which generates a local water pressure field. These local generated pressures dissipate almost instantaneously in soils of high permeability, so equilibrium water pressures are measured during CPTU ir coarse sand and gravel. In medium or low permeability soils, the generated water pressure field is sustained for a lengthy period of time (Saines and others, 1989).

The dissipation of generated water pressure can be recorded during pauses in the penetration process. If the pauses are long enough for all generated water pressures to dissipate, potentiometric surface measurements can be obtained at multiple depths in a single CPTU sounding. The dissipation test is also used to estimate soil hydraulic conductivity and consolidation characteristics.

2.3.1 Piezometer Saturation The CPTU piezometer filter is saturated with an incompressible liquid so that instantaneous responses (zero lag time) can be achieved during testing. High saturation levels are indicated by sharp responses at interfaces and immediate regeneration of excess water pressure after pauses in penetration. Low saturation levels leading to poor measurements can be caused by inadequate equipment preparation, soil suction, or filter damage on coarse soil particles. Clogging of piezometric filters by clay particles also can lead to poor results. Loss of filter saturation or clogged filters are beyond the control of the penetrometer system operator. Thus, the piezometric measurements can be less repeatable than the highly repeatable CPT tip and sleeve measurements.

2.4 Electrical Conductivity and Thermal Measurements A CPTU-EC penetrometer including tip, sleeve, piezometric, temperature, and electrical conductivity (EC) sensors can be used to simultaneously acquire geotechnical, hydrogeological and qualitative geochemical information. Soil EC is measured using a two electrode array, energized with a 3 kHz signal, mounted on the penetrometer tip. The EC measurement has a resolution of about 0.75 inches.

A thermal sensor can be mounted inside the penetrometer. Significant frictional heating occurs when penetrating sandy soils. During pauses, the generated heat will dissipate and the penetrometer will reach thermal equilibrium with the soil. This allows a soil temperature profile to be acquired.

2.5 Natural Gamma Measurements A CPTU-ECG penetrometer incorporating cone, friction, piezometric, soil electrical conductivity and natural gamma (G) sensors can be used to simultaneously acquire geotechnical, hydrogeological, qualitative geochemical and radiological information. Gamma measurements can be used to enhance lithologic interpretation. Radionuclide contamination can also be detected using gamma logging.

2.6 Induced UV Fluorescence A CPTU-EC-UVF penetrometer incorporating cone, friction, piezometric, soil electrical conductivity, and induced UV Fluorescence (UVF) sensors can be used to simultaneously acquire geotechnical, hydrogeological, and qualitative geochemical information. The UVF system consists of a sapphire window in the penetrometer, a UV light source, and photonic sensors. UV light is transmitted through the window into the adjacent soil. If the soil contains compounds such as petroleum hydrocarbons that fluoresce, the resulting light can be detected.

The UV source light is bandpass filtered to provide an excitation wavelength of 254 nm. The photonics sensor is filtered to monitor resulting fluorescence emissions above 290 nm. Future improvements to the UVF module include a photonic sensor array, filtered at several different wavelengths to allow some compound differentiation capabilities.

2.7 CPT Shear Wave Velocity Measurements A geophone module is deployed similarly to other penetrometer sensors. A main advantage of the pushed in sensor is that it has superior coupling to the soil, resulting in much better definition of wave arrival, as compared to borehole deployed geophones. The shear wave system consists of a pair of downhole geophones, an uphole wave source and timing trigger, signal conditioning and A/D, signal enhancement and acquisition software, and a PC computer.

The CPT shear wave velocity data acquisition procedure is as follows: 1) the geophone module is pushed to the required depth; 2) data file/signal conditioning is initialized; 3) a hammer/timing trigger is used as a uphole wave source; 4) geophone signal is monitored for wave arrival. The software allows signal stacking to enhance the picking of wave arrival times. The procedure is repeated at multiple depths, to allow calculation of interval wave velocities between adjacent tests.

2.8 CPT Load/settlement Measurements The standard CPT procedure is typically conducted as a constant rate of strain test, resulting in continuous measurements of soil ultimate bearing and frictional strengths. By conducting CPT under monotonically increasing stress conditions, soil deformation properties can be evaluated. The procedure is very similar to pile load testing except that no pile "set up" is typically allowed - the CPT test is conducted during short pauses in the continuous push process.

2.9 Penetrometer Geometry The CPT penetrometer external geometry is specified by ASTM standards. Differences in penetrometer internal design can lead to some variability in response between penetrometers of different manufacture, especially in very soft clays. The CPTU measurement of generated water pressure depends on external filter geometry. Measurements of equilibrium water pressures after pauses in the penetration process are not sensitive to geometry, and reflect undisturbed conditions. CPTU piezometric filters are typically mounted on either the cone tip or just ahead of the friction sleeve. Each position has advantages and disadvantages. Measurements taken with the cone tip filter are at a maximum and show high resolution of thin soil seams. The cone tip filter is prone to damage on coarse soil particles.

Negative pressures are often measured in dense, silty or clayey sands and hard clays when using the friction sleeve filter. These low pressures are caused by soil elastic rebound (expansion) as the soil moves from the intensely loaded region beneath the cone tip to the less loaded region next to the friction sleeve. Soil expansion can induce large suction forces on the friction sleeve filter, which then often results in decreased filter saturation levels.

Site characteristics and data usage determine which piezometric filter geometry is appropriate. The piezometric filter is placed at the friction sleeve position on the CPTU-EC penetrometer. Generally good results can be obtained using this geometry when proper preparation techniques are followed.

2.10 Downhole Equipment Decontamination and Open Hole Grouting The rod string is retrieved through a rodwasher mounted on the hydraulic ram assembly. High pressure hot water is sprayed from internal nozzles to clean the rod string. Wash water (½ gallon per 10 ft of rod) can be captured for disposal.

The STRATIGRAPHICS grouting system is used to seal open hole. As penetrometers are being advanced, bentonite grout is pumped into the annular space between the smaller diameter sounding rods and the soil formed by the passage of the larger diameter penetrometer. A bypass valve is opened and additional grout is pumped to seal the hole during rod string retrieval. About 3/4 gallons of grout are required to seal 10 ft of open hole.

Pressure grouting during sounding advance controls cross-contamination between different strata. The grout decreases the contact of downhole equipment with contaminated soil. The grout also can decrease friction on the sounding rods, which can allow deeper penetration. Grout levels are checked after completion, and additional grout is added to account for penetration of grout into permeable strata.

## 3.0 PENETROMETER SAMPLING EQUIPMENT

Groundwater, soil gas, and soil samplers are deployed in the same manner as CPTU-EC penetrometers. Good sample isolation is achieved because no open hole exists during penetrometer operations.

3.1 Groundwater Sampler The STRATIGRAPHICS groundwater sampler is a shielded wellpoint sampler of heavy construction. The shield prevents sampler contamination while penetrating soils above the sampling depth. After shield retraction, groundwater flows under in situ pressure conditions, through a 20 inch long screen, into the 350 ml sample barrel. The sampler is retrieved to pour off the sample and for decontamination. Small diameter pumps can be used with the sampler to acquire large volumes of sample. This sampler can be deployed in any soil capable of being penetrated by the CPTU-EC penetrometer (Strutynsky and others, 1998).

A pressure transducer can be placed inside the sampler barrel. This allows the measurement of sample inflow rate. Analysis of inflow data using rising head slug test methods can provide a means of estimating soil hydraulic conductivities. If equilibrium conditions are reached, a measurement of the static water pressure head is obtained during groundwater sampling.

3.2 Soil Gas Sampler The STRATIGRAPHICS soil gas sampler is a shielded screen sampler, similar to the groundwater sampler. The shield is opened by pulling back the rod string during sampling, and soil gases are then extracted. The shield can be closed, and the rod string advanced to another depth, allowing multiple samples during a single rod trip. Soil gasses are extracted from the rod string. A vacuum box can be used to inflate Tedlar bags for off site analysis. Portable analytical equipment can be used to allow immediate analysis. The sampler, rod string and tubing are purged before sampling.

3.3 Soil Samplers Fixed piston samplers are used to obtain soil samples during penetrometer exploration. The STRATIGRAPHICS and MOSTAP 2-meter samplers are deployed similarly to a penetrometer. A piston, locked into the tip of the barrel to prevent soil from entering the sampler prematurely, is released at the sampling depth. The barrel is then advanced to the bottom of the sampling interval. The soil enters the liners within the barrel and is retained by a core catcher. The sampler is retrieved to remove the sample and for sampler decontamination.

The MOSTAP Sampler is used to obtain 1 inch diameter samples as long as 2 meters (78 inches). This sampler incorporates a PVC liner and a nylon stocking to allow retrieval of such a long sample. As the sample enters the sampler, it is encased in the nylon stocking. The stocking lessens soil friction around on the sample as it enters the PVC liner. At the end of the 2 meter run, the sampler is rotated to twist the stocking, helping retain the sample. This sampler can be used in softer soils.

## 4.0 PIEZOMETER INSTALLATION TECHNIQUES

Penetrometer methods can be used to install piezometers for water level measurements, slug testing, groundwater sampling, and for remediation activities, such as sparging and soil vapor extraction (SVE). Various installation techniques are available (Saines and others, 1989). Proprietary, low volume change piezometers also can be installed using penetrometer equipment. These piezometers are often used for long term water pressure measurements during geotechnical projects.

PVC piezometers can be installed using either of two techniques. The simplest is to lower 3/4 inch PVC screen and riser into the open hole left after penetrometer retrieval. Installation and material costs are very low for this technique. A drawback is that caving sands or squeezing clays can limit the depth to which the PVC pipe can be lowered.

PVC piezometers also are most often installed using a steel casing pushed to depth. The steel casing is sealed with an expendable tip, which prevents soil from entering the casing during deployment. The PVC screen and risers are lowered into the casing. The steel casing is then withdrawn, leaving the expendable tip and PVC piezometer in place.

5.0 DATA REDUCTION

Test data are monitored as the soundings are performed. Data are recorded on hard disk and may consist of: depth, time, tip and sleeve resistance, generated water pressure, EC, UVF, temperature and natural gamma. Data are processed in-house for final reporting. Before final reporting, data pass a quality control review. Routine checking of proper equipment performance is conducted in the field. Office review helps assure that data quality is maintained throughout the study.

Several parameters can be computed to enhance data correlation:

friction ratio, FR (in %):

FR = fs/qc * 100 (Eq. 1); and

pore pressure ratio, Bq (dimensionless):

Bq = (U-Ue)/(qc-Sv) (Eq. 2);

where: fs is the measured friction sleeve resistance, in TSF;
qc is the measured cone end bearing resistance, in TSF;
U is the measured generated pore water pressure, in TSF;
Ue is the measured or estimated equilibrium pore water pressure, in TSF; and
Sv is the total soil overburden pressure, in TSF.

Measured data and correlated parameters are presented in a graphical sounding log format for each sounding; numerical data are typically tabulated at 0.5 ft intervals. Tabulated digital data in ASCII real format are attached on 3-1/2 inch, 1.44 M floppy disk.

CPTU dissipation test data are recorded as a function of time during pauses in the penetration process. The CPTU dissipation data are normalized using the following equation:

normalized dissipation level, U* (dimensionless):

(Ut - Ue) / (U0 - Ue) (Eq. 3);

where: Ut is the excess pore water pressure at time t, in TSF;
Ue is the measured or estimated equilibrium, undisturbed pore water pressure (in situ pore water pressure before penetrometer insertion), in TSF; and
U0 is the excess pore water pressure at time equal to zero, at the start of the dissipation test, in TSF

The normalized dissipation level is plotted versus log scale time. In uniform soils, the plot takes the shape of a reverse S-curve, beginning at 1.0 at zero time (at the instant the penetration process is stopped) and falling to 0.0 when equilibrium pressures are achieved. Boundary effects in interbedded deposits can cause deviation from this ideal.

An estimate of the horizontal coefficient of soil consolidation can be calculated (Baligh and Levadoux, 1980) using:

Ch (in cm**2/sec) = (r**2*T)/t (Eq. 4a).

Estimates of soil hydraulic conductivity in the horizontal direction can be calculated using:

kh (in cm/s) = ((r**2*T)/t)*RR*(Gw/(2.3*Sv')) (Eq. 4b);

where: r is the penetrometer radial dimension at the plane of the piezometric filter, equal to 2.2 cm for the friction sleeve filter and 1.9 cm for the cone tip filter;
T is a dimensionless time factor at the 50% normalized dissipation level, equal to 5.5 for the friction sleeve filter and 3.8 for the cone tip filter;
t is the measured time, in seconds, at which the normalized dissipation level is 50%;
RR is a dimensionless soil compressibility parameter;
Gw is the unit weight of water, in kg/cm***3; and
Sv' is the effective soil vertical overburden pressure, in kg/cm**2.

Dissipation test data can be presented in graphical plots and are summarized in tabular form.

6.0 GENERAL DATA EVALUATION

6.1 Sounding Log The CPTU-EC sounding logs provide high resolution information on subsurface conditions. Soil layering is often highly apparent. Soil relative strength and saturation levels can also be evaluated. Zones of anomalous soil electrical conductivity can readily be identified. Lateral continuity of conditions can be developed by overlaying adjacent sounding logs on a light table and comparing layer characteristics for similarities. Digital CPTU-EC data files can be used in two and three dimensional data visualization or CAD software programs.

6.2 Soil Type Classification Correlations between penetrometer data and soil classification have been developed from geotechnical bearing capacity theory and a relational database on adjacent CPT soundings and drilled boreholes (Douglas and Olsen, 1981). A CPT soil classification chart based on cone tip resistance and friction ratio is presented in Appendix A.

The CPT tip resistance increases exponentially with soil grain size. For example, tip resistance in dense sands ranges from about 100 to 400 tons per square foot (TSF), while tip resistance in a stiff clay ranges from about 5 to 15 TSF. The friction ratio (Section 5.0) is also used for indication of soil type. The friction ratio increases with the fines content and compressibility of a soil. The friction ratio is less than about 1% in a sand and greater than about 3% in a clay.

Correlated CPT soil classifications reflect the soil shear resistance to penetration. Soil shear resistance is not entirely controlled by grain size distribution. However, correlated CPT classifications generally agree with classifications based on grain size distribution methods, such as the Unified Soil Classification System (USCS).

The generated water pressure measurement may be useful for classification of saturated soils. Penetration of coarse sand and gravel occurs under drained loading conditions, and equilibrium pressures are measured during penetration. The pore pressure ratio (Section 5.0) is zero in high permeability soils.

For saturated soils of permeability less than about 1*10E-2 cm/sec, undrained loading with significant excess water pressure generation occurs during CPTU. Positive excess water pressures are generally measured during penetration of silt or clay soils when using either the cone tip or friction sleeve filter penetrometer (Section 2.7). Pore pressure ratios of fine grained soils typically range from about 0.4 to 1.0.

Positive excess water pressures are also usually measured in dense, silty or clayey sands when using the cone tip filter penetrometer, with pore pressure ratios from about 0 to 0.3. Due to geometric effects (Section 2.7), negative pressures are usually measured in dense, silty or clayey sands, sandy silts, or hard sandy clays with the friction sleeve filter penetrometer. Thus, it is important to note the type of piezometer in use. The CPTU-EC penetrometer uses a friction sleeve piezometric filter.

6.3 Potentiometric Surfaces Equilibrium water pressures are measured during penetrometer advance in saturated, coarse sands and gravels. Measurements of equilibrium water pressures can be obtained during CPTU in lower permeability soils by pausing during penetration and allowing generated water pressures to dissipate to equilibrium conditions.

6.4 Soil Saturation Soil saturation can be evaluated by inspection of the CPTU sounding log. Atmospheric (zero) pressure is measured during CPTU in unsaturated soils. Hydrostatic pressures are measured in saturated, high permeability soils. Significant water pressures are generated in saturated, low permeability soils due to penetrometer advance. Decreased levels of water pressure generation can be indicative of partially saturated soils. Decreased water pressure generation also may occur in organic soils due to the high compressibility of organic soil particles and the presence of biogenic gases, such as methane and hydrogen sulfide.

6.5 Soil Hydraulic Conductivity Excess water pressures are generated by penetrometer advance in saturated soils with permeability of less than about 1*10E-2 cm/sec. These pressures can be allowed to dissipate during pauses in the penetration process. The CPTU dissipation test is similar to a falling head slug test and can be used to estimate soil hydraulic conductivity in the horizontal direction. Very high water pressures are typically generated in low permeability soils by penetrometer advance. The large water pressure changes require soil compressibility (storage) effects to be included in analyses. The CPTU tip resistance provides an index of soil compressibility for these computations (Section 5.0).

6.6 Soil Electrical Conductivity Behavior Soil electrical conductivity (EC) is controlled by the conductance of both the soil particles and soil pore fluids. The ratio between pore fluid and soil-pore fluid electrical conductivity is termed the formation factor (Archie, 1942). Clays can be electrically conductive due to adsorbed water and ionic electrical charges on the clay platelets. Clay EC depends on mineralogy, porosity and pore fluid characteristics. Sand grains are typically non-conductive, so granular soil conductance is primarily dependent on the conductance of pore fluids and the sand's porosity. The following factors affect granular soil EC: **Pore fluids** Pore fluids play a major role in sand EC. A dry sand has low conductance since both the sand grains and the air in the pore space have very low EC. Sands saturated with conductive liquids, such as brine or landfill leachates, have high electrical conductivity. Hydrocarbons typically decrease EC because of their low conductance.

**Saturation** Soil saturation has a pronounced effect on soil EC, as conductance increases with water saturation. Low saturation is typically associated with low EC.

**Porosity** The low porosity of a dense sand results in less pore fluid available for electrical conductance and thus lower EC; the high porosity of a loose sand is associated with higher EC. Formation factors vary as an inverse function of porosity, from about 3 at high porosity to about 4.5 at low porosity.

**Clay content** The addition of as little as 5% clay to a sand can significantly increase soil electrical conductance (Windle, 1977).

**Gravel Interference** The high resolution of the STRATIGRAPHICS CPTU-EC electrode array makes measurements sensitive to soil grain size. Two behaviors can occur when penetrating gravelly soils. One can occur when a large particle is crushed against an electrode, masking it from the pore fluids, which results in very low EC values. This can result in false positive hydrocarbon interpretations. An opposite behavior is observed in gravel deposits which contain few fine grained, intersticial soils. The resolution of the EC measurement is so high that electrical conductance paths are often entirely within the pore fluid of the coarse grained soil. In this situation, high EC values are measured, more closely reflecting pore fluid EC, rather than soil EC.

6.7 EC Evaluation EC data are evaluated for qualitative geochemical characteristics in conjunction with piezometric data and soil types. Anomalous zones possibly indicative of contaminants can be directly sampled for quantitative chemical analysis.

**Vadose Zone** Low or zero EC values are measured in dry sandy soils. Increased EC in sands above the water table may indicate moisture infiltration. Low EC data in silty or clayey soils can be anomalous as fine grained soils often retain significant amounts of moisture within their pore spaces, creating good conditions for electrical conductance. Thus, low EC values in silty or clayey soils in the vadose zone may indicate hydrocarbon contamination. Elevated EC values in the vadose zone may be associated with road deicing salts, buried metals and rusted metal objects, flyash and cinders, among others.

**Saturated Soils** Low EC values in saturated soils can be indicative of anomalous geochemistry. In particular, depressed EC zones immediately at the water table may be associated with floating (LNAPL) compounds. Very low EC zones at interfaces between aquifers and aquitards may be associated with either floating (LNAPL) or sinking (DNAPL) compounds. Gravel interference must be considered when evaluating depressed EC zones in saturated soils.

Elevated EC values in saturated soils can be due to increased soil clay content or to increased dissolved salts in the ground water. Increased clay contents are evaluated based on the CPTU-EC piezometric data and soil type information. Zones of elevated EC immediately above an aquiclude may be associated with brines (Strutynsky and others, 1998).

6.8 UV Fluorescence Behavior Fluorimetry (measurement of fluorescence) has been used for many years for the detection and identification of various compounds and minerals. An excitation light of short wavelength is used to expose the specimen. If fluorescent compounds or minerals are present, light of longer wavelength, as compared to the excitation wavelength, will be emitted from the specimen. This resulting light can be monitored for intensity and spectral distribution.

Compounds that fluoresce include a wide range of hydrocarbon and other organic compounds. Heavy hydrocarbons (e.g. fuel oil and coal tars) fluoresce at relatively long wavelength excitation. As excitation wavelength decreases below about 300 nm, fluorescence from lighter hydrocarbons (e.g. jet fuel and gasoline) is observed. In addition to hydrocarbons, other compounds and minerals, such as fluorites and other carbonates, also exhibit fluorescence. Compounds that fluoresce include dyes and optical brighteners. Dyes and brighteners can be found in paints, detergents, antifreeze compounds, some food additives and cosmetics, among others. UVF response will be affected by the presence of any such compounds.

6.9 CPT-SPT Correlation Since most geoscientists are familiar with drilling and split spoon sampling, CPT data have been correlated with SPT blowcount N-values. The SPT N-value is defined by ASTM to be the number of blows of a 140 lb hammer, dropped 30 inches, required to drive a 2 inch outside diameter sampler 12 inches into the bottom of the borehole, after an initial seating drive of 6 inches. Correlations of CPT to the crude SPT have been based on numerical modeling of the two penetration processes and on side by side comparisons Douglas and others, 1981). Details on CPT-SPT correlations are included in Appendix A

## 7.0 OPTIONAL GEOTECHNICAL DATA CORRELATION

CPT data have been correlated with soil type, drained friction angle, undrained shear strength, relative density and SPT blowcounts, among others. A correlation scheme including tip resistance and friction ratio has generally proved most useful for evaluating CPT data. Correlation of CPT data with other parameters has been developed using: 1) comparisons between CPT data and results of other in situ and laboratory tests in adjacent boreholes; 2) CPT testing on large scale soil samples of known composition; and 3) geotechnical bearing capacity and cavity expansion theory. Site specific information can be used to fine tune correlations. Additional information on correlation techniques, including overburden pressure normalization, test drainage conditions and recommended practices, is presented in Appendix A.

## 8.0 PROGRAM RESULTS

Acquired data are presented following the report text and consist of: 1) sounding logs with lithologic evaluation; 2) data presentation sounding logs; and 3) tabulations of correlated geotechnical parameters, including soil classifications.

It should be noted that the computerized correlations of soil types and other geotechnical properties were generated using a global rather than site specific data base. Use of site specific data was beyond the scope of this study.

## 9.0 STATEMENT OF LIMITATIONS

Subsurface information was gathered only at the sounding locations. Extrapolation of sounding data to develop stratigraphic continuity is conjectural. Actual site conditions between sounding locations may differ.

Computer correlation of penetrometer data with other parameters was performed using generalized charts rather than on site specific information. Site specific correlation work based on results of detailed laboratory testing was beyond the scope of this project. Evaluation of soil saturation levels and potentiometric surfaces is only representative of conditions encountered during the field program. Seasonal variation must be expected.

Data gathering for this study was attempted to be performed in general accordance with accepted procedures and practices. Correlation of penetrometer data with other parameters is empirical and should not be considered as the exact equivalent of laboratory testing. STRATIGRAPHICS shall not be responsible for another's interpretation of the information obtained for this study.

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# TABLE 1
## SUMMARY OF CPTU-EC DISSIPATION TEST DATA
### Stratford Army Engine Plant
### Stratford, Connecticut

| SOUNDING NUMBER | DEPTH (ft) | SOIL TYPE AT DISSIPATION DEPTH | t50 (sec) | ESTIMATED SOIL HORIZONTAL HYDRAULIC CONDUCTIVITY kh (cm/sec) |
|---|---|---|---|---|
| CP-9901 | 79.4 | Silty sand or fine sand | 5.0 | 2E-04 |
| | 92.4 | Silty sand or fine sand | 6.5 | 1E-04 |
| | 104.3 | Silty sand or fine sand | 6.5 | 1E-04 |
| CP-9902 | 27.1 | Silty sand or fine sand | 4.5 | 6E-04 |
| | 34.2 | Silty sand or fine sand | 1.5 | 1E-03 |
| | 47.8 | Silty sand or fine sand | 3.5 | 4E-04 |
| | 50.1 | Silty sand or fine sand | 9.5 | 2E-04 |
| | 57.3 | Silty sand or fine sand | 3.5 | 4E-04 |
| | 66.8 | Silty sand or fine sand | 5.5 | 2E-04 |
| | 69.6 | Silty sand or fine sand | 5.5 | 2E-04 |
| | 97.0 | Silty sand or fine sand | 0.5 | 2E-03 |
| | 99.1 | Silty sand or fine sand | 0.5 | 2E-03 |
| CP-9903 | 21.5 | Gravelly, silty sand | 1.5 | 2E-03 |
| | 27.0 | Silty sand or fine sand | 5.0 | 5E-04 |
| | 30.3 | Silty sand or fine sand | 1.5 | 1E-03 |
| | 63.9 | Clayey sand or micaceous sand | 4.5 | 3E-04 |
| | 66.3 | Clayey sand or micaceous sand | 12.5 | 9E-05 |
| | 72.8 | Clayey sand or micaceous sand | 6.0 | 2E-04 |
| | 92.4 | Clayey sand or micaceous sand | 3.0 | 3E-04 |
| | 102.2 | Clayey sand or micaceous sand | 3.5 | 2E-04 |
| CP-9904 | 20.8 | Silty sand or fine sand | 8.5 | 4E-04 |
| | 125.8 | Silty sand or fine sand | 2.5 | 2E-04 |
| CP-9905 | 71.2 | Silty sand or fine sand | 4.0 | 3E-04 |
| CP-9906 | 30.5 | Silty sand or fine sand | 6.5 | 4E-04 |
| | 42.6 | Clayey sand or micaceous sand | 4.5 | 2E-04 |
| | 60.1 | Clayey sand or micaceous sand | 1.5 | 8E-04 |
| | 115.9 | Clayey sand or micaceous sand | 7.5 | 9E-05 |
| | 125.8 | Silty sand or fine sand | 1.5 | 4E-04 |
| CP-9908 | 40.2 | Silty sand or fine sand | 13.0 | 1E-04 |
| CP-9909 | 44.6 | Clayey sand or micaceous sand | 59.0 | 3E-05 |
| | 92.5 | Silty sand or fine sand | 9.0 | 1E-04 |
| CP-9910 | 30.2 | Silty/fine sand, possibly cemented | 0.5 | 4E-03 |
| | 38.0 | Silty/fine sand, possibly cemented | 2.5 | 7E-04 |
| CP-9913 | 49.7 | Silty sand or fine sand | 2.5 | 5E-04 |
| | 53.0 | Silty sand or fine sand | 5.5 | 2E-04 |
| | 56.2 | Silty sand or fine sand | 17.5 | 7E-05 |
| | 86.0 | Silty sand or fine sand | 3.5 | 2E-04 |
| | 89.9 | Silty sand or fine sand | 3.0 | 3E-04 |

# TABLE 2
# SUMMARY OF CPTU-EC SOUNDINGS
# STRATFORD ARMY ENGINE PLANT
# STRATFORD, CONNECTICUT

| SOUNDING NUMBER | DATE PERFORMED | SOUNDING TYPE | SOUNDING DEPTH (feet) | COMMENTS |
|---|---|---|---|---|
| CP-9901 | 05/05/99 | CPTU-EC | 131.6 | |
| CP-9902 | 05/06/99 | CPTU-EC | 136.3 | |
| CP-9903 | 05/10/99 | CPTU-EC | 116.4 | |
| CP-9904 | 05/06/99 | CPTU-EC | 162.4 | |
| CP-9905 | 05/07/99 | CPTU-EC | 132.8 | |
| CP-9906 | 05/08/99 | CPTU-EC | 139.5 | |
| CP-9907 | 05/11/99 | CPTU-EC | 115.7 | |
| CP-9908 | 05/20/99 | CPTU-EC | 158.8 | |
| CP-9909 | 05/09/99 | CPTU-EC | 92.6 | |
| CP-9910 | 05/18/99 | CPTU-EC | 75.9 | |
| CP-9911 | 05/12/99 | CPTU-EC | 78.6 | |
| CP-9912 | 05/10/99 | CPTU-EC | 121.6 | |
| CP-9913 | 05/12/99 | CPTU-EC | 144.7 | |
| CP-9914A | 05/18/99 | CPTU-EC | 38.5 | |
| CP-9915 | 05/20/99 | CPTU-EC | 59.2 | |
| CP-9916 | 05/20/99 | CPTU-EC | 87.8 | |

# TABLE 3
# SUMMARY OF SAMPLING
# STRATFORD ARMY ENGINE PLANT
# STRATFORD, CONNECTICUT

| SAMPLE NUMBER | DATE SAMPLED | SAMPLER TYPE | DEPTH INTERVAL (in feet) | COMMENTS |
|---|---|---|---|---|
| GWS-9901-130 | 05/05/99 | STRATIGRAPHICS groundwater sampler | 128.5 - 130.3 | |
| GWS-9901-98 | 05/05/98 | STRATIGRAPHICS groundwater sampler | 96.0 - 97.8 | |
| GWS-9901-80 | 05/05/98 | STRATIGRAPHICS groundwater sampler | 78.0 - 79.8 | |
| GWS-9901-56 | 05/05/98 | STRATIGRAPHICS groundwater sampler | 54.0 - 55.8 | |
| GWS-9901-42 | 05/05/98 | STRATIGRAPHICS groundwater sampler | 40.0 - 41.5 | |
| GWS-9902-133 | 05/06/99 | STRATIGRAPHICS groundwater sampler | 131.5 - 133.3 | |
| GWS-9902-96 | 05/06/99 | STRATIGRAPHICS groundwater sampler | 94.0 - 95.8 | |
| GWS-9902-44 | 05/06/99 | STRATIGRAPHICS groundwater sampler | 42.4 - 44.2 | |
| GWS-9902-32 | 05/06/99 | STRATIGRAPHICS groundwater sampler | 30.0 - 31.8 | |
| GWS-9902-20 | 05/06/99 | STRATIGRAPHICS groundwater sampler | 18.0 - 19.8 | |
| PZ-9902-9 | 05/06/99 | 3/4 INCH PVC piezometer | 7.0 8.8 | |
| GWS-9903-114 | 05/10/99 | STRATIGRAPHICS groundwater sampler | 112.3 - 114.0 | |
| GWS-9903-97 | 05/10/99 | STRATIGRAPHICS groundwater sampler | 94.7 - 96.5 | |
| GWS-9903-76 | 05/10/99 | STRATIGRAPHICS groundwater sampler | 74.4 - 76.2 | |
| GWS-9903-56 | 05/10/99 | STRATIGRAPHICS groundwater sampler | 54.5 - 56.0 | |
| GWS-9903-39 | 05/10/99 | STRATIGRAPHICS groundwater sampler | 37.2 - 39.0 | |
| GWS-9904-159 | 05/07/99 | STRATIGRAPHICS groundwater sampler | 157.4 - 159.1 | |
| GWS-9904-112 | 05/07/99 | STRATIGRAPHICS groundwater sampler | 110.0 - 111.8 | |
| GWS-9904-85 | 05/07/99 | STRATIGRAPHICS groundwater sampler | 86.0 - 87.8 | |
| GWS-9904-45 | 05/07/99 | STRATIGRAPHICS groundwater sampler | 43.2 - 45.0 | |
| GWS-9904-34 | 05/07/99 | STRATIGRAPHICS groundwater sampler | 32.0 - 33.8 | |
| GWS-9905-131 | 05/07/99 | STRATIGRAPHICS groundwater sampler | 129.7 - 131.4 | |
| GWS-9905-99 | 05/07/99 | STRATIGRAPHICS groundwater sampler | 97.0 - 98.8 | |
| GWS-9905-74 | 05/07/99 | STRATIGRAPHICS groundwater sampler | 72.5 - 74.3 | |

# TABLE 3
# SUMMARY OF SAMPLING
# STRATFORD ARMY ENGINE PLANT
# STRATFORD, CONNECTICUT

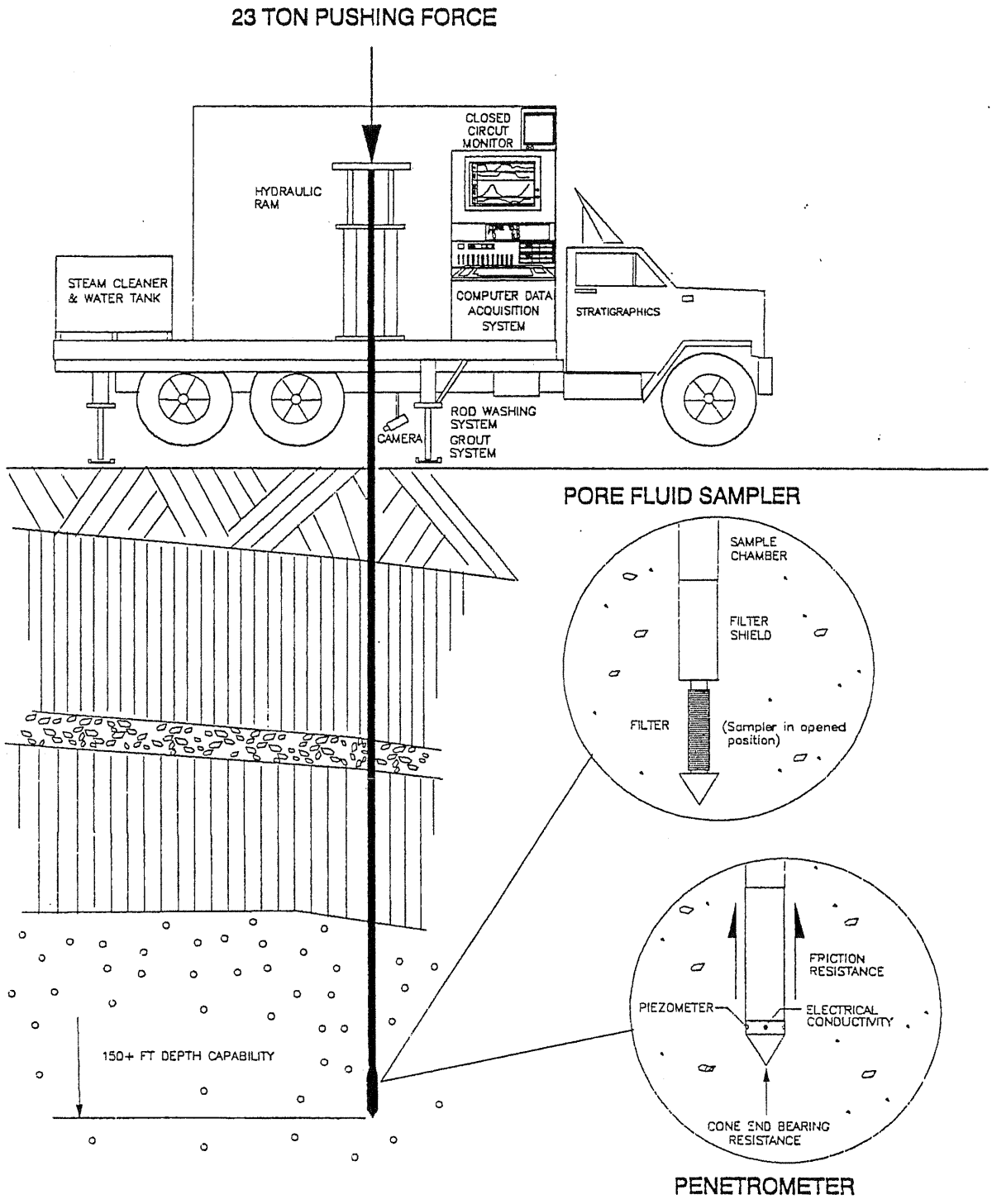
| SAMPLE NUMBER | DATE SAMPLED | SAMPLER TYPE | DEPTH INTERVAL (in feet) | COMMENTS |
|---|---|---|---|---|
| GWS-9905-56 | 05/07/99 | STRATIGRAPHICS groundwater sampler | 54.6 - 56.4 | |
| GWS-9905-33 | 05/07/99 | STRATIGRAPHICS groundwater sampler | 30.8 - 32.8 | |
| GWS-9906-128 | 05/09/99 | STRATIGRAPHICS groundwater sampler | 126.2 - 128.0 | |
| GWS-9906-114 | 05/09/99 | STRATIGRAPHICS groundwater sampler | 112.0 - 113.8 | |
| GWS-9906-80 | 05/09/99 | STRATIGRAPHICS groundwater sampler | 78.0 - 79.8 | |
| GWS-9906-52 | 05/09/99 | STRATIGRAPHICS groundwater sampler | 50.0 - 51.8 | |
| GWS-9906-30 | 05/09/99 | STRATIGRAPHICS groundwater sampler | 28.0 - 29.8 | |
| GWS-9907-115 | 05/11/99 | STRATIGRAPHICS groundwater sampler | 113.2 - 115.0 | |
| GWS-9907-86 | 05/11/99 | STRATIGRAPHICS groundwater sampler | 84.0 - 85.8 | |
| GWS-9907-70 | 05/11/99 | STRATIGRAPHICS groundwater sampler | 68.0 - 69.8 | |
| GWS-9907-39 | 05/11/99 | STRATIGRAPHICS groundwater sampler | 37.4 - 39.2 | |
| GWS-9907-20 | 05/11/99 | STRATIGRAPHICS groundwater sampler | 18.4 - 20.3 | |
| GWS-9908-158 | 05/08/99 | STRATIGRAPHICS groundwater sampler | 156.3 - 158.5 | |
| GWS-9908-135 | 05/08/99 | STRATIGRAPHICS groundwater sampler | 133.2 - 135.0 | |
| GWS-9908-101 | 05/19/99 | STRATIGRAPHICS groundwater sampler | 99.2 - 101.0 | |
| GWS-9908-73 | 05/19/99 | STRATIGRAPHICS groundwater sampler | 71.2 - 73.0 | |
| GWS-9908-62 | 05/19/99 | STRATIGRAPHICS groundwater sampler | 60.2 - 62.0 | |
| GWS-9908-46 | 05/19/99 | STRATIGRAPHICS groundwater sampler | 44.0 - 45.8 | |
| GWS-9908-34 | 05/19/99 | STRATIGRAPHICS groundwater sampler | 32.0 - 33.8 | |
| GWS-9908-14 | 05/19/99 | STRATIGRAPHICS groundwater sampler | 12.0 - 13.8 | |
| GWS-9909-90 | 05/09/99 | STRATIGRAPHICS groundwater sampler | 88.0 - 89.8 | |
| GWS-9909-34 | 05/09/99 | STRATIGRAPHICS groundwater sampler | 33.0 - 34.5 | |
| GWS-9910-75 | 05/18/99 | STRATIGRAPHICS groundwater sampler | 73.3 - 75.1 | |
| GWS-9910-59 | 05/18/99 | STRATIGRAPHICS groundwater sampler | 57.8 - 59.6 | |

# TABLE 3
# SUMMARY OF SAMPLING
# STRATFORD ARMY ENGINE PLANT
# STRATFORD, CONNECTICUT

| SAMPLE NUMBER | DATE SAMPLED | SAMPLER TYPE | DEPTH INTERVAL (in feet) | COMMENTS |
|---|---|---|---|---|
| GWS-9910-50 | 05/18/99 | STRATIGRAPHICS groundwater sampler | 48.0 - 49.8 | |
| GWS-9910-42 | 05/18/99 | STRATIGRAPHICS groundwater sampler | 40.8 - 42.6 | |
| GWS-9910-36 | 05/18/99 | STRATIGRAPHICS groundwater sampler | 34.5 - 36.3 | |
| GWS-9910-29 | 05/18/99 | STRATIGRAPHICS groundwater sampler | 27.0 - 28.8 | |
| GWS-9911-78 | 05/12/99 | STRATIGRAPHICS groundwater sampler | 75.7 - 77.5 | |
| GWS-9911-60 | 05/12/99 | STRATIGRAPHICS groundwater sampler | 58.0 - 59.8 | |
| GWS-9911-46 | 05/12/99 | STRATIGRAPHICS groundwater sampler | 44.6 - 46.4 | |
| GWS-9911-16 | 05/12/99 | STRATIGRAPHICS groundwater sampler | 14.5 - 16.3 | |
| GWS-9912-121 | 05/10/99 | STRATIGRAPHICS groundwater sampler | 119.8 - 121.6 | |
| GWS-9912-82 | 05/10/99 | STRATIGRAPHICS groundwater sampler | 90.0 - 91.8 | |
| GWS-9912-56 | 05/10/99 | STRATIGRAPHICS groundwater sampler | 54.6 - 56.4 | |
| GWS-9912-21 | 05/10/99 | STRATIGRAPHICS groundwater sampler | 19.6 - 21.4 | |
| GWS-9912-11 | 05/10/99 | STRATIGRAPHICS groundwater sampler | 9.0 - 10.8 | |
| GWS-9914-42 | 05/19/99 | STRATIGRAPHICS groundwater sampler | 40.6 - 42.4 | |
| GWS-9914-31 | 05/19/99 | STRATIGRAPHICS groundwater sampler | 29.0 - 30.8 | |
| GWS-9914-18 | 05/19/99 | STRATIGRAPHICS groundwater sampler | 15.3 - 18.1 | |
| GWS-9915-59 | 05/20/99 | STRATIGRAPHICS groundwater sampler | 57.4 - 59.2 | |
| GWS-9915-47 | 05/20/99 | STRATIGRAPHICS groundwater sampler | 45.5 - 47.0 | |
| GWS-9915-41 | 05/20/99 | STRATIGRAPHICS groundwater sampler | 39.0 - 40.8 | |
| GWS-9915-32 | 05/20/99 | STRATIGRAPHICS groundwater sampler | 29.7 - 31.5 | |
| GWS-9916-94 | 05/21/99 | STRATIGRAPHICS groundwater sampler | 92.3 - 94.0 | |
| GWS-9916-78 | 05/21/99 | STRATIGRAPHICS groundwater sampler | 75.7 - 77.5 | |
| GWS-9916-63 | 05/21/99 | STRATIGRAPHICS groundwater sampler | 62.7 - 63.5 | |
| GWS-9916-53 | 05/21/99 | STRATIGRAPHICS groundwater sampler | 51.0 - 52.8 | |

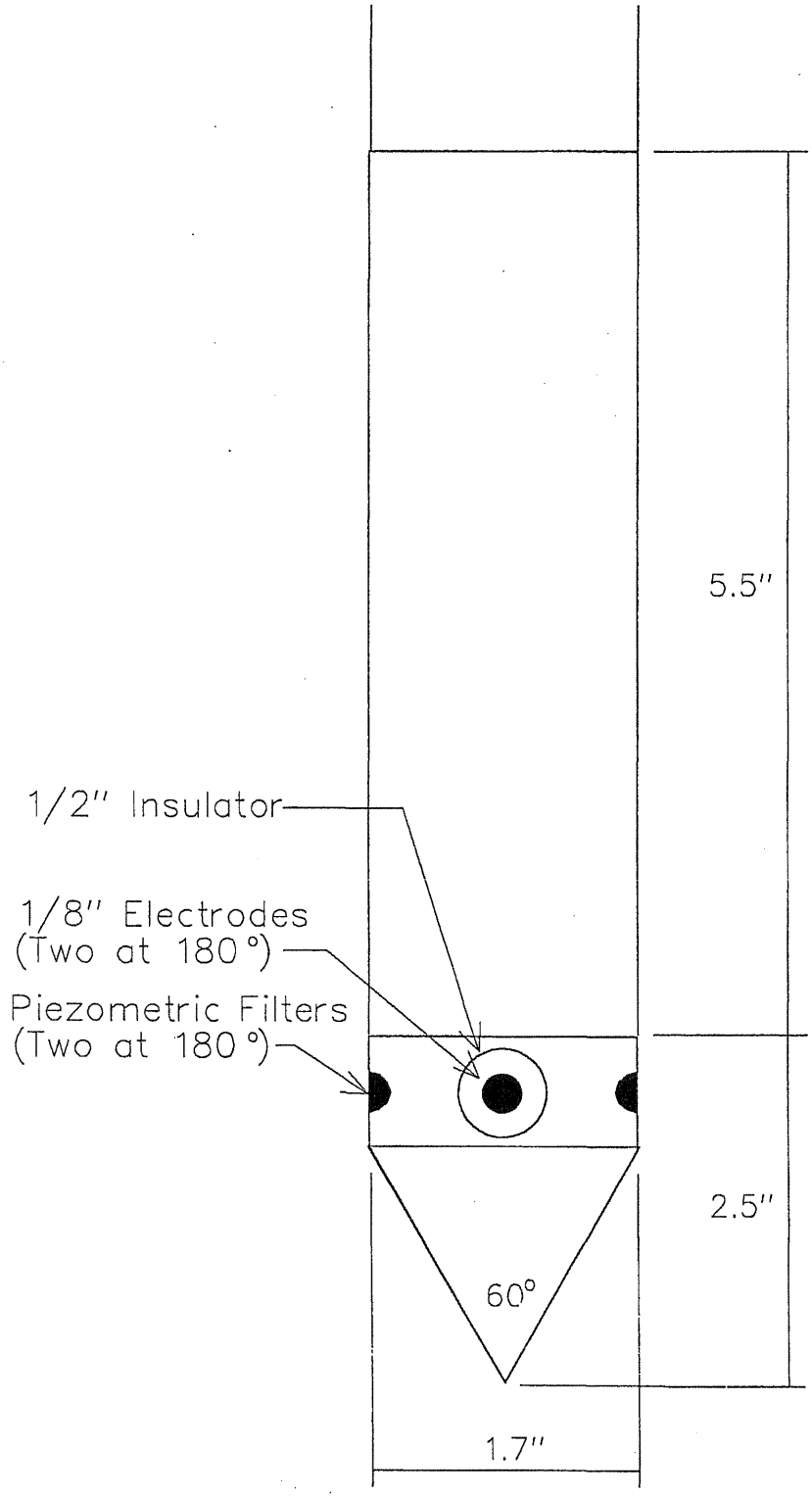
# TABLE 3
# SUMMARY OF SAMPLING
# STRATFORD ARMY ENGINE PLANT
# STRATFORD, CONNECTICUT

| SAMPLE NUMBER | DATE SAMPLED | SAMPLER TYPE | DEPTH INTERVAL (in feet) | COMMENTS |
|---|---|---|---|---|
| GWS-9916-36 | 05/21/99 | STRATIGRAPHICS groundwater sampler | 34.6 - 36.4 | |
| GWS-9916-28 | 05/21/99 | STRATIGRAPHICS groundwater sampler | 26.7 - 28.5 | |
| GWS-9917-63 | 05/26/99 | STRATIGRAPHICS groundwater sampler | 60.9 - 62.7 | |
| GWS-9917-46 | 05/26/99 | STRATIGRAPHICS groundwater sampler | 44.0 - 45.8 | |
| GWS-9917-32 | 05/26/99 | STRATIGRAPHICS groundwater sampler | 29.0 - 31.8 | |
| GWS-9918-148 | 05/25/99 | STRATIGRAPHICS groundwater sampler | 146.2 - 148.0 | |
| GWS-9918-134 | 05/25/99 | STRATIGRAPHICS groundwater sampler | 132.6 - 134.4 | |
| GWS-9918-100 | 05/25/99 | STRATIGRAPHICS groundwater sampler | 98.6 - 100.4 | |
| GWS-9918-13 | 05/25/99 | STRATIGRAPHICS groundwater sampler | 11.5 - 13.3 | |
| GWS-9918-73 | 05/25/99 | STRATIGRAPHICS groundwater sampler | 71.4 - 73.2 | |
| GWS-9918-61 | 05/25/99 | STRATIGRAPHICS groundwater sampler | 59.2 - 61.0 | |
| GWS-9918-46 | 05/25/99 | STRATIGRAPHICS groundwater sampler | 44.0 - 45.8 | |
| GWS-9918-34 | 05/25/99 | STRATIGRAPHICS groundwater sampler | 33.0 - 34.8 | |




# PENETROMETER SUBSURFACE EXPLORATION SYSTEM

***STRATIGRAPHICS***




NOTE:

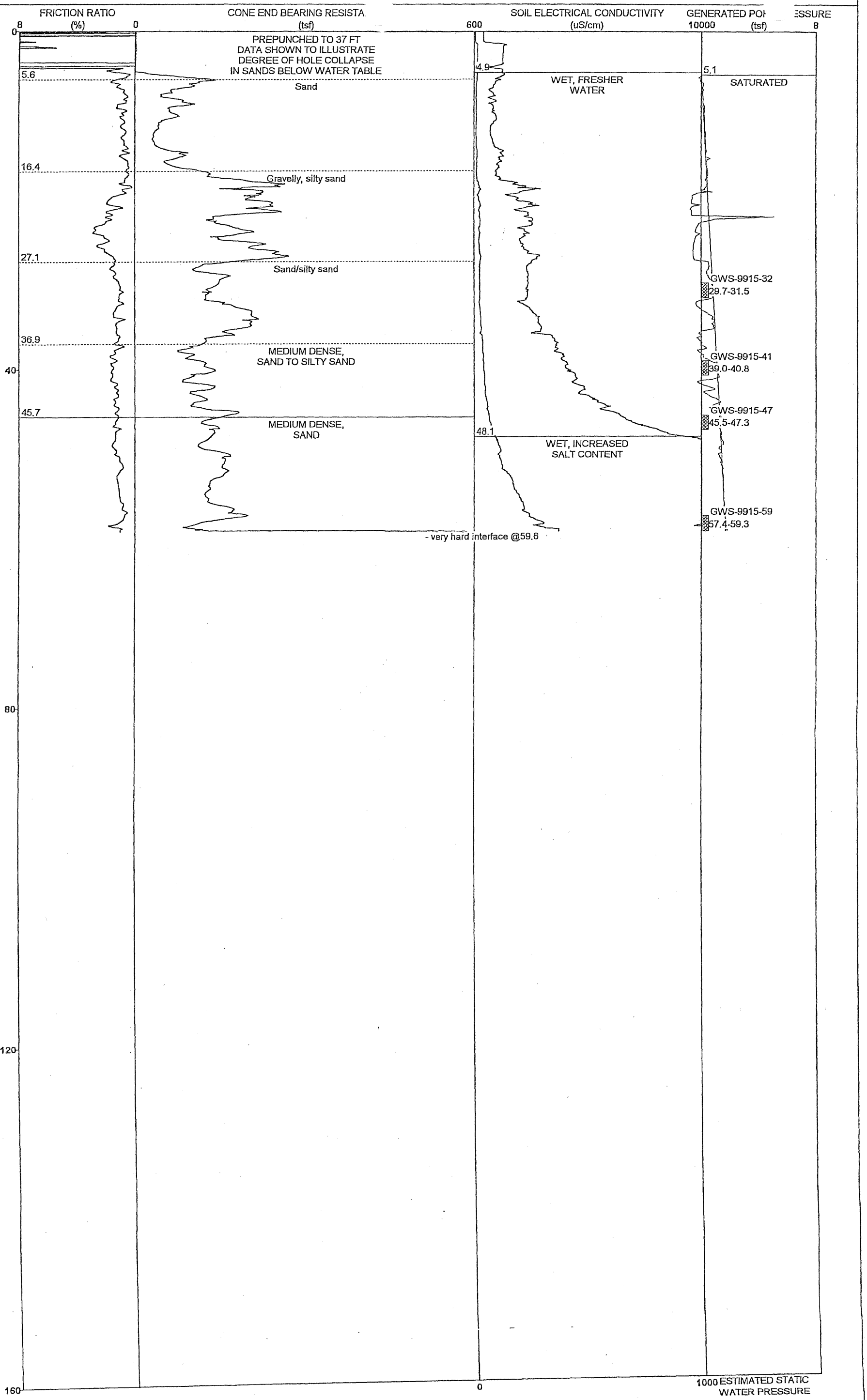
1. All dimensions approximate.

**STRATIGRAPHICS**

**PENETROMETER FOR CPTU-EC TESTING**

Figure 1a

# CPTU LOG WITH LITHOLOGIC EVALUATION




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-20-1999 TIME:10:55:48.01
SOUNDING NUMBER:cp-9915

# CPTU-20 LOG WITH LITHOLOGIC EVALUATION

FRICTION RATIO (%) 8 0 | CONE END BEARING RESISTAN (tsf) 0 600 | SOIL ELECTRICAL CONDUCTIVITY (uS/cm) | GENERATED POR 10000 (tsf) SSURE 8

0

PAVEMENT AND GRANULAR BASE

3.8

DENSE TO MEDIUM DENSE, SAND TO SILTY SAND, WITH SOME GRAVEL

4.7

WET, FRESHER WATER

NO PIEZOMETRIC DATA ACQUIRED

- water table estimated @5.3

13.2

DENSE, GRAVELLY SAND TO SILTY SAND,

24.9

DENSE TO VERY DENSE, SAND TO SILTY SAND, PROBABLY CEMENTED

GWS-9916-28
26.7-27.5

GWS-9916-36
34.6-36.4

36.8

MEDIUM DENSE, SAND TO SILTY SAND

37.2

WET, INCREASED SALT CONTENT

40

GWS-9916-53
51.0-52.8

GWS-9916-64
61.7-63.5

66.1

MEDIUM DENSE, SAND, PROBABLY FINE

GWS-9916-78
75.7-77.5

77.9

MEDIUM DENSE TO DENSE, SAND TO SILTY SAND

80

83.1

with numerous cobbles

GWS-9916-94
92.2-94.0

120

160

0

1000 ESTIMATED STATIC WATER PRESSURE

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-20-1999 TIME:15:45:04.69
SOUNDING NUMBER:CP-9916

# CPT-20 LOG WITH LITHOLOGIC EVALUATION

FRICTION RATIO (%) 8 0

CONE END BEARING RESISTA (tsf) 0

Prepunched to 10.60' thru rubble to about 9.5 ft

SOIL ELECTRICAL CONDUCTIVITY (uS/cm) 600

GENERATED PO 10000 (tsf, ESSURE 8

0

10.6

12.6 — LOOSE, SAND TO SILTY SAND (Fill?)

SOFT TO FIRM, CLAYEY SILT TO SILTY CLAY

WET, INCREASED SALT CONTENT

SATURATED

40 — 39.9

DENSE TO VERY DENSE, GRAVELLY, SILTY SAND TO GRAVELLY, SANDY SILT

GWS-9901-42
39.7-41.5

52.1

DENSE TO MEDIUM DENSE, SAND TO SILTY SAND, SLIGHTY CLAYEY OR MICACEOUS

GWS-9901-56
54.0-55.8

80

GWS-9901-80
78.0-79.8

86.3

Increased silt content, or fine sand

98.8

MEDIUM DENSE TO LOOSE, FINE SAND TO SILTY SAND, WITH NUMEROUS COARSER GRAINED SAND SEAMS AND LAYERS

GWS-9901-98
96.0-97.8

117.1

120 — MEDIUM DENSE TO DENSE, SAND , WITH SOME SILTY SEAMS, AND CLAYEY OR MICACEOUS LAYERS

GWS-9901-130
128.5-130.3

160

0

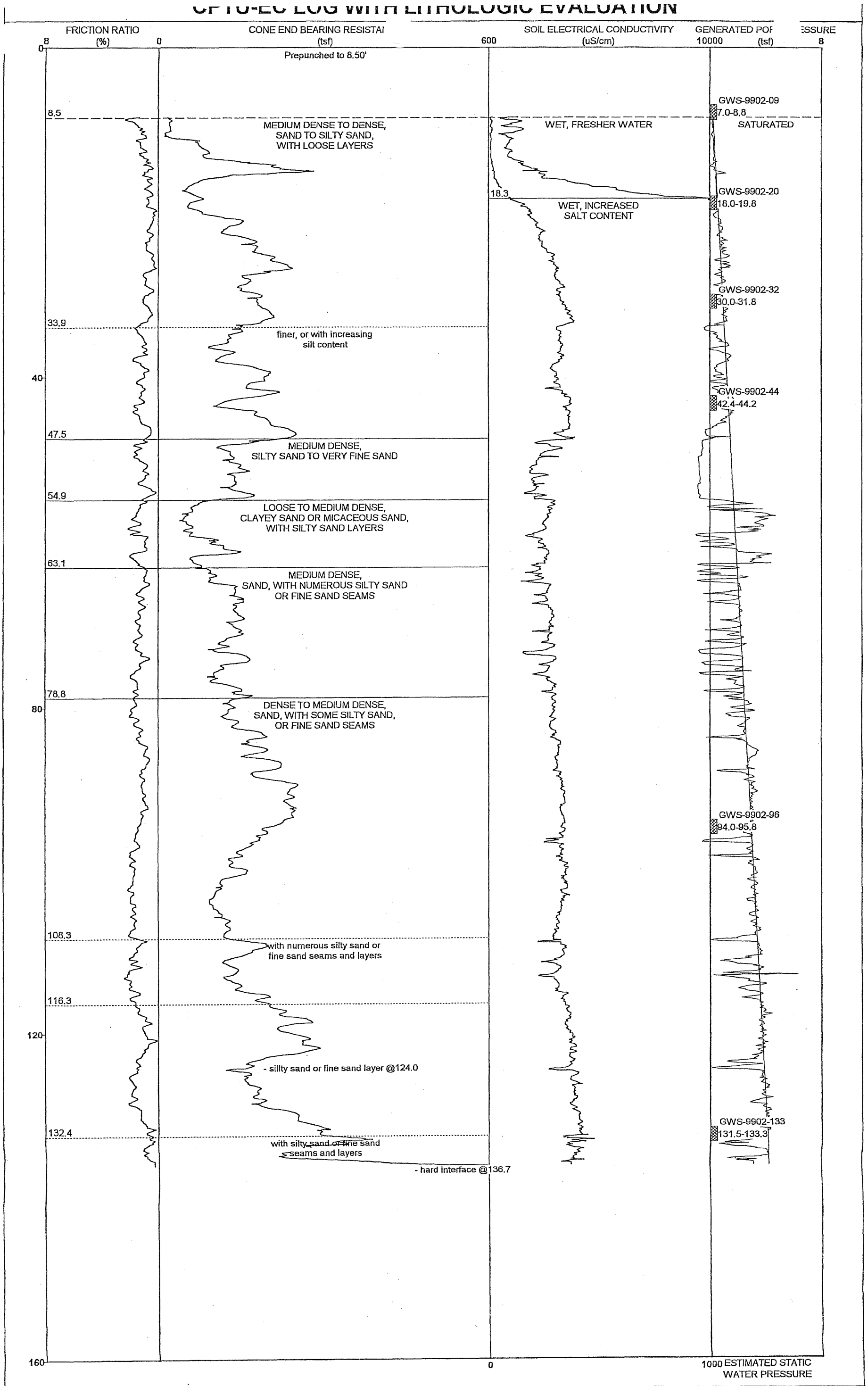
1000 ESTIMATED STATIC WATER PRESSURE

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-05-1999 TIME:12:24:09.81
SOUNDING NUMBER:cp-9901

# CPTU-EC LOG WITH LITHOLOGIC EVALUATION

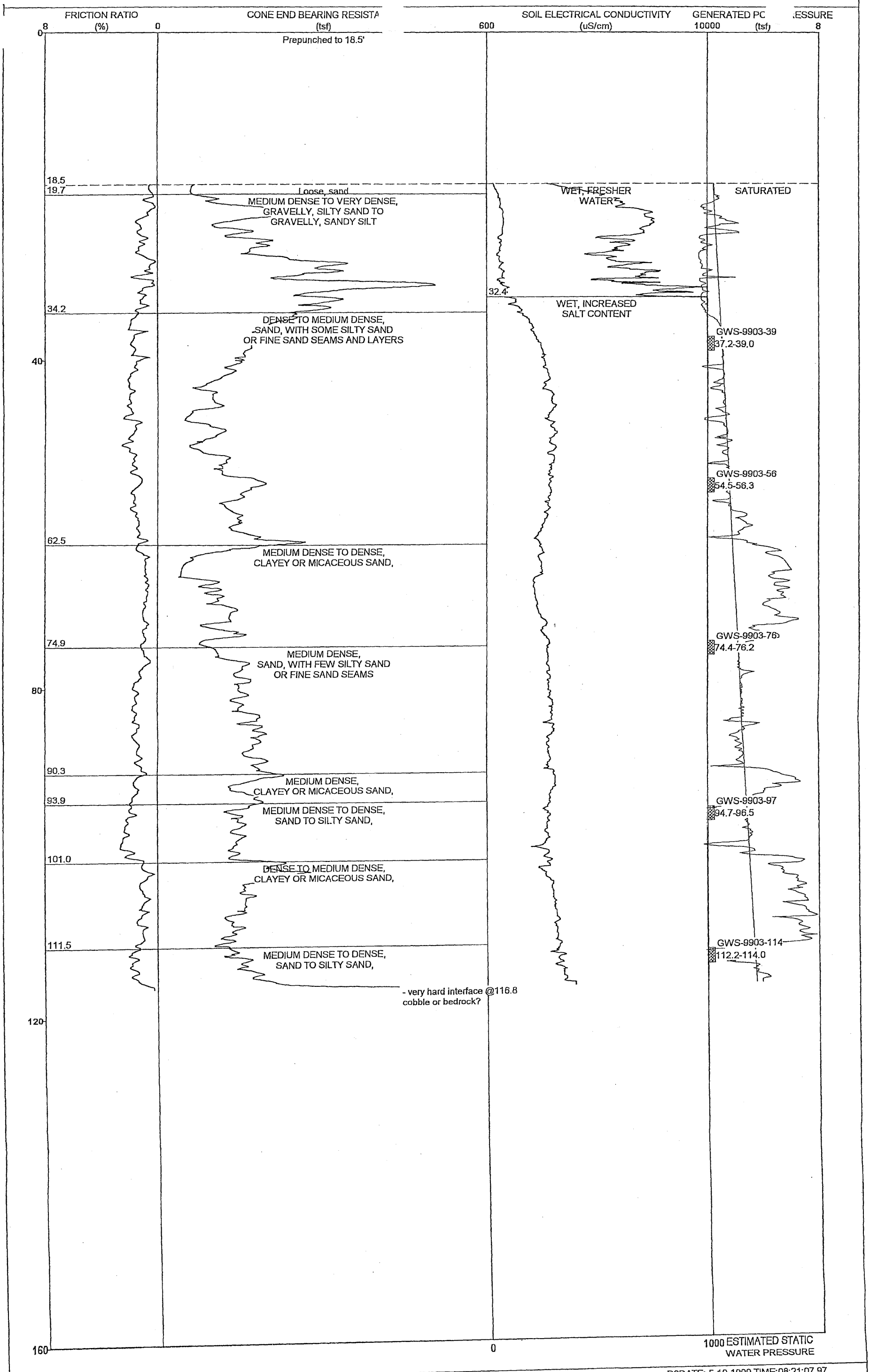



PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-06-1999 TIME:08:39:23.18
SOUNDING NUMBER:cp-9902

# CPT WITH LITHOLOGIC EVALUATION

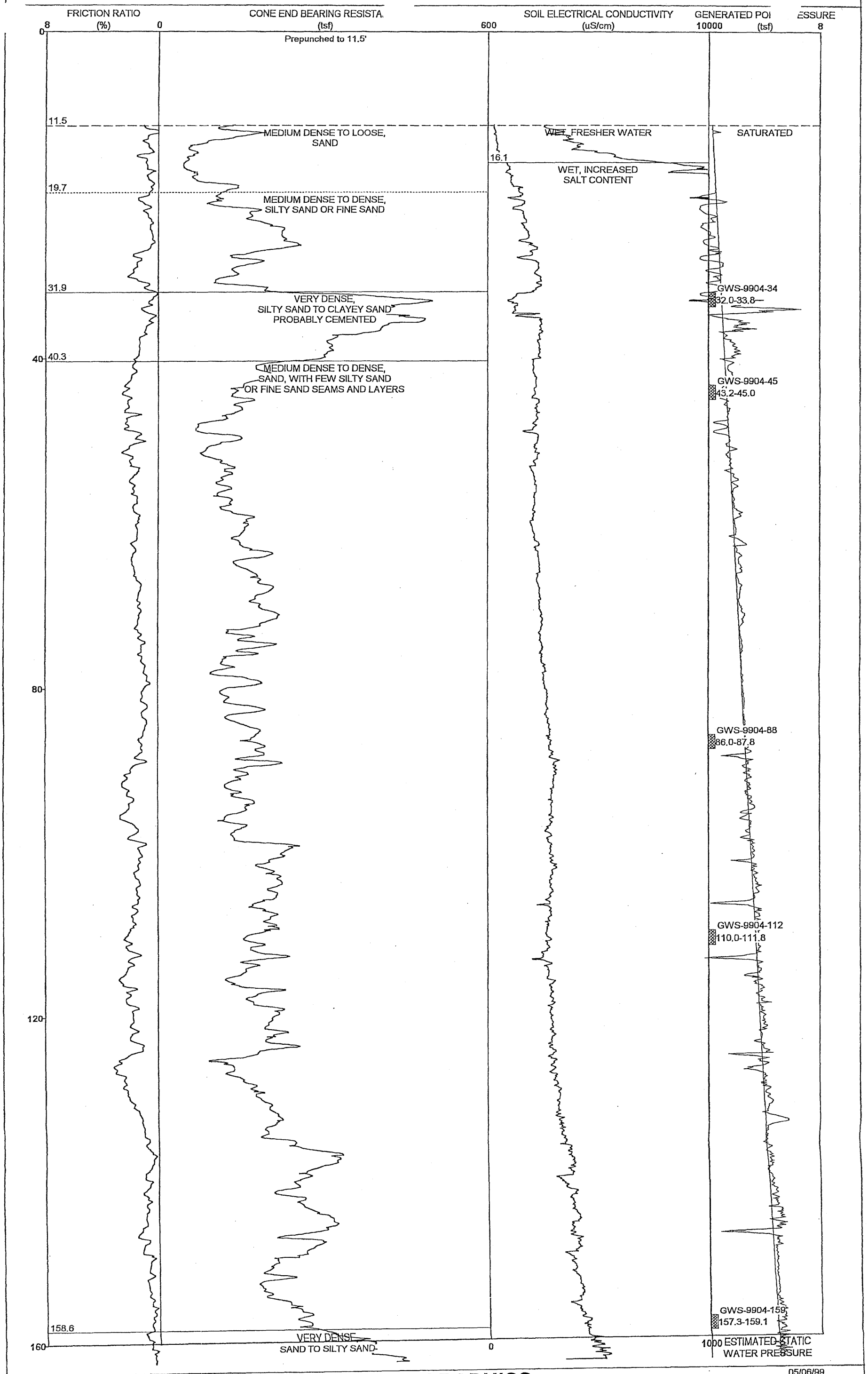



PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-10-1999 TIME:08:21:07.97
SOUNDING NUMBER:cp-9903

# CPTU-EC LOG WITH LITHOLOGIC EVALUATION




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

## STRATIGRAPHICS

05/06/99
SOUNDING NUMBER:cp9904

# CPT WITH LITHOLOGIC EVALUATION

FRICTION RATIO (%) 0–8 | CONE END BEARING RESISTANCE (tsf) 0 | SOIL ELECTRICAL CONDUCTIVITY (uS/cm) 600 | GENERATED PORE PRESSURE (tsf) 10000 | 8

Prepunched to 8'

8.0 — MEDIUM DENSE TO DENSE, GRAVELLY SAND TO SILTY SAND

16.1 — WET, FRESHER WATER

WET, INCREASED SALT CONTENT

21.5 — MEDIUM DENSE TO DENSE, SAND, WITH FEW SILTY SAND OR FINE SAND SEAMS

GWS-9905-33 31.0-32.8

37.8 — MEDIUM DENSE TO LOOSE, SILTY SAND OR FINE SAND

40

57.5 — INTERLAYERED SILTY (OR FINE SAND), AND CLAYEY (OR MICACEOUS) SAND

57.6 — decreasing salt content

GWS-9905-56 54.6-56.4

72.1 — MEDIUM DENSE TO DENSE, SAND

GWS-9905-74 72.5-74.3

79.3 — silty sand or fine sand layer

80

82.8 — silty or fine sand layer @89.0

GWS-9905-99 97.0-98.8

110.4 — with numeous silty sand or fine sand seams and layers

120

123.2 — extremely hard/abrupt interface @133.3 boulder/bedrock?

GWS-9905-131 129.7-131.4

160

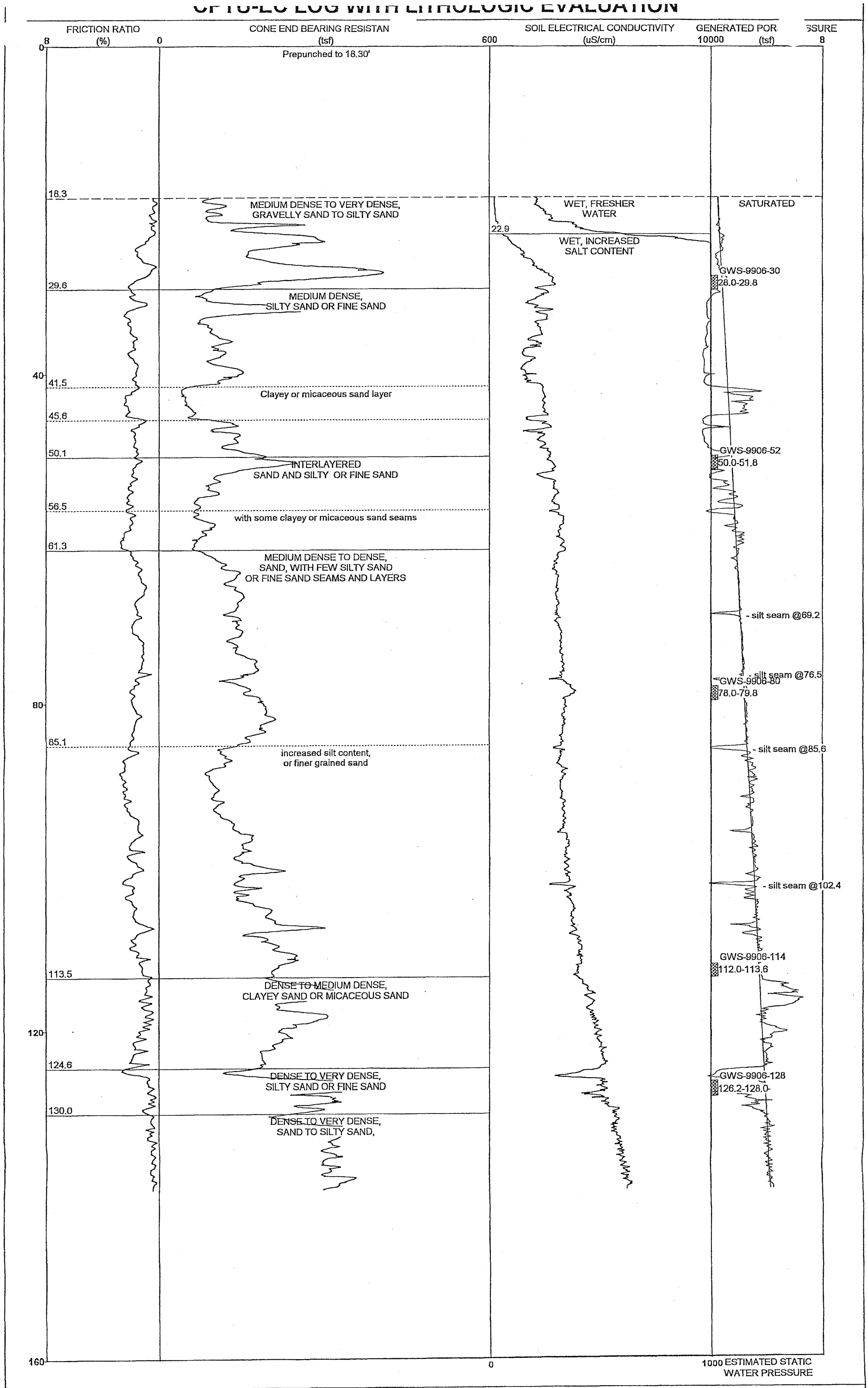
0 — 1000 ESTIMATED STATIC WATER PRESSURE

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-07-1999 TIME:11:20:49.02
SOUNDING NUMBER:CP-9905

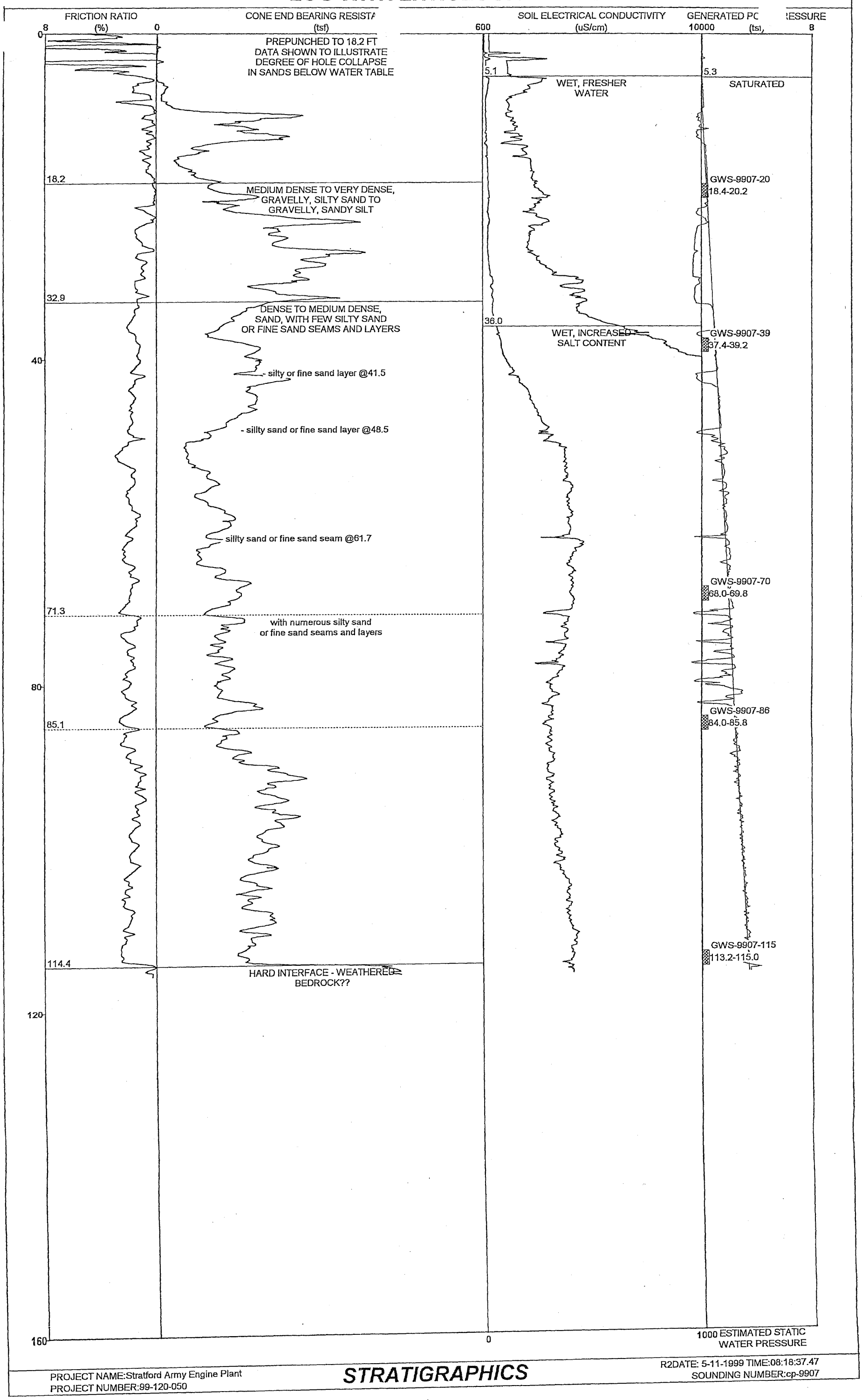
# CPTU-EC LOG WITH LITHOLOGIC EVALUATION




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-08-1999 TIME:16:44:36.88
SOUNDING NUMBER:cp-9906

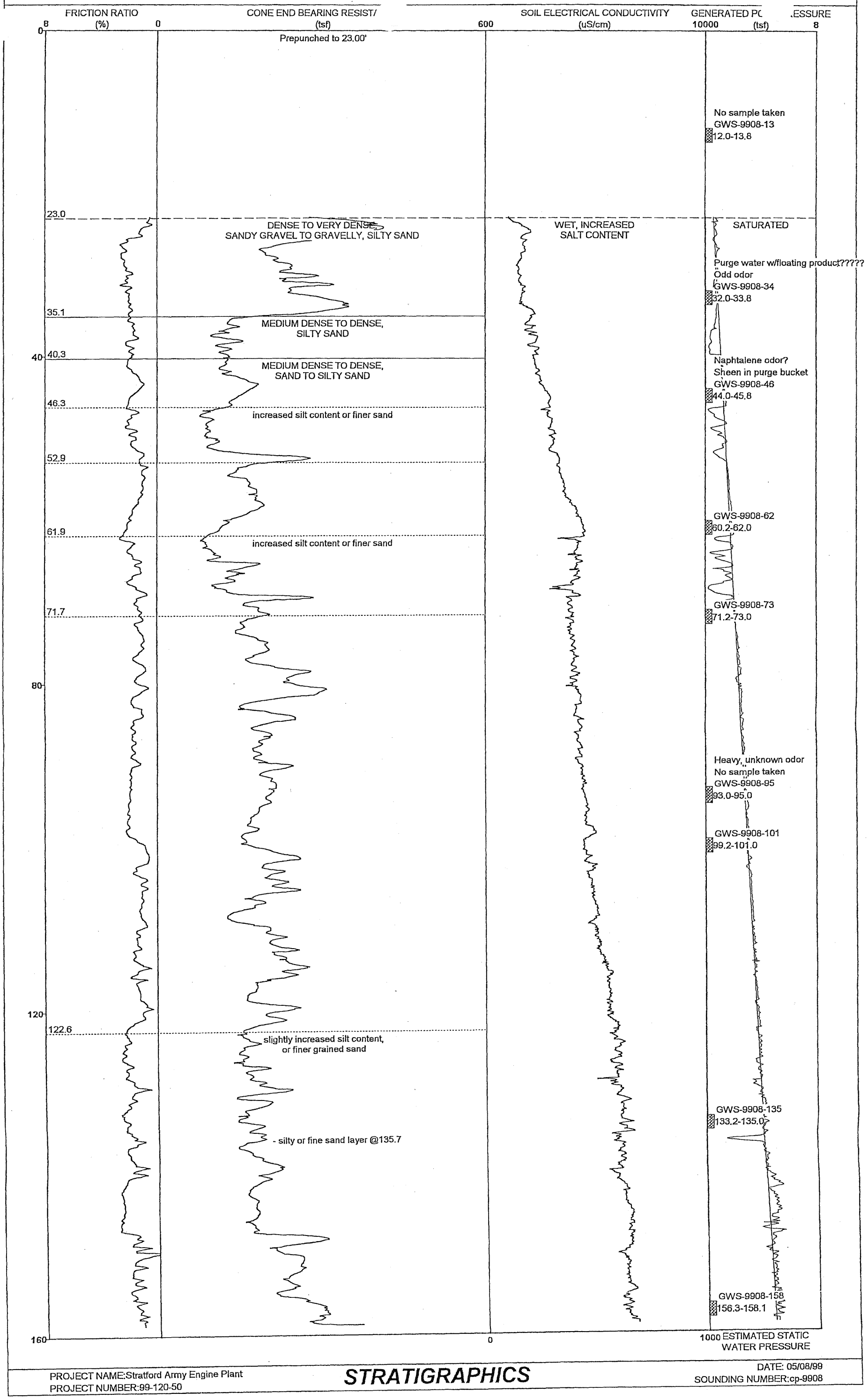



PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-11-1999 TIME:08:18:37.47
SOUNDING NUMBER:cp-9907

# CPTU-20 LOG WITH LITHOLOGIC EVALUATION

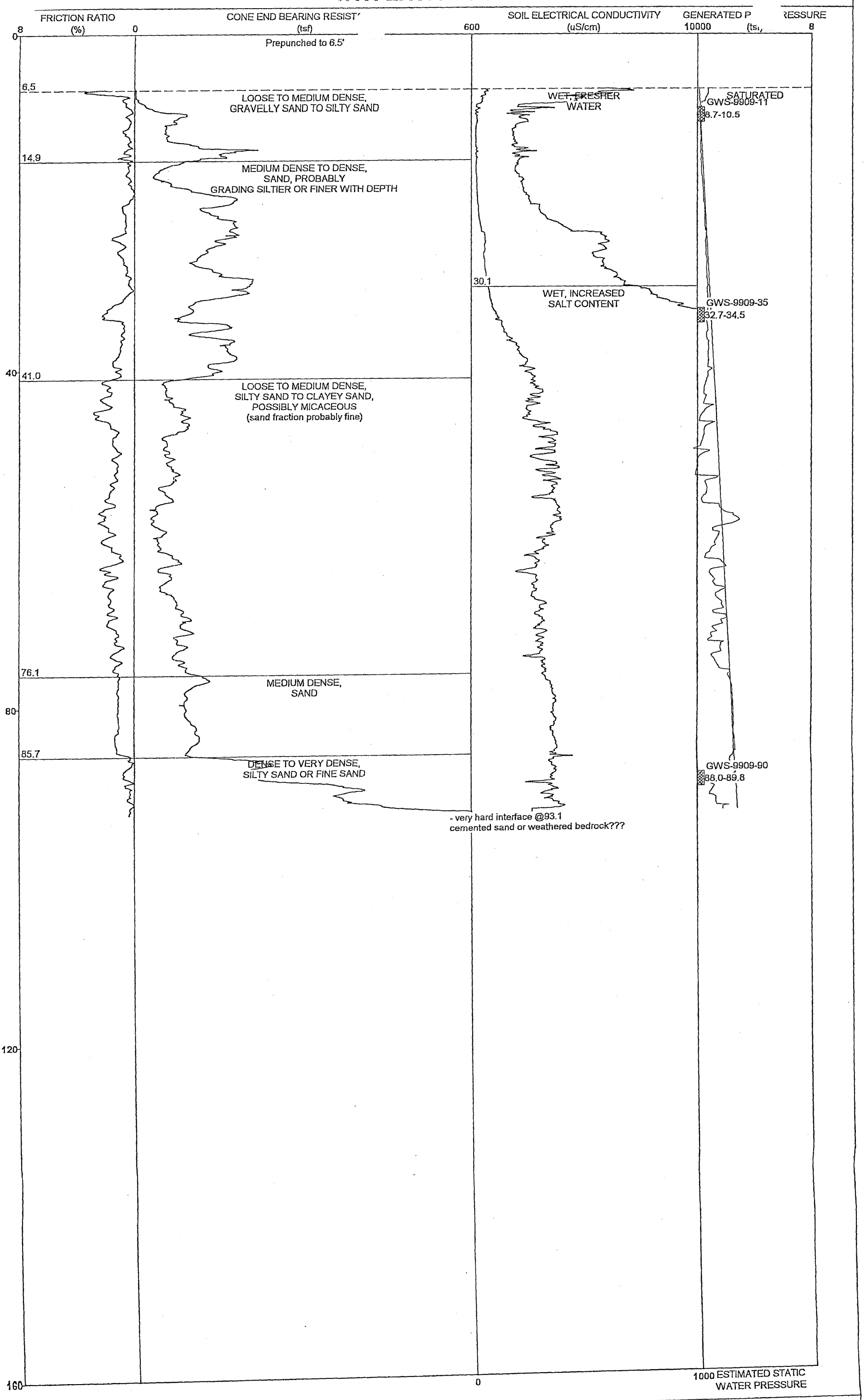



PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-50

**STRATIGRAPHICS**

DATE: 05/08/99
SOUNDING NUMBER:cp-9908

# ...ENTIOLOGIC EVALUATION




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-09-1999 TIME:10:43:45.25
SOUNDING NUMBER:cvp-9909

# CPTU-EC LOG WITH LITHOLOGIC EVALUATION

FRICTION RATIO (%) 8 0 | CONE END BEARING RESISTANCE (tsf) 0 | SOIL ELECTRICAL CONDUCTIVITY (uS/cm) 600 | GENERATED PORE 10000 (tsf) | PRESSURE 8

Prepunched to 14'

14.0 — MEDIUM DENSE, SAND

WET, FRESHER WATER

SATURATED

26.8 — WET, INCREASED SALT CONTENT

28.6 — DENSE TO VERY DENSE, SAND TO SILTY SAND, WITH POSSIBLY CEMENTED LAYER

36.5 — medium dense

41.8 — MEDIUM DENSE, SAND

61.0 — DENSE TO VERY DENSE, GRAVELLY, SILTY SAND TO SILTY SAND

GWS-9910-29 27.0-28.8

GWS-9910-36 34.5-36.3

GWS-9910-42 40.8-42.6

GWS-9910-50 48.0-49.8

GWS-9910-59 57.8-59.6

GWS-9910-75 73.3-75.1

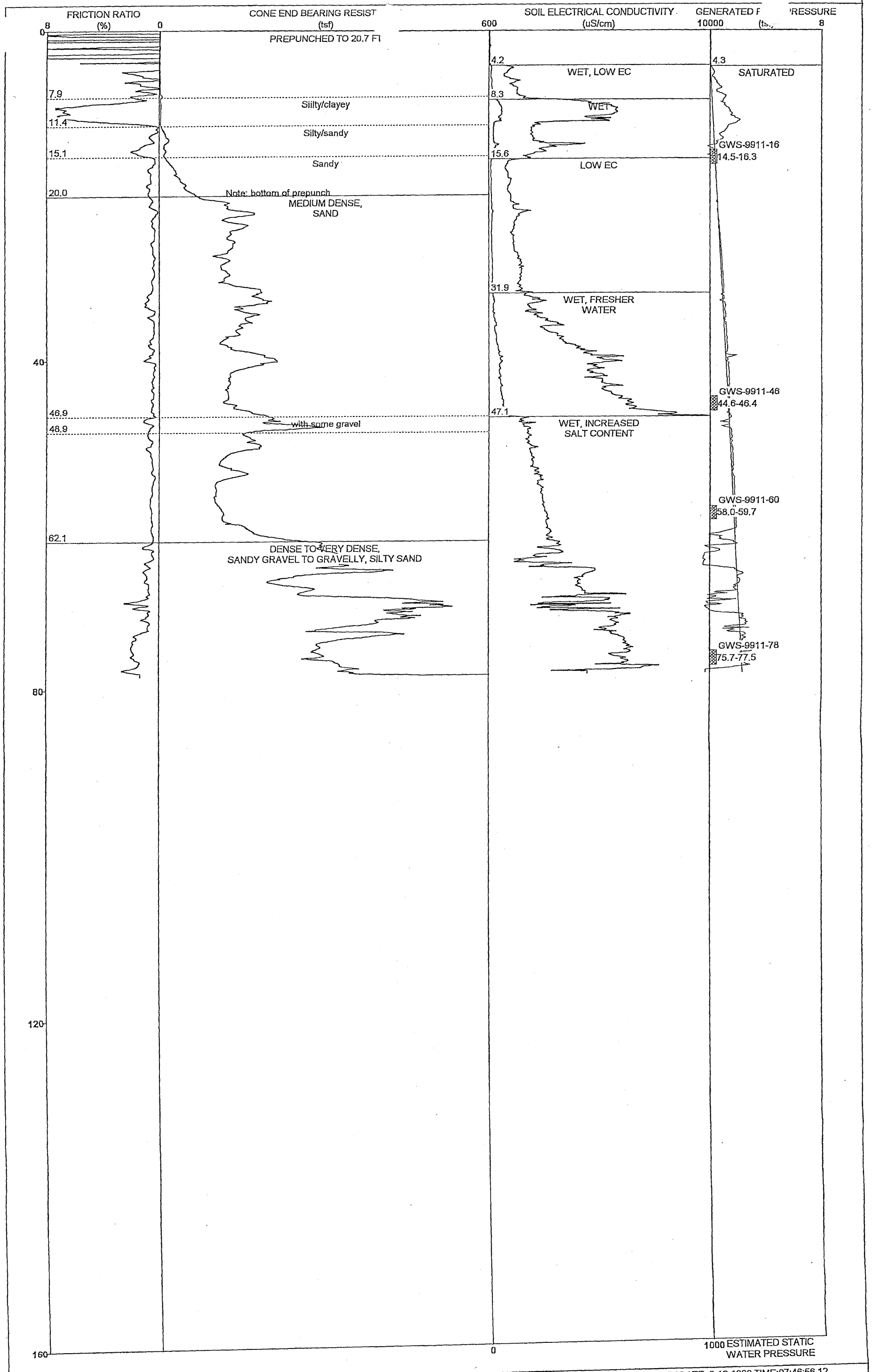
0 40 80 120 160

0 — 1000 ESTIMATED STATIC WATER PRESSURE

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

STRATIGRAPHICS

R2DATE: 5-18-1999 TIME:10:49:11.45
SOUNDING NUMBER:cp-9910




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-12-1999 TIME:07:46:56.12
SOUNDING NUMBER:cp-9911

# CPTU-EC LOG WITH LITHOLOGIC EVALUATION

FRICTION RATIO (%) 8 0

CONE END BEARING RESISTANC (tsf) 0

SOIL ELECTRICAL CONDUCTIVITY (uS/cm) 600

GENERATED PORE 10000 (tsf)

SURE 8

Prepunched to 8.5'

8.5 LOOSE SAND

WET, FRESHER WATER

GWS-9912-11 SATURATED 9.0-10.8

10.8 SOFT TO FIRM, CLAYEY SILT TO SILTY CLAY

11.0 WET, CLAYEY

Hydrocarbon odor

GWS-9912-21 19.6-21.4

20.1 LOOSE TO MEDIUM DENSE, GRAVELLY SAND TO SAND

20.0 WET, FRESHER WATER

31.4 MEDIUM DENSE TO DENSE, SAND

32.6 WET, INCREASED SALT CONTENT

40

53.1 DENSE TO VERY DENSE, GRAVELLY, SILTY SAND TO SILTY SAND POSSIBLY SHELLY

GWS-9912-56 54.6-56.4

66.7 MEDIUM DENSE TO DENSE, SAND

80

GWS-9912-92 90.0-91.8

109.2 Slightly increased silt content, or finer sand

120

- very hard interface @121.9

GWS-9912-121 119.8-121.6

160

0

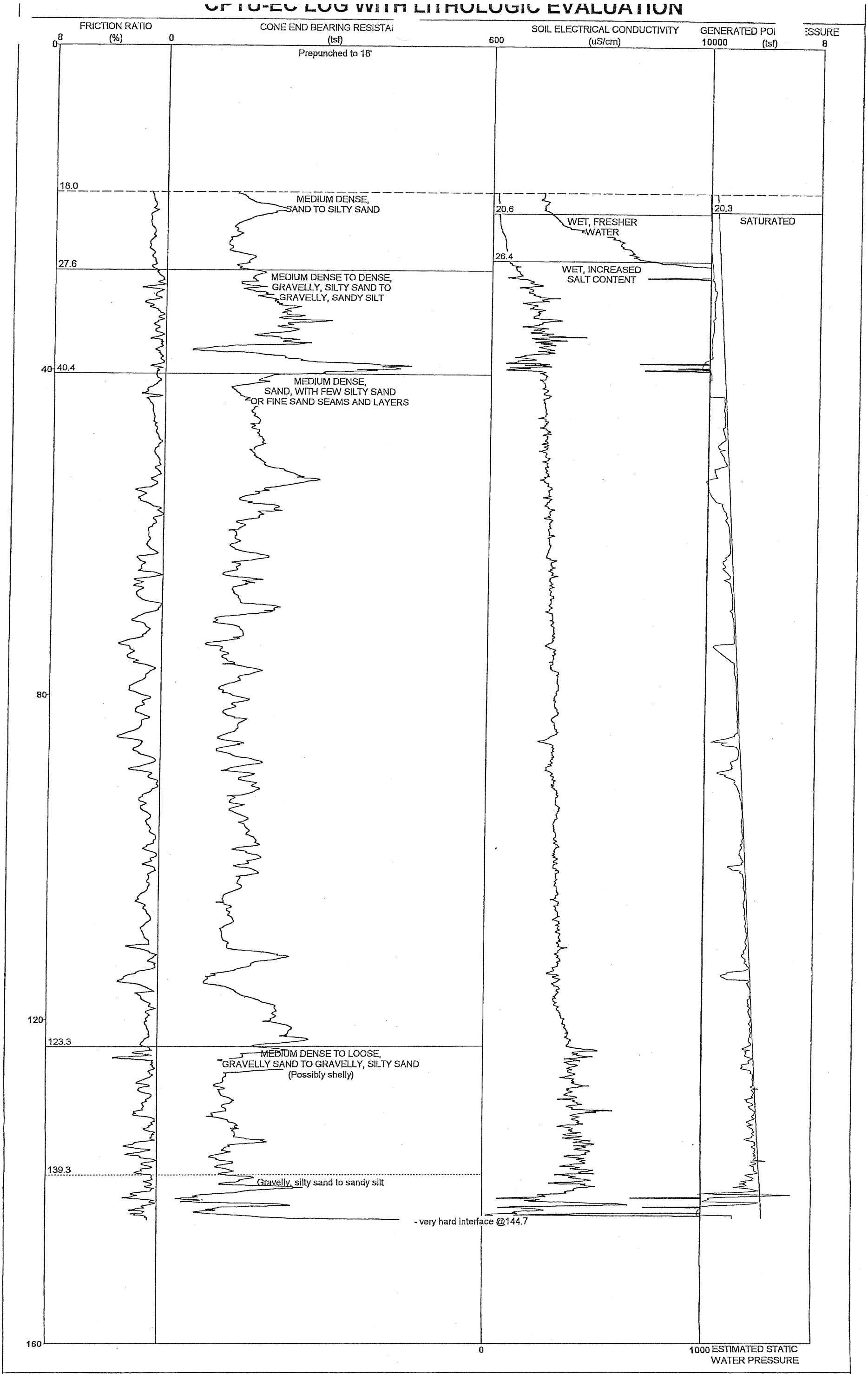
1000 ESTIMATED STATIC WATER PRESSURE

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-10-1999 TIME:13:53:20.59
SOUNDING NUMBER:CP-9912

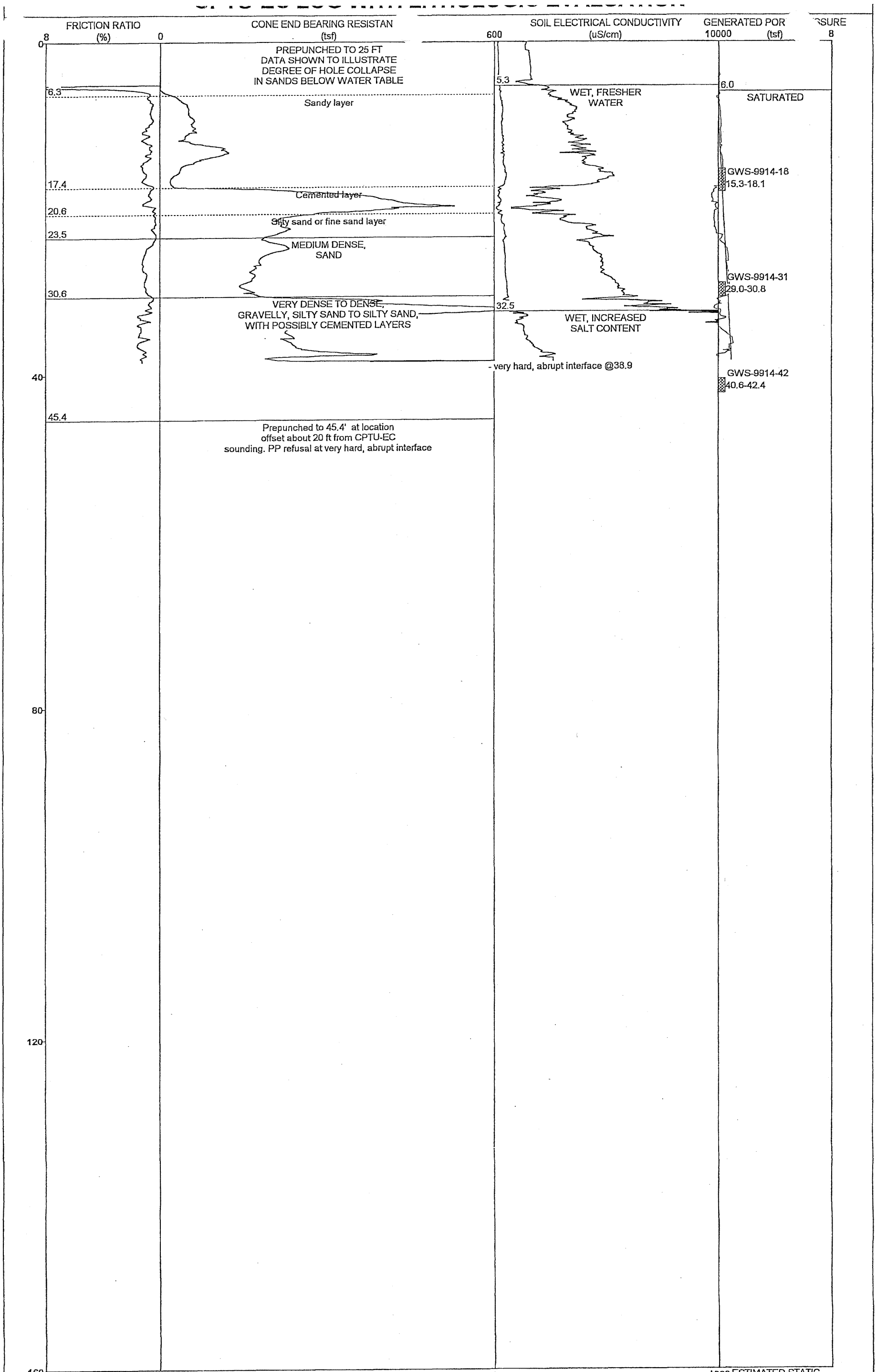
# CPTU-EC LOG WITH LITHOLOGIC EVALUATION




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-12-1999 TIME:14:46:19.41
SOUNDING NUMBER:CP-9913

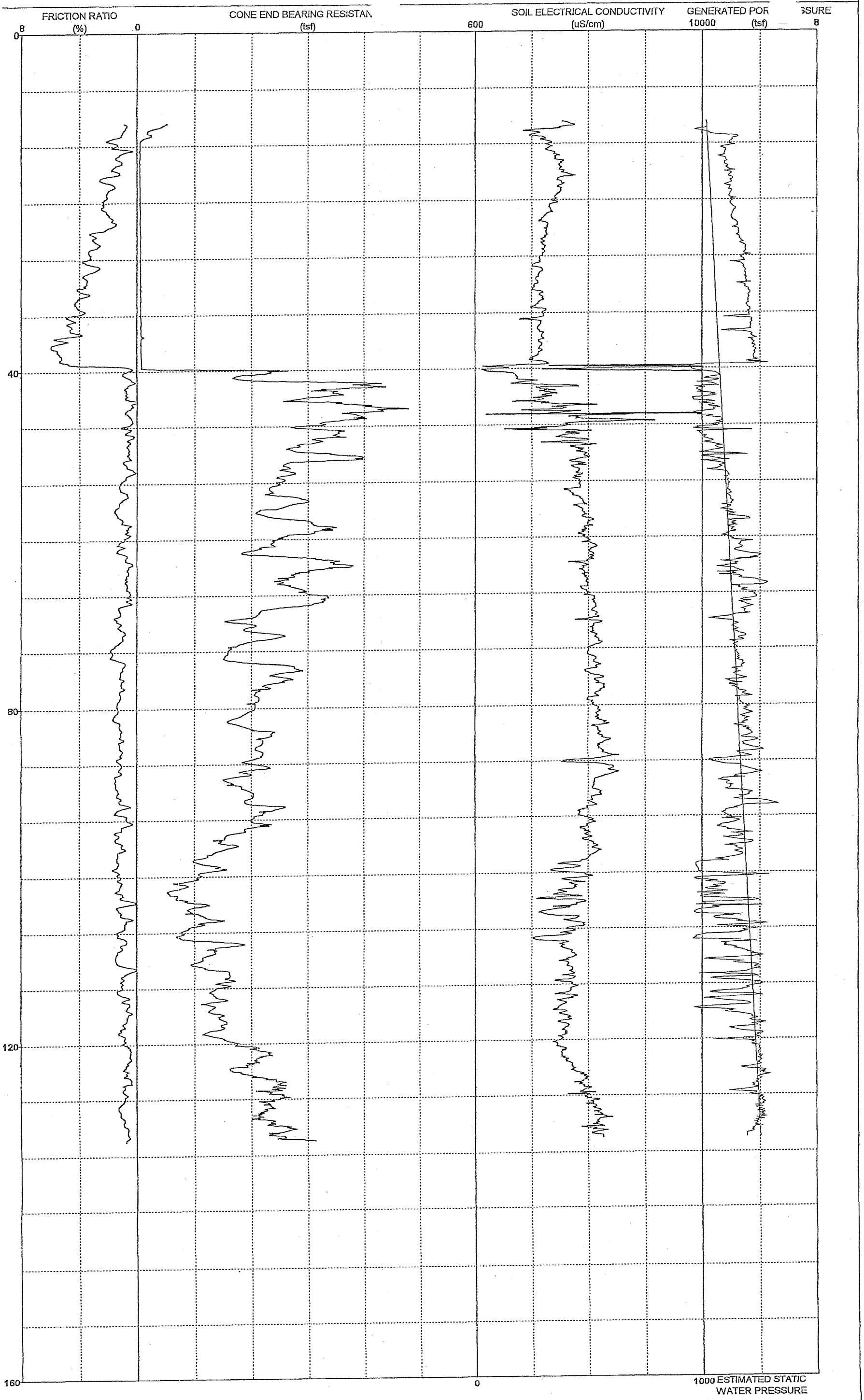



PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-18-1999 TIME:16:50:05.11
SOUNDING NUMBER:CP-9914A

# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

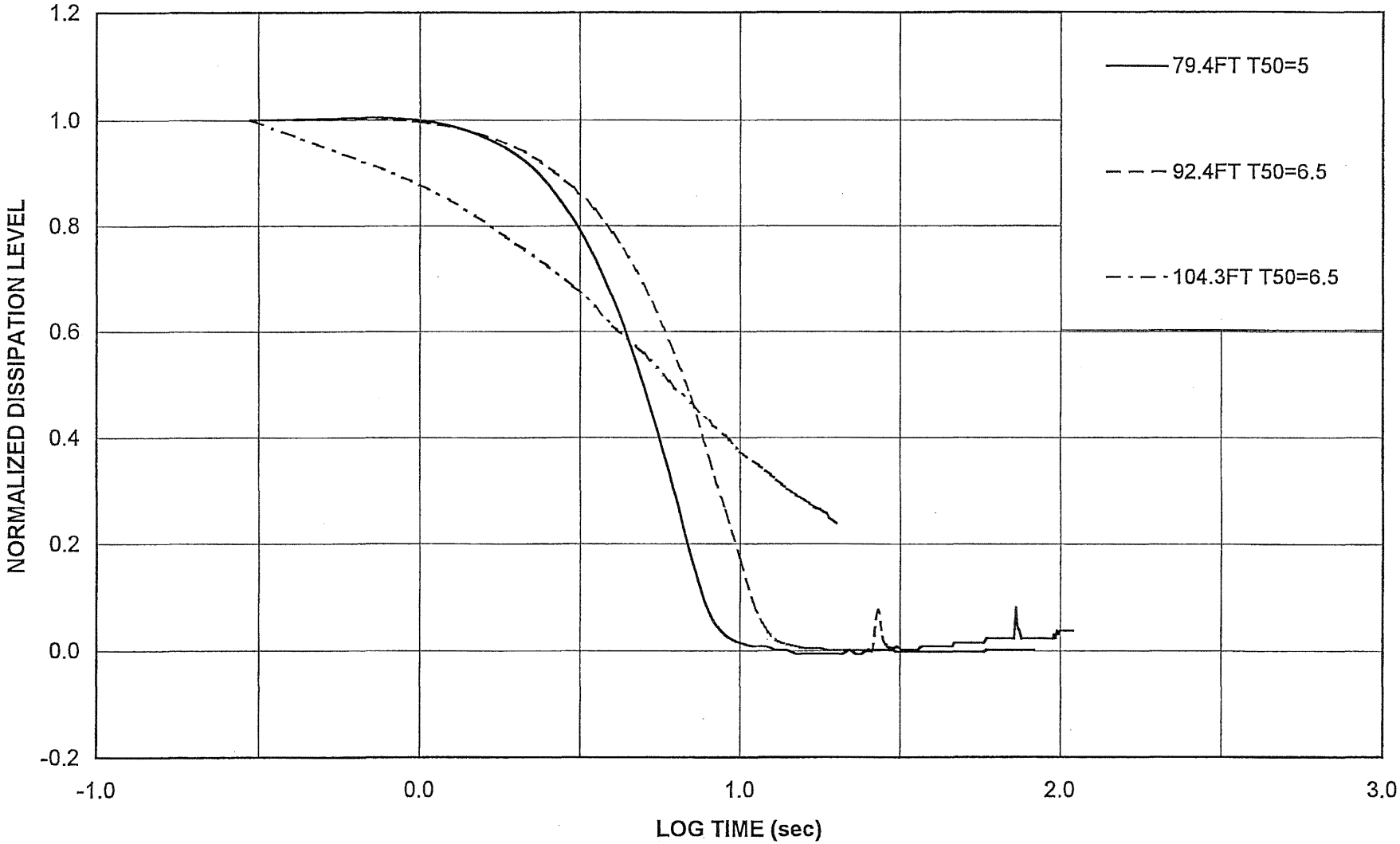
**STRATIGRAPHICS**

R2DATE: 5-05-1999 TIME:12:24:09.81
SOUNDING NUMBER:cp-9901

*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

**Stratford Army Engine Plant cp-9901**



*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-05-1999 TIME:12:24:09.81
SOUNDING NUMBER:cp-9901

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 10.60' | | | | | | | | | | | | |
| 1.5 | Prepunched To 10.60' | | | | | | | | | | | | |
| 2.0 | Prepunched To 10.60' | | | | | | | | | | | | |
| 2.5 | Prepunched To 10.60' | | | | | | | | | | | | |
| 3.0 | Prepunched To 10.60' | | | | | | | | | | | | |
| 3.5 | Prepunched To 10.60' | | | | | | | | | | | | |
| 4.0 | Prepunched To 10.60' | | | | | | | | | | | | |
| 4.5 | Prepunched To 10.60' | | | | | | | | | | | | |
| 5.0 | Prepunched To 10.60' | | | | | | | | | | | | |
| 5.5 | Prepunched To 10.60' | | | | | | | | | | | | |
| 6.0 | Prepunched To 10.60' | | | | | | | | | | | | |
| 6.5 | Prepunched To 10.60' | | | | | | | | | | | | |
| 7.0 | Prepunched To 10.60' | | | | | | | | | | | | |
| 7.5 | Prepunched To 10.60' | | | | | | | | | | | | |
| 8.0 | Prepunched To 10.60' | | | | | | | | | | | | |
| 8.5 | Prepunched To 10.60' | | | | | | | | | | | | |
| 9.0 | Prepunched To 10.60' | | | | | | | | | | | | |
| 9.5 | Prepunched To 10.60' | | | | | | | | | | | | |
| 10.0 | Prepunched To 10.60' | | | | | | | | | | | | |
| 10.5 | Prepunched To 10.60' | | | | | | | | | | | | |
| 11.0 | 42.7 | 51.7 | 0.37 | 0.7 | 4349 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 05 - 08 | 06 - 10 |
| 11.5 | 17.9 | 21.5 | 0.30 | 1.0 | 3423 | Loose, Silty sand to sandy silt | 31-36 | 20-40 | | | | 02 - 03 | 02 - 04 |
| 12.0 | 24.5 | 29.3 | 0.23 | 1.1 | 2826 | Loose, Silty sand to sandy silt | 31-36 | 20-40 | | | | 03 - 05 | 04 - 06 |
| 12.5 | 9.6 | 11.4 | 0.33 | 1.8 | 2948 | Stiff, Sandy silt to clayey silt | | | 15 | 1.19 | 0.67 | 00 - 02 | 00 - 02 |
| 13.0 | 5.0 | 5.9 | 0.09 | 1.5 | 3205 | Firm, Clayey silt to silty clay | | | 10 | 0.84 | 0.19 | 00 - 02 | 00 - 02 |
| 13.5 | 5.2 | 6.1 | 0.09 | 1.7 | 3269 | Firm, Clayey silt to silty clay | | | 10 | 0.87 | 0.18 | 00 - 02 | 00 - 02 |
| 14.0 | 4.3 | 5.0 | 0.03 | 0.7 | 3134 | Soft, Sensitive fine grained soil | | | 18 | 0.39 | 0.07 | 00 - 02 | 00 - 02 |
| 14.5 | 5.0 | 5.8 | 0.07 | 1.3 | 3513 | Soft, Clayey silt to silty clay | | | 18 | 0.46 | 0.13 | 00 - 02 | 00 - 02 |
| 15.0 | 4.2 | 4.8 | 0.06 | 1.2 | 3556 | Soft, Clayey silt to silty clay | | | 18 | 0.37 | 0.12 | 00 - 02 | 00 - 02 |
| 15.5 | 4.3 | 4.9 | 0.05 | 1.2 | 3766 | Soft, Clayey silt to silty clay | | | 18 | 0.37 | 0.10 | 00 - 02 | 00 - 02 |
| 16.0 | 4.5 | 5.1 | 0.08 | 1.7 | 3748 | Soft, Clayey silt to silty clay | | | 18 | 0.39 | 0.16 | 00 - 02 | 00 - 02 |
| 16.5 | 4.4 | 5.0 | 0.06 | 1.2 | 3885 | Soft, Clayey silt to silty clay | | | 18 | 0.38 | 0.12 | 00 - 02 | 00 - 02 |
| 17.0 | 4.9 | 5.6 | 0.12 | 2.4 | 4227 | Firm, Clayey silt to silty clay | | | 10 | 0.78 | 0.23 | 00 - 02 | 00 - 02 |
| 17.5 | 4.7 | 5.3 | 0.11 | 2.4 | 3665 | Soft, Clayey silt to silty clay | | | 18 | 0.40 | 0.22 | 00 - 02 | 00 - 02 |
| 18.0 | 4.5 | 5.1 | 0.07 | 1.6 | 3874 | Soft, Clayey silt to silty clay | | | 18 | 0.38 | 0.14 | 00 - 02 | 00 - 02 |
| 18.5 | 4.7 | 5.3 | 0.09 | 1.9 | 3703 | Soft, Clayey silt to silty clay | | | 18 | 0.40 | 0.19 | 00 - 02 | 00 - 02 |
| 19.0 | 4.9 | 5.4 | 0.10 | 2.1 | 3755 | Soft, Clayey silt to silty clay | | | 18 | 0.42 | 0.20 | 00 - 02 | 00 - 02 |
| 19.5 | 4.7 | 5.2 | 0.11 | 2.2 | 3549 | Soft, Clayey silt to silty clay | | | 18 | 0.39 | 0.22 | 00 - 02 | 00 - 02 |
| 20.0 | 5.1 | 5.5 | 0.10 | 2.3 | 3385 | Firm, Clayey silt to silty clay | | | 10 | 0.77 | 0.21 | 00 - 02 | 00 - 02 |
| 20.5 | 5.2 | 5.7 | 0.13 | 2.4 | 3328 | Firm, Clayey silt to silty clay | | | 10 | 0.80 | 0.26 | 00 - 02 | 00 - 02 |
| 21.0 | 5.2 | 5.6 | 0.11 | 2.2 | 3319 | Firm, Clayey silt to silty clay | | | 10 | 0.79 | 0.22 | 00 - 02 | 00 - 02 |
| 21.5 | 5.2 | 5.6 | 0.10 | 2.0 | 3270 | Firm, Clayey silt to silty clay | | | 10 | 0.78 | 0.20 | 00 - 02 | 00 - 02 |
| 22.0 | 5.0 | 5.4 | 0.08 | 1.7 | 3032 | Soft, Clayey silt to silty clay | | | 18 | 0.41 | 0.16 | 00 - 02 | 00 - 02 |
| 22.5 | 5.0 | 5.4 | 0.08 | 1.5 | 2868 | Soft, Clayey silt to silty clay | | | 18 | 0.41 | 0.16 | 00 - 02 | 00 - 02 |
| 23.0 | 5.3 | 5.7 | 0.12 | 2.0 | 3198 | Firm, Clayey silt to silty clay | | | 10 | 0.79 | 0.23 | 00 - 02 | 00 - 02 |
| 23.5 | 5.7 | 6.1 | 0.19 | 3.2 | 3168 | Firm, Silty clay to clay | | | 10 | 0.86 | 0.38 | 00 - 02 | 00 - 02 |
| 24.0 | 5.8 | 6.2 | 0.17 | 2.9 | 3171 | Firm, Silty clay to clay | | | 10 | 0.88 | 0.34 | 00 - 02 | 00 - 02 |
| 24.5 | 5.6 | 5.9 | 0.17 | 3.0 | 3004 | Firm, Silty clay to clay | | | 10 | 0.82 | 0.34 | 00 - 02 | 00 - 02 |
| 25.0 | 5.8 | 6.1 | 0.16 | 2.6 | 2975 | Firm, Silty clay to clay | | | 10 | 0.86 | 0.31 | 00 - 02 | 00 - 02 |

Notes:

* Indicates lightly overconsolidated soil
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-05-1999 TIME:12:24:09.81
SOUNDING NUMBER:cp-9901

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 6.3 | 6.6 | 0.20 | 3.2 | 3089 | Firm, Silty clay to clay | | | 10 | 0.95 | 0.39 | 00 - 02 | 00 - 02 |
| 26.0 | 6.0 | 6.3 | 0.21 | 3.3 | 3059 | Firm, Silty clay to clay | | | 10 | 0.89 | 0.42 | 00 - 02 | 00 - 02 |
| 26.5 | 5.9 | 6.2 | 0.20 | 3.2 | 2980 | Firm, Silty clay to clay | | | 10 | 0.87 | 0.40 | 00 - 02 | 00 - 02 |
| 27.0 | 6.1 | 6.3 | 0.22 | 3.7 | 2860 | Firm, Silty clay to clay | | | 10 | 0.90 | 0.43 | 00 - 02 | 00 - 02 |
| 27.5 | 5.6 | 5.8 | 0.15 | 2.7 | 2645 | Firm, Silty clay to clay | | | 10 | 0.80 | 0.31 | 00 - 02 | 00 - 02 |
| 28.0 | 5.9 | 6.0 | 0.17 | 2.9 | 2919 | Firm, Silty clay to clay | | | 10 | 0.84 | 0.34 | 00 - 02 | 00 - 02 |
| 28.5 | 5.9 | 6.1 | 0.22 | 3.7 | 2881 | Firm, Silty clay to clay | | | 10 | 0.85 | 0.44 | 00 - 02 | 00 - 02 |
| 29.0 | 6.0 | 6.1 | 0.21 | 3.5 | 2805 | Firm, Silty clay to clay | | | 10 | 0.85 | 0.42 | 00 - 02 | 00 - 02 |
| 29.5 | 6.2 | 6.3 | 0.22 | 3.5 | 2723 | Firm, Silty clay to clay | | | 10 | 0.88 | 0.44 | 00 - 02 | 00 - 02 |
| 30.0 | 6.1 | 6.2 | 0.24 | 3.8 | 2622 | Firm, Silty clay to clay | | | 10 | 0.87 | 0.49 | 00 - 02 | 00 - 02 |
| 30.5 | 6.1 | 6.1 | 0.24 | 3.9 | 2536 | Firm, Silty clay to clay | | | 10 | 0.85 | 0.48 | 00 - 02 | 00 - 02 |
| 31.0 | 6.3 | 6.3 | 0.23 | 3.6 | 2959 | Firm, Silty clay to clay | | | 10 | 0.88 | 0.46 | 00 - 02 | 00 - 02 |
| 31.5 | 6.4 | 6.4 | 0.27 | 4.2 | 3000 | Firm, Silty clay to clay | | | 10 | 0.90 | 0.53 | 00 - 02 | 00 - 02 |
| 32.0 | 6.1 | 6.1 | 0.27 | 4.3 | 2839 | Firm, Silty clay to clay | | | 10 | 0.83 | 0.54 | 00 - 02 | 00 - 02 |
| 32.5 | 6.1 | 6.1 | 0.25 | 4.0 | 2630 | Firm, Silty clay to clay | | | 10 | 0.83 | 0.50 | 00 - 02 | 00 - 02 |
| 33.0 | 6.2 | 6.2 | 0.23 | 3.8 | 3126 | Firm, Silty clay to clay | | | 10 | 0.85 | 0.47 | 00 - 02 | 00 - 02 |
| 33.5 | 6.4 | 6.4 | 0.32 | 4.9 | 3045 | Firm, Clay | | | 10 | 0.88 | 0.64 | 02 - 04 | 02 - 04 |
| 34.0 | 6.5 | 6.4 | 0.29 | 4.3 | 2161 | Firm, Silty clay to clay | | | 10 | 0.89 | 0.58 | 00 - 02 | 00 - 02 |
| 34.5 | 6.7 | 6.6 | 0.32 | 4.6 | 2902 | Firm, Clay | | | 10 | 0.92 | 0.64 | 00 - 02 | 00 - 02 |
| 35.0 | 6.6 | 6.5 | 0.31 | 4.6 | 2771 | Firm, Clay | | | 10 | 0.90 | 0.62 | 00 - 02 | 00 - 02 |
| 35.5 | 6.7 | 6.6 | 0.30 | 3.8 | 2669 | Firm, Silty clay to clay | | | 10 | 0.91 | 0.60 | 00 - 02 | 00 - 02 |
| 36.0 | 7.9 | 7.7 | 0.46 | 5.7 | 2953 | Firm, Silty clay to clay * | | | 12 | 0.95 | 0.92 | 04 - 06 | 04 - 06 |
| 36.5 | 6.5 | 6.3 | 0.35 | 5.2 | 2967 | Firm, Clay | | | 10 | 0.86 | 0.70 | 02 - 04 | 02 - 04 |
| 37.0 | 7.0 | 6.8 | 0.40 | 6.0 | 2962 | Firm, Clay | | | 12 | 0.79 | 0.80 | 04 - 06 | 04 - 06 |
| 37.5 | 6.6 | 6.4 | 0.37 | 5.5 | 2850 | Firm, Clay | | | 12 | 0.72 | 0.74 | 02 - 04 | 02 - 04 |
| 38.0 | 6.6 | 6.4 | 0.37 | 5.4 | 2826 | Firm, Clay | | | 10 | 0.87 | 0.74 | 02 - 04 | 02 - 04 |
| 38.5 | 7.2 | 6.9 | 0.38 | 5.3 | 2689 | Firm, Clay | | | 10 | 0.97 | 0.76 | 02 - 04 | 02 - 04 |
| 39.0 | 7.1 | 6.8 | 0.36 | 4.8 | 2562 | Firm, Clay | | | 10 | 0.95 | 0.72 | 02 - 04 | 02 - 04 |
| 39.5 | 7.7 | 7.4 | 0.44 | 0.7 | 2703 | Stiff, Sandy silt to clayey silt | | | 10 | 1.06 | 0.88 | 00 - 02 | 00 - 02 |
| 40.0 | 243.8 | 233.2 | 1.63 | 0.7 | 844 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 40.5 | 190.1 | 181.3 | 2.08 | 0.9 | 1635 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 41.0 | 177.6 | 169.0 | 1.07 | 0.4 | 1863 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 32 - 42 | 30 - 40 |
| 41.5 | 375.4 | 356.2 | 1.62 | 0.4 | 2369 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 42.0 | 428.9 | 405.9 | 3.43 | 0.8 | 3864 | V dense, Sand to silty sand | +46 | 80-100 | | | | + 106 | + 100 |
| 42.5 | 341.2 | 322.1 | 2.66 | 0.7 | 3300 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 64 - 105 | 60 - 99 |
| 43.0 | 348.0 | 327.6 | 1.88 | 0.7 | 3309 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 64 - 105 | 60 - 99 |
| 43.5 | 274.9 | 258.2 | 0.25 | 0.1 | 2849 | Med dense, Sa gravel to gr sand | +46 | 40-60 | | | | 43 - 64 | 40 - 60 |
| 44.0 | 357.8 | 335.2 | 1.55 | 0.4 | 3133 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 44.5 | 429.0 | 400.9 | 1.94 | 0.5 | 3559 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 64 - 106 | 60 - 99 |
| 45.0 | 408.0 | 380.3 | 3.48 | 0.8 | 2492 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 64 - 106 | 60 - 99 |
| 45.5 | 393.0 | 365.4 | 1.96 | 0.5 | 6911 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 65 - 106 | 60 - 99 |
| 46.0 | 360.7 | 334.5 | 1.15 | 0.3 | 4715 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 46.5 | 327.5 | 303.1 | 2.52 | 0.8 | 4134 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 65 - 107 | 60 - 99 |
| 47.0 | 311.7 | 287.7 | 1.47 | 0.5 | 2759 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 47.5 | 355.6 | 327.5 | 2.78 | 0.7 | 4436 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 65 - 108 | 60 - 99 |
| 48.0 | 355.1 | 326.2 | 1.41 | 0.4 | 3779 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 44 - 65 | 40 - 60 |
| 48.5 | 321.7 | 294.9 | 1.55 | 0.5 | 5010 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 44 - 65 | 40 - 60 |
| 49.0 | 285.8 | 261.3 | 2.05 | 0.7 | 5288 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 49.5 | 272.9 | 248.9 | 1.78 | 0.6 | 4776 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 50.0 | 344.0 | 313.1 | 2.55 | 0.6 | 4880 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 66 - 109 | 60 - 99 |

Notes:

* Indicates lightly overconsolidated soil
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-05-1999 TIME:12:24:09.81
SOUNDING NUMBER:cp-9901

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 391.1 | 355.1 | 2.68 | 0.7 | 5022 | Dense, Sand to silty sand | +46 | 60-80 | | | | 66 - 109 | 60 - 99 |
| 51.0 | 262.7 | 238.1 | 2.65 | 0.8 | 4251 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 51.5 | 267.1 | 241.5 | 1.68 | 0.5 | 4271 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 52.0 | 268.7 | 242.3 | 0.32 | 0.1 | 4594 | Med dense, Sa gravel to gr sand | +46 | 40-60 | | | | 44 - 67 | 40 - 60 |
| 52.5 | 254.9 | 229.4 | 2.12 | 0.8 | 4722 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 44 - 67 | 40 - 60 |
| 53.0 | 259.2 | 232.8 | 2.54 | 1.0 | 4376 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 53.5 | 250.7 | 224.7 | 3.11 | 1.2 | 4641 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 54.0 | 231.5 | 207.0 | 2.79 | 1.2 | 4651 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 54.5 | 235.8 | 210.4 | 1.76 | 0.7 | 4167 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 55.0 | 275.5 | 245.3 | 2.25 | 0.8 | 4323 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 55.5 | 301.3 | 267.6 | 3.49 | 1.2 | 4734 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 68 - 111 | 60 - 99 |
| 56.0 | 265.7 | 235.5 | 3.59 | 1.3 | 4879 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 68 - 112 | 60 - 99 |
| 56.5 | 215.0 | 190.2 | 3.94 | 1.6 | 4656 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 45 - 68 | 40 - 60 |
| 57.0 | 214.6 | 189.4 | 3.24 | 1.4 | 4805 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 45 - 68 | 40 - 60 |
| 57.5 | 250.2 | 220.4 | 2.98 | 1.1 | 4748 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 68 | 40 - 60 |
| 58.0 | 307.4 | 270.3 | 3.40 | 1.0 | 5177 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 68 - 113 | 60 - 99 |
| 58.5 | 337.2 | 295.9 | 2.34 | 0.6 | 5001 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 68 | 40 - 60 |
| 59.0 | 324.6 | 284.3 | 2.25 | 0.7 | 4910 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 59.5 | 267.0 | 233.3 | 1.70 | 0.6 | 4618 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 60.0 | 246.3 | 214.8 | 2.18 | 0.9 | 4863 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 60.5 | 233.9 | 203.6 | 3.07 | 1.3 | 4916 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 61.0 | 215.8 | 187.5 | 2.72 | 1.2 | 5357 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 61.5 | 186.9 | 162.0 | 2.66 | 1.3 | 5120 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 62.0 | 249.1 | 215.5 | 2.01 | 0.7 | 5253 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 62.5 | 331.0 | 285.9 | 2.83 | 0.8 | 5108 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 63.0 | 351.3 | 302.8 | 1.27 | 0.4 | 4299 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 46 - 70 | 40 - 60 |
| 63.5 | 341.6 | 293.8 | 2.56 | 0.7 | 4790 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 70 | 40 - 60 |
| 64.0 | 280.2 | 240.6 | 1.91 | 0.6 | 4774 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 64.5 | 275.1 | 235.7 | 2.01 | 0.7 | 4854 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 65.0 | 245.7 | 210.1 | 2.29 | 0.8 | 4966 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 65.5 | 266.6 | 227.6 | 1.77 | 0.7 | 5004 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 66.0 | 290.4 | 247.4 | 1.56 | 0.6 | 4678 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 66.5 | 298.7 | 254.0 | 1.68 | 0.5 | 4946 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 67.0 | 333.0 | 282.7 | 1.45 | 0.4 | 5175 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 67.5 | 326.5 | 276.7 | 1.10 | 0.4 | 5204 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 68.0 | 275.3 | 232.9 | 3.89 | 1.3 | 5346 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 71 - 117 | 60 - 99 |
| 68.5 | 217.2 | 183.4 | 2.85 | 1.2 | 5255 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 69.0 | 210.5 | 177.4 | 2.59 | 1.2 | 5373 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 69.5 | 175.2 | 147.4 | 2.72 | 1.4 | 5459 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 71 | 40 - 60 |
| 70.0 | 190.4 | 159.9 | 2.16 | 1.1 | 5341 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 71 | 40 - 60 |
| 70.5 | 194.9 | 163.4 | 2.63 | 1.3 | 5233 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 71.0 | 202.2 | 169.2 | 1.95 | 0.8 | 5204 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 71.5 | 258.9 | 216.2 | 2.49 | 1.0 | 5222 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 72.0 | 219.2 | 182.8 | 2.59 | 1.1 | 5323 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 72.5 | 181.8 | 151.3 | 2.77 | 1.4 | 5459 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 73.0 | 164.7 | 136.8 | 3.12 | 1.8 | 5256 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 73.5 | 158.8 | 131.7 | 2.70 | 1.7 | 5023 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 74.0 | 153.0 | 126.7 | 2.87 | 1.8 | 4985 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 74.5 | 167.5 | 138.5 | 2.05 | 1.0 | 5342 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 48 | 30 - 40 |
| 75.0 | 253.3 | 209.0 | 2.42 | 0.9 | 5247 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 73 | 40 - 60 |

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-05-1999 TIME:12:24:09.81
SOUNDING NUMBER:cp-9901

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 281.6 | 231.9 | 2.80 | 1.0 | 5342 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 76.0 | 244.8 | 201.3 | 3.02 | 1.1 | 4883 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 76.5 | 263.5 | 216.3 | 2.54 | 1.0 | 5423 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 77.0 | 250.5 | 205.3 | 2.80 | 1.1 | 5280 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 77.5 | 224.2 | 183.5 | 2.38 | 1.0 | 5586 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 78.0 | 213.4 | 174.3 | 2.70 | 1.2 | 5668 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 78.5 | 206.7 | 168.5 | 2.41 | 1.1 | 5332 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 79.0 | 214.0 | 174.2 | 2.60 | 1.2 | 5390 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 79.5 | 206.2 | 167.6 | 2.93 | 1.4 | 5184 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 80.0 | 205.9 | 167.1 | 2.72 | 1.3 | 5238 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 80.5 | 193.0 | 156.4 | 2.78 | 1.4 | 5418 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 81.0 | 179.5 | 145.2 | 3.11 | 1.6 | 5343 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 81.5 | 157.7 | 127.4 | 2.25 | 1.3 | 5463 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 82.0 | 178.8 | 144.2 | 2.38 | 1.2 | 5698 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 74 | 40 - 60 |
| 82.5 | 202.7 | 163.2 | 2.39 | 1.1 | 5261 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 83.0 | 235.6 | 189.4 | 2.64 | 1.1 | 5446 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 83.5 | 223.9 | 179.7 | 2.32 | 1.1 | 5527 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 84.0 | 220.7 | 176.8 | 2.86 | 1.3 | 5991 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 84.5 | 212.0 | 169.6 | 2.66 | 1.2 | 5562 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 85.0 | 211.6 | 169.0 | 2.18 | 1.0 | 5472 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 85.5 | 220.8 | 176.1 | 2.59 | 1.2 | 5658 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 86.0 | 208.0 | 165.6 | 3.10 | 1.4 | 6280 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 86.5 | 189.0 | 150.2 | 2.43 | 1.2 | 4517 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 87.0 | 230.5 | 182.9 | 2.47 | 1.2 | 5463 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 87.5 | 182.4 | 144.5 | 2.39 | 1.1 | 6080 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 88.0 | 194.9 | 154.3 | 2.89 | 1.5 | 6271 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 88.5 | 151.1 | 119.4 | 2.47 | 1.5 | 5653 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 89.0 | 167.7 | 132.3 | 2.56 | 1.5 | 5278 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 89.5 | 182.5 | 143.7 | 2.75 | 1.4 | 5259 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 90.0 | 200.1 | 157.4 | 2.61 | 1.3 | 5256 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 90.5 | 203.4 | 159.8 | 2.65 | 1.3 | 5516 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 91.0 | 189.2 | 148.4 | 2.50 | 1.3 | 5171 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 91.5 | 198.3 | 155.3 | 1.52 | 0.7 | 5005 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 92.0 | 254.2 | 198.7 | 2.87 | 1.2 | 5344 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 92.5 | 223.7 | 174.7 | 3.56 | 1.5 | 4764 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 93.0 | 204.9 | 159.8 | 1.63 | 0.7 | 4620 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 93.5 | 201.2 | 156.6 | 1.06 | 0.5 | 5024 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 39 - 51 | 30 - 40 |
| 94.0 | 218.0 | 169.4 | 1.74 | 0.8 | 5296 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 94.5 | 187.3 | 145.4 | 2.14 | 1.1 | 4941 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 95.0 | 164.7 | 127.7 | 2.40 | 1.3 | 4865 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 95.5 | 153.0 | 118.4 | 2.39 | 1.5 | 4935 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 96.0 | 142.5 | 110.1 | 1.70 | 1.1 | 4786 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 96.5 | 172.3 | 133.0 | 1.76 | 1.1 | 5237 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 39 - 52 | 30 - 40 |
| 97.0 | 142.6 | 109.9 | 1.85 | 1.2 | 5196 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 97.5 | 122.6 | 94.4 | 1.73 | 1.3 | 5394 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 98.0 | 99.1 | 76.1 | 1.57 | 1.4 | 5053 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 98.5 | 116.6 | 89.5 | 1.72 | 1.3 | 4698 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 99.0 | 142.7 | 109.3 | 2.31 | 1.6 | 4270 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 99.5 | 116.0 | 88.8 | 1.69 | 1.2 | 3753 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 100.0 | 110.2 | 84.2 | 1.30 | 1.2 | 4440 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 26 - 39 | 20 - 30 |

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PROJECT NUMBER:99-120-050
R2DATE: 5-05-1999 TIME:12:24:09.81
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| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.5 | 93.6 | 71.4 | 1.29 | 1.2 | 4946 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 20 - 26 | 15 - 20 |
| 101.0 | 86.2 | 65.7 | 0.92 | 1.1 | 4664 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 20 - 26 | 15 - 20 |
| 101.5 | 70.6 | 53.8 | 0.99 | 1.2 | 4454 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 13 - 20 | 10 - 15 |
| 102.0 | 55.4 | 42.1 | 0.63 | 1.1 | 3813 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 08 - 13 | 06 - 10 |
| 102.5 | 69.6 | 52.8 | 0.94 | 1.2 | 3595 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 13 - 20 | 10 - 15 |
| 103.0 | 85.4 | 64.7 | 0.06 | 0.1 | 2781 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 08 - 13 | 06 - 10 |
| 103.5 | 114.1 | 86.3 | 1.50 | 1.3 | 4749 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 26 - 40 | 20 - 30 |
| 104.0 | 89.2 | 67.5 | 1.25 | 1.3 | 4023 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 20 - 26 | 15 - 20 |
| 104.5 | 109.4 | 82.6 | 1.34 | 1.1 | 3117 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 26 - 40 | 20 - 30 |
| 105.0 | 124.6 | 94.0 | 0.29 | 0.3 | 3340 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 27 | 15 - 20 |
| 105.5 | 109.7 | 82.6 | 1.08 | 0.8 | 4334 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 27 | 15 - 20 |
| 106.0 | 96.0 | 72.2 | 0.93 | 0.9 | 4826 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 20 - 27 | 15 - 20 |
| 106.5 | 79.6 | 59.7 | 1.13 | 1.3 | 4313 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 20 - 27 | 15 - 20 |
| 107.0 | 75.2 | 56.4 | 1.03 | 1.3 | 4217 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 13 - 20 | 10 - 15 |
| 107.5 | 81.3 | 60.9 | 0.98 | 0.8 | 3767 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 13 - 20 | 10 - 15 |
| 108.0 | 175.6 | 131.3 | 1.34 | 0.8 | 2741 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 40 - 53 | 30 - 40 |
| 108.5 | 146.1 | 109.1 | 1.83 | 1.0 | 3785 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 109.0 | 134.8 | 100.6 | 1.86 | 1.4 | 3897 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 109.5 | 126.4 | 94.2 | 1.98 | 1.5 | 4264 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 110.0 | 114.9 | 85.5 | 1.73 | 1.5 | 4452 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 110.5 | 94.8 | 70.4 | 1.39 | 1.3 | 3922 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 20 - 27 | 15 - 20 |
| 111.0 | 118.6 | 88.0 | 0.11 | 0.1 | 4115 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 13 - 20 | 10 - 15 |
| 111.5 | 161.5 | 119.6 | 1.05 | 0.6 | 4314 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 112.0 | 162.1 | 119.9 | 1.84 | 1.1 | 4377 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 41 - 54 | 30 - 40 |
| 112.5 | 171.0 | 126.4 | 1.81 | 1.1 | 4400 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 41 - 54 | 30 - 40 |
| 113.0 | 161.2 | 119.0 | 1.70 | 1.1 | 3878 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 41 - 54 | 30 - 40 |
| 113.5 | 136.4 | 100.5 | 1.90 | 1.3 | 4519 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 114.0 | 132.2 | 97.3 | 1.64 | 1.2 | 4240 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 114.5 | 140.4 | 103.3 | 0.78 | 0.6 | 3916 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 115.0 | 131.3 | 96.4 | 0.79 | 0.7 | 4159 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 115.5 | 135.9 | 99.7 | 0.83 | 0.6 | 4043 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 116.0 | 126.3 | 92.5 | 0.77 | 0.6 | 3689 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 27 | 15 - 20 |
| 116.5 | 150.3 | 110.0 | 0.91 | 0.6 | 4061 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 117.0 | 147.0 | 107.4 | 1.00 | 0.7 | 4098 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 117.5 | 155.8 | 113.7 | 1.54 | 1.0 | 4134 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 118.0 | 152.6 | 111.2 | 1.45 | 1.0 | 4064 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 118.5 | 124.3 | 90.5 | 1.79 | 1.2 | 3980 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 119.0 | 130.5 | 94.9 | 1.17 | 0.8 | 3991 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 41 | 20 - 30 |
| 119.5 | 154.5 | 112.2 | 1.45 | 0.9 | 3711 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 41 | 20 - 30 |
| 120.0 | 176.6 | 128.1 | 1.75 | 0.9 | 3744 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 120.5 | 212.4 | 153.9 | 0.90 | 0.5 | 3642 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 121.0 | 226.4 | 163.9 | 1.05 | 0.4 | 4008 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 121.5 | 221.7 | 160.3 | 1.28 | 0.5 | 3826 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 55 | 30 - 40 |
| 122.0 | 209.2 | 151.0 | 1.09 | 0.5 | 3869 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 55 | 30 - 40 |
| 122.5 | 202.7 | 146.1 | 1.24 | 0.6 | 4048 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 55 | 30 - 40 |
| 123.0 | 162.8 | 117.3 | 1.67 | 0.9 | 4318 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 123.5 | 182.3 | 131.1 | 1.51 | 0.8 | 4344 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 124.0 | 205.4 | 147.6 | 1.92 | 0.8 | 4700 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 124.5 | 244.0 | 175.1 | 0.94 | 0.4 | 4923 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 125.0 | 249.8 | 179.0 | 2.35 | 0.9 | 4740 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 84 | 40 - 60 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-05-1999 TIME:12:24:09.81
SOUNDING NUMBER:cp-9901

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125.5 | 239.6 | 171.5 | 2.44 | 0.9 | 4824 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 126.0 | 233.0 | 166.6 | 1.95 | 0.8 | 4812 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 56 - 84 | 40 - 60 |
| 126.5 | 261.1 | 186.5 | 2.10 | 0.8 | 4459 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 127.0 | 218.3 | 155.7 | 2.33 | 1.0 | 5023 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 127.5 | 235.7 | 167.9 | 3.07 | 1.3 | 5238 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 128.0 | 226.6 | 161.2 | 2.73 | 1.1 | 5227 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 128.5 | 209.5 | 148.9 | 2.54 | 1.1 | 5320 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 129.0 | 208.0 | 147.7 | 1.94 | 0.9 | 5597 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 129.5 | 240.3 | 170.4 | 2.23 | 0.9 | 5469 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 85 | 40 - 60 |
| 130.0 | 263.0 | 186.3 | 1.59 | 0.6 | 5222 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 56 - 85 | 40 - 60 |
| 130.5 | 259.1 | 183.3 | 1.64 | 0.6 | 5376 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 57 - 85 | 40 - 60 |
| 131.0 | 251.9 | 178.0 | 1.30 | 0.5 | 5260 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 57 | 30 - 40 |
| 131.5 | 294.9 | 208.1 | 1.92 | 0.8 | 5662 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |

Notes:

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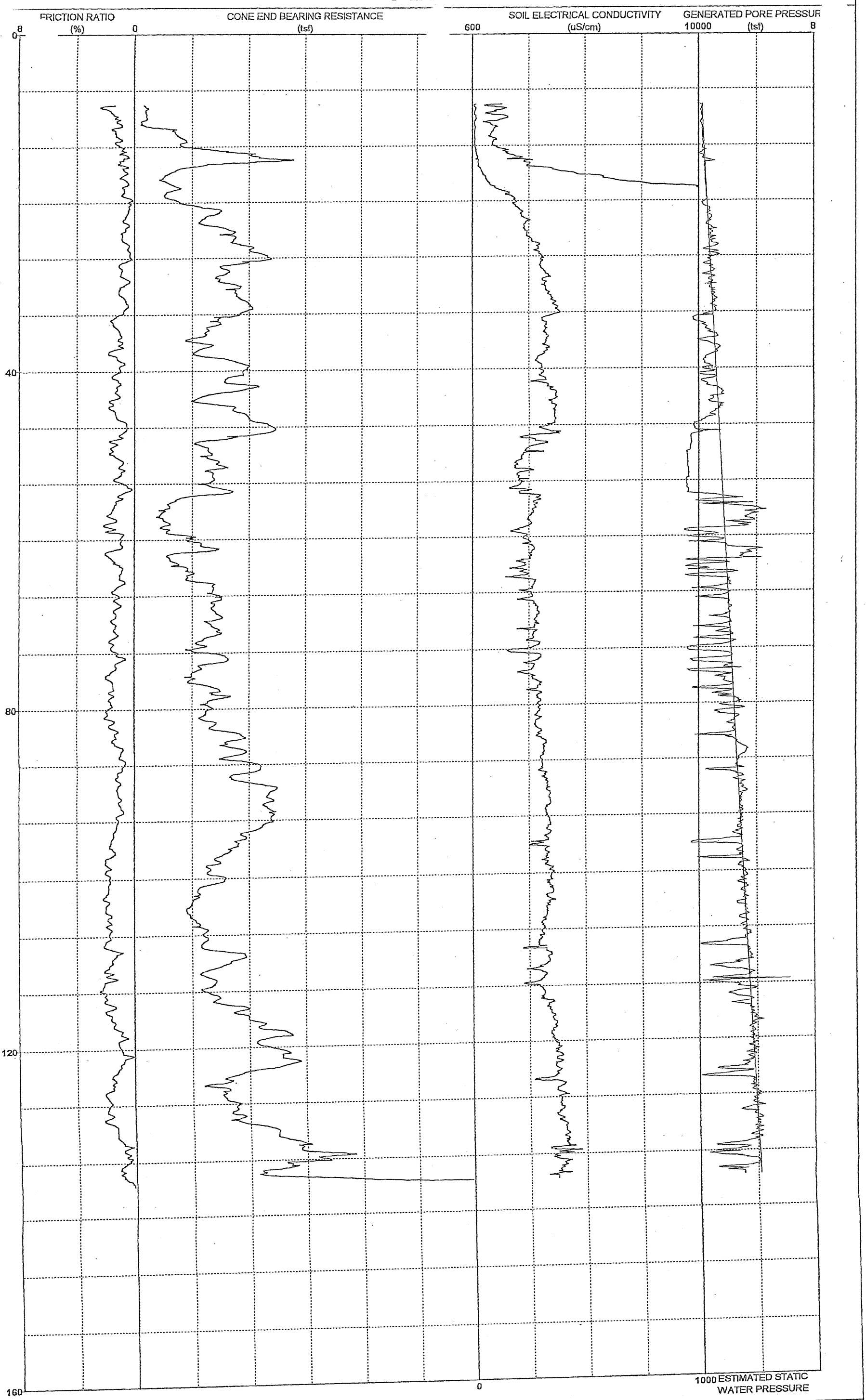
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

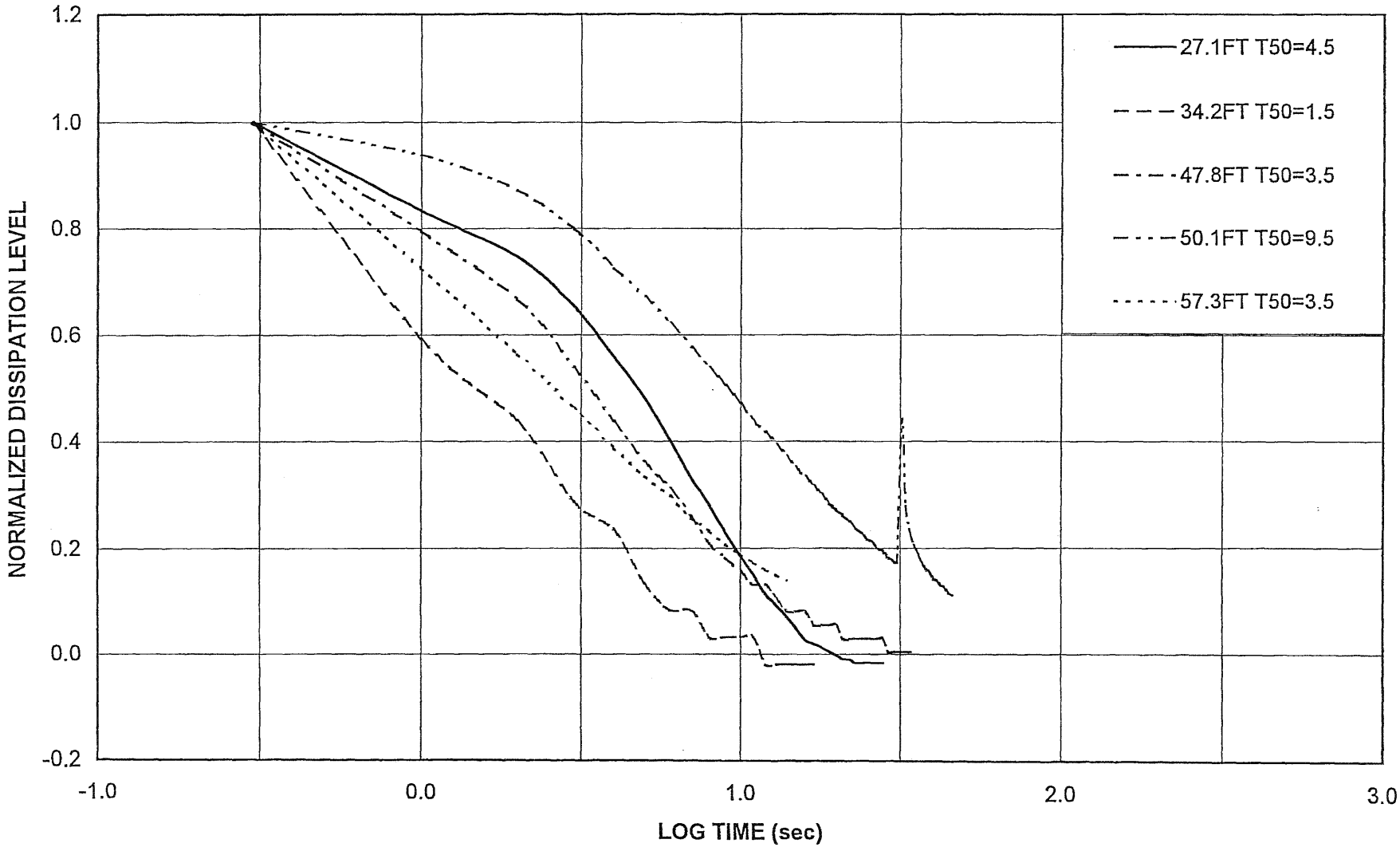
**STRATIGRAPHICS**

R2DATE: 5-06-1999 TIME:08:39:23.18
SOUNDING NUMBER:cp-9902

*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

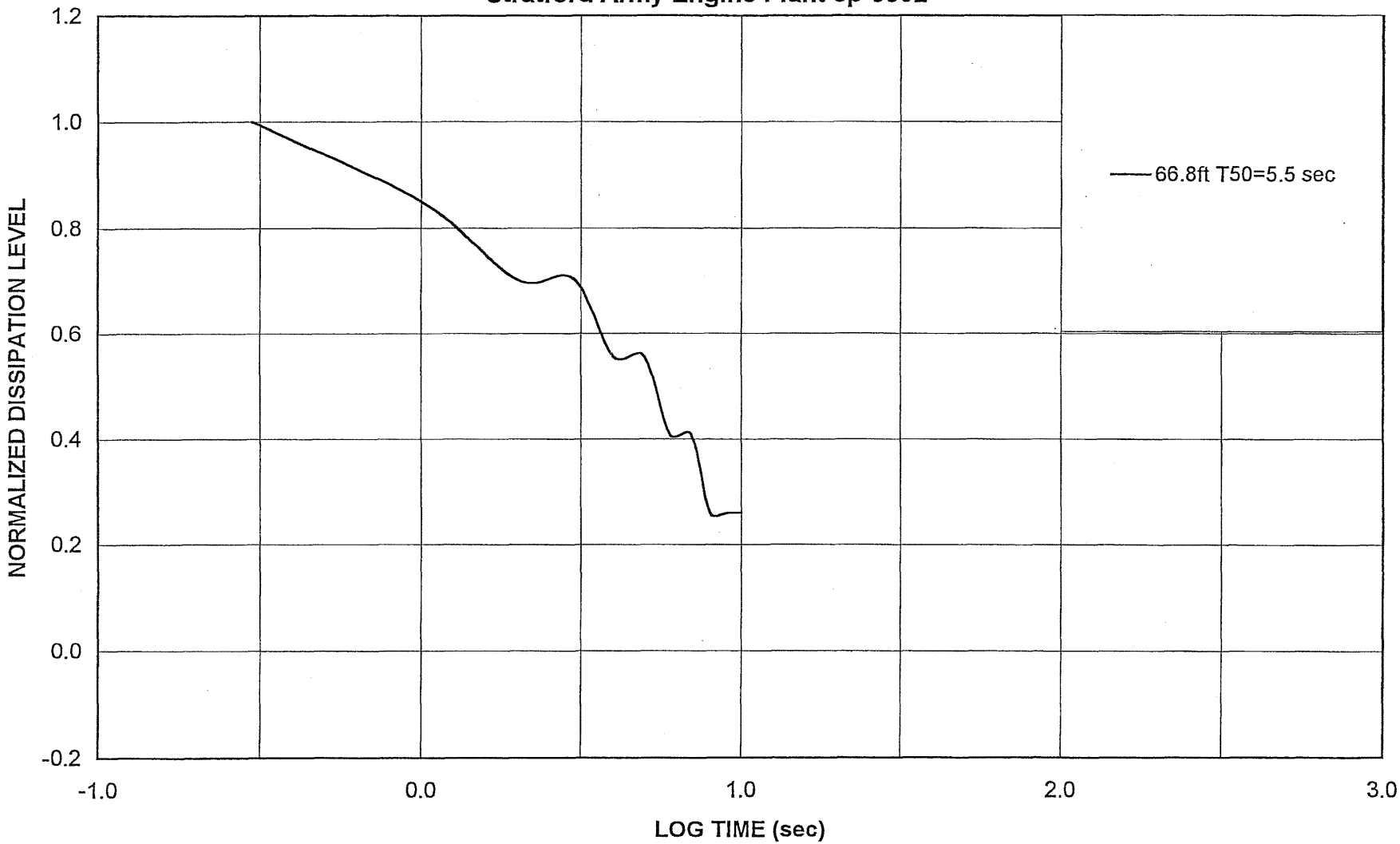
**Stratford Army Engine Plant cp-9902**



*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

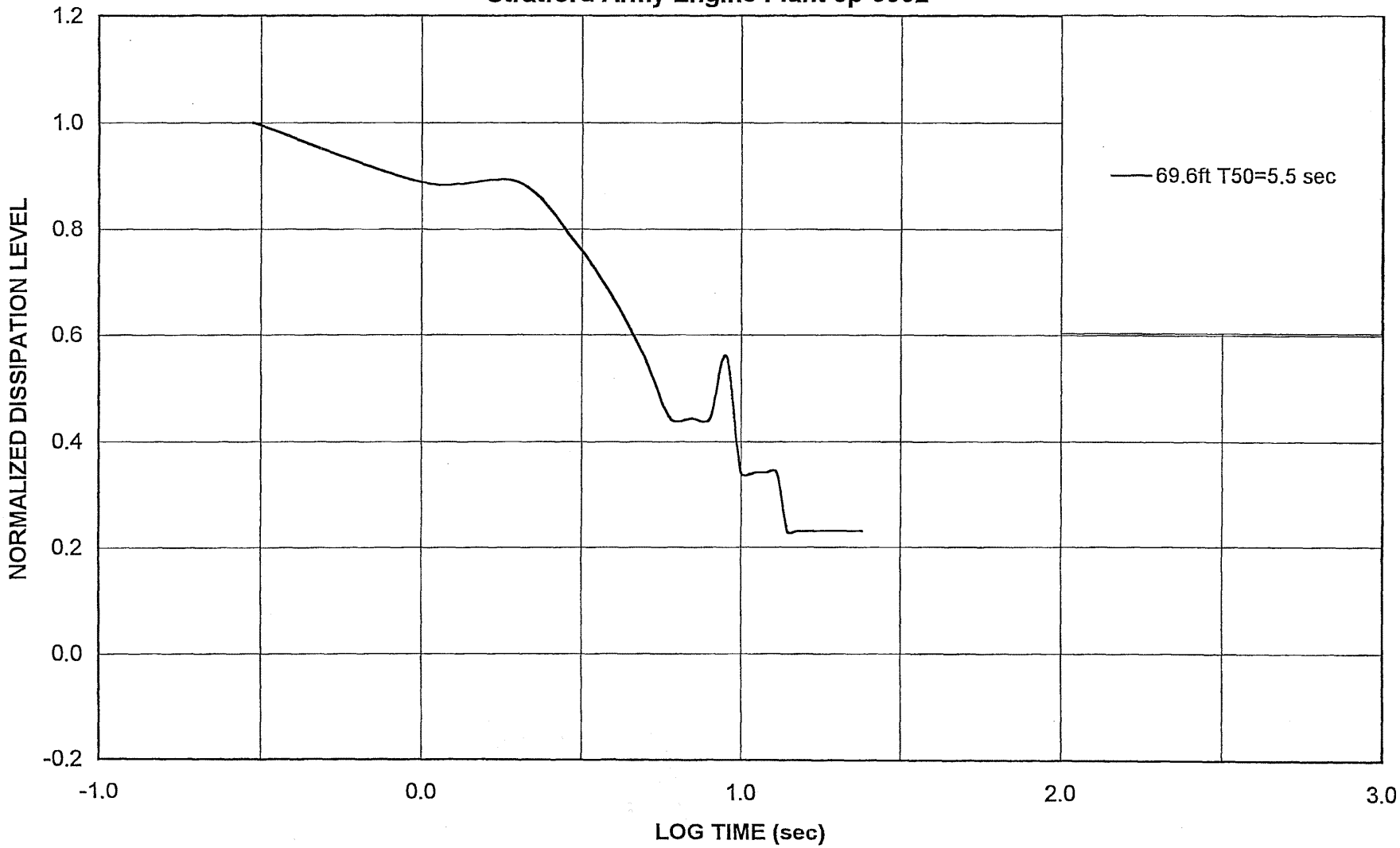
**Stratford Army Engine Plant cp-9902**



*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

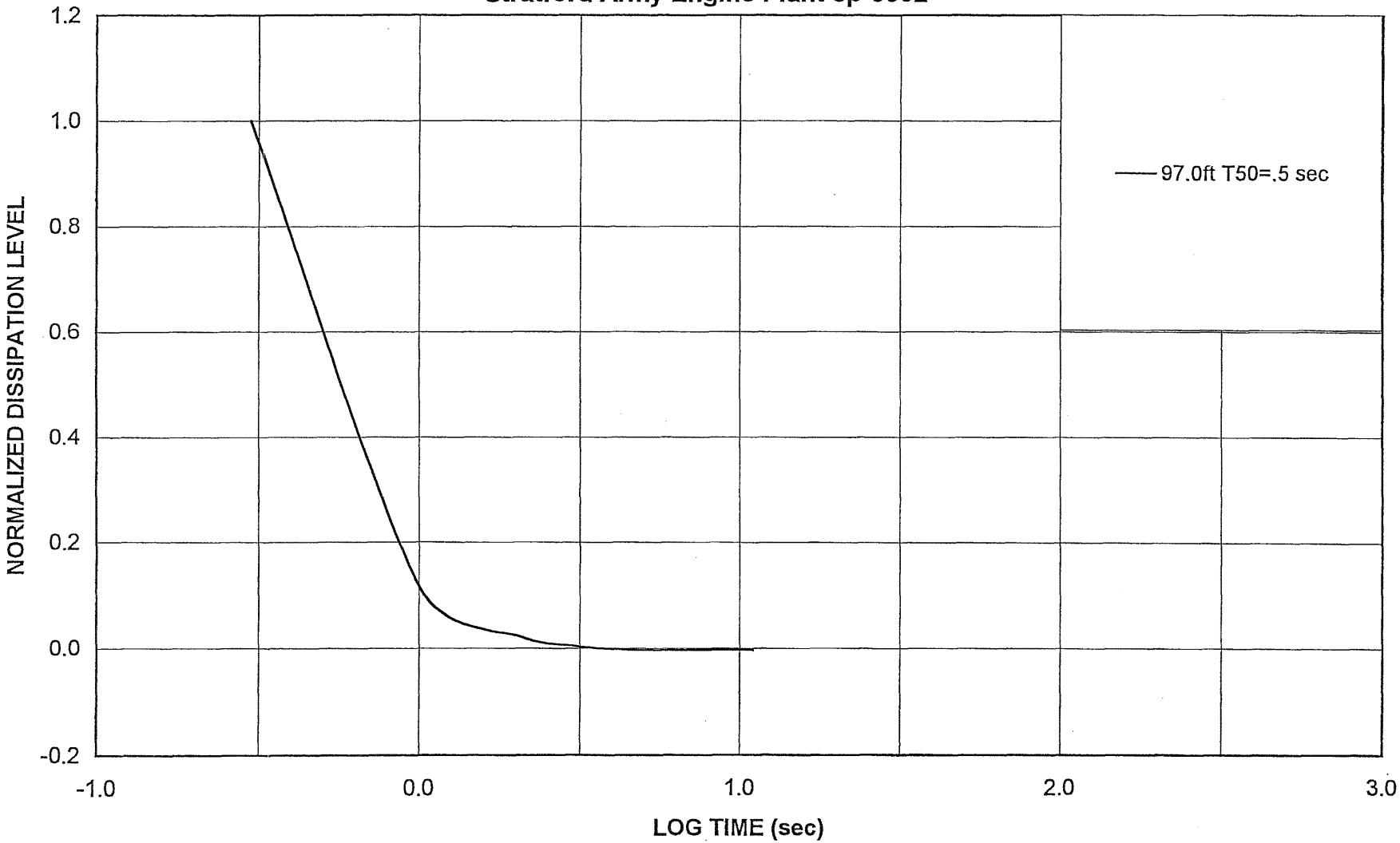
**Stratford Army Engine Plant cp-9902**



*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

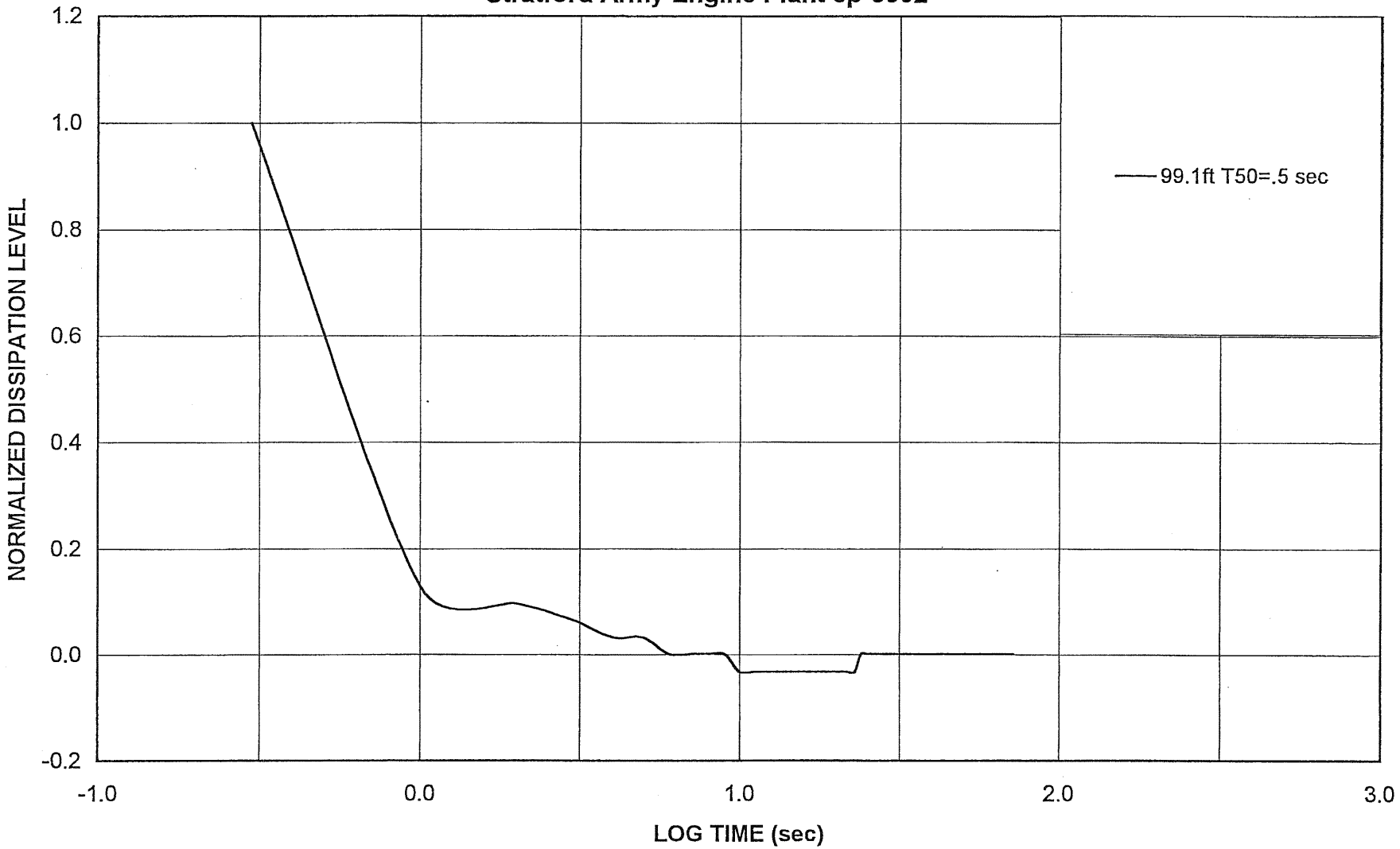
**Stratford Army Engine Plant cp-9902**



*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

**Stratford Army Engine Plant cp-9902**



*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-06-1999 TIME:08:39:23.18
SOUNDING NUMBER:cp-9902

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 1.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 2.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 2.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 3.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 3.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 4.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 4.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 5.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 5.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 6.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 6.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 7.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 7.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 8.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 8.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 9.0 | 19.6 | 24.4 | 0.36 | 1.8 | 138 | Loose, Silty sand to sandy silt | 27-31 | 20-40 | | | | 03 - 05 | 04 - 06 |
| 9.5 | 20.8 | 25.7 | 0.30 | 1.4 | 62 | Loose, Silty sand to sandy silt | 27-31 | 20-40 | | | | 03 - 05 | 04 - 06 |
| 10.0 | 21.7 | 26.6 | 0.26 | 1.2 | 154 | Loose, Silty sand to sandy silt | 27-31 | 20-40 | | | | 03 - 05 | 04 - 06 |
| 10.5 | 12.8 | 15.6 | 0.20 | 1.1 | 50 | Loose, Silty sand to sandy silt | 27-31 | 20-40 | | | | 00 - 02 | 00 - 02 |
| 11.0 | 31.5 | 38.1 | 0.60 | 1.1 | 105 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 05 - 08 | 06 - 10 |
| 11.5 | 69.6 | 83.7 | 0.92 | 1.3 | 91 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 17 - 25 | 20 - 30 |
| 12.0 | 75.3 | 89.9 | 1.05 | 1.3 | 79 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 17 - 25 | 20 - 30 |
| 12.5 | 88.8 | 105.3 | 0.63 | 0.9 | 105 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 25 | 20 - 30 |
| 13.0 | 79.3 | 93.5 | 1.05 | 1.2 | 86 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 17 - 25 | 20 - 30 |
| 13.5 | 105.8 | 123.9 | 0.95 | 0.7 | 109 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 26 | 20 - 30 |
| 14.0 | 169.7 | 197.7 | 1.73 | 0.8 | 141 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 34 - 52 | 40 - 60 |
| 14.5 | 214.3 | 248.2 | 1.18 | 0.4 | 185 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 35 - 52 | 40 - 60 |
| 15.0 | 273.0 | 314.4 | 2.71 | 1.0 | 232 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 52 - 86 | 60 - 99 |
| 15.5 | 124.5 | 142.6 | 1.90 | 0.9 | 256 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 35 | 30 - 40 |
| 16.0 | 75.9 | 86.5 | 0.74 | 0.8 | 334 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 13 - 18 | 15 - 20 |
| 16.5 | 60.7 | 68.8 | 0.35 | 0.5 | 419 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 09 - 13 | 10 - 15 |
| 17.0 | 49.5 | 55.8 | 0.59 | 1.0 | 574 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 09 - 13 | 10 - 15 |
| 17.5 | 54.4 | 61.0 | 0.30 | 0.5 | 627 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 05 - 09 | 06 - 10 |
| 18.0 | 70.4 | 78.6 | 0.55 | 0.7 | 782 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 13 - 18 | 15 - 20 |
| 18.5 | 68.5 | 76.1 | 0.56 | 0.7 | 1073 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 13 - 18 | 15 - 20 |
| 19.0 | 52.7 | 58.3 | 0.49 | 0.9 | 1634 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 09 - 14 | 10 - 15 |
| 19.5 | 59.7 | 65.8 | 0.20 | 0.3 | 1774 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 05 - 09 | 06 - 10 |
| 20.0 | 78.1 | 85.7 | 0.36 | 0.4 | 1938 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 18 | 15 - 20 |
| 20.5 | 114.3 | 124.7 | 0.56 | 0.4 | 1899 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 27 | 20 - 30 |
| 21.0 | 151.1 | 164.2 | 0.64 | 0.4 | 2098 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 37 | 30 - 40 |
| 21.5 | 135.7 | 146.9 | 0.84 | 0.6 | 2128 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 37 | 30 - 40 |
| 22.0 | 117.8 | 127.0 | 0.93 | 0.8 | 2296 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 22.5 | 115.1 | 123.5 | 0.60 | 0.5 | 2381 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 23.0 | 154.5 | 165.1 | 1.09 | 0.6 | 2312 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 37 | 30 - 40 |
| 23.5 | 176.2 | 187.5 | 1.26 | 0.8 | 2350 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 56 | 40 - 60 |
| 24.0 | 173.8 | 184.2 | 1.52 | 0.9 | 2429 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 24.5 | 173.0 | 182.7 | 1.50 | 0.9 | 2608 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 25.0 | 183.9 | 193.5 | 0.76 | 0.4 | 2822 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 57 | 40 - 60 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-06-1999 TIME:08:39:23.18
SOUNDING NUMBER:cp-9902

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 206.7 | 216.7 | 1.10 | 0.5 | 2917 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 26.0 | 212.2 | 221.5 | 0.64 | 0.3 | 2827 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 38 - 57 | 40 - 60 |
| 26.5 | 232.7 | 242.0 | 0.73 | 0.3 | 3059 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 38 - 58 | 40 - 60 |
| 27.0 | 220.9 | 229.0 | 1.28 | 0.6 | 3043 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 27.5 | 164.6 | 170.0 | 2.06 | 1.1 | 3015 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 28.0 | 159.0 | 163.6 | 1.37 | 0.9 | 3044 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 28.5 | 160.9 | 165.0 | 1.50 | 0.9 | 3223 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 29.0 | 141.3 | 144.5 | 1.05 | 0.7 | 3414 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 29.5 | 149.9 | 152.7 | 0.63 | 0.4 | 3102 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 30.0 | 182.9 | 185.7 | 1.42 | 0.8 | 3185 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 30.5 | 176.2 | 178.3 | 1.95 | 1.1 | 3257 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 59 | 40 - 60 |
| 31.0 | 178.4 | 179.9 | 1.89 | 1.0 | 3410 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 59 | 40 - 60 |
| 31.5 | 184.9 | 185.9 | 1.31 | 0.7 | 3505 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 32.0 | 198.6 | 199.0 | 1.08 | 0.5 | 3660 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 40 - 60 | 40 - 60 |
| 32.5 | 205.3 | 205.0 | 1.06 | 0.5 | 3669 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 33.0 | 192.9 | 192.1 | 1.55 | 0.8 | 3766 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 33.5 | 177.5 | 176.2 | 2.21 | 1.3 | 3669 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 34.0 | 145.4 | 143.9 | 2.62 | 1.7 | 3094 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 40 - 61 | 40 - 60 |
| 34.5 | 148.8 | 146.8 | 2.16 | 1.5 | 3270 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 35.0 | 125.5 | 123.5 | 1.55 | 1.2 | 3211 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 30 - 41 | 30 - 40 |
| 35.5 | 122.9 | 120.6 | 1.29 | 1.0 | 3195 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 31 - 41 | 30 - 40 |
| 36.0 | 110.6 | 108.2 | 1.13 | 0.9 | 3303 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 31 | 20 - 30 |
| 36.5 | 96.5 | 94.1 | 1.03 | 0.9 | 3308 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 37.0 | 135.2 | 131.5 | 1.33 | 1.0 | 3212 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 31 - 41 | 30 - 40 |
| 37.5 | 112.1 | 108.7 | 1.87 | 1.5 | 3415 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 31 - 41 | 30 - 40 |
| 38.0 | 102.7 | 99.3 | 2.14 | 1.8 | 3195 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 31 - 41 | 30 - 40 |
| 38.5 | 148.0 | 142.8 | 2.04 | 1.2 | 2972 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 39.0 | 178.4 | 171.5 | 1.41 | 0.8 | 2811 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 62 | 40 - 60 |
| 39.5 | 200.4 | 192.2 | 2.09 | 1.1 | 3075 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 40.0 | 188.9 | 180.7 | 1.93 | 1.0 | 3002 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 40.5 | 187.6 | 178.9 | 2.89 | 1.5 | 3071 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 41.0 | 159.1 | 151.4 | 1.99 | 1.2 | 3191 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 41.5 | 169.0 | 160.3 | 1.91 | 1.0 | 2631 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 42.0 | 208.9 | 197.7 | 2.45 | 1.2 | 3356 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 42.5 | 165.2 | 155.9 | 2.58 | 1.3 | 3545 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 64 | 40 - 60 |
| 43.0 | 117.9 | 111.0 | 1.38 | 1.0 | 3687 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 43.5 | 99.4 | 93.3 | 2.17 | 1.8 | 3674 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 21 - 32 | 20 - 30 |
| 44.0 | 148.5 | 139.1 | 2.61 | 1.6 | 3518 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 44.5 | 171.8 | 160.6 | 2.74 | 1.6 | 3663 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 45.0 | 189.2 | 176.4 | 2.63 | 1.4 | 3665 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 45.5 | 199.1 | 185.1 | 2.54 | 1.3 | 3618 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 46.0 | 208.2 | 193.1 | 1.46 | 0.7 | 3671 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 46.5 | 237.0 | 219.3 | 1.33 | 0.6 | 3480 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 47.0 | 246.5 | 227.5 | 1.45 | 0.6 | 3014 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 47.5 | 220.2 | 202.8 | 2.41 | 1.0 | 3762 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 48.0 | 166.9 | 153.3 | 1.96 | 1.1 | 2210 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 65 | 40 - 60 |
| 48.5 | 104.8 | 96.1 | 1.76 | 1.4 | 2851 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 49.0 | 123.9 | 113.3 | 2.12 | 1.7 | 2882 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 49.5 | 128.4 | 117.2 | 2.09 | 1.6 | 2374 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 50.0 | 133.3 | 121.4 | 1.82 | 1.4 | 2258 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 33 - 44 | 30 - 40 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
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Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-06-1999 TIME:08:39:23.18
SOUNDING NUMBER:cp-9902

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 138.9 | 126.1 | 1.37 | 0.9 | 2158 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 51.0 | 142.5 | 129.1 | 1.31 | 0.9 | 1929 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 51.5 | 156.2 | 141.2 | 1.51 | 1.0 | 1869 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 52.0 | 135.1 | 121.8 | 1.32 | 0.9 | 2693 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 52.5 | 135.3 | 121.8 | 1.58 | 1.2 | 1957 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 53.0 | 136.7 | 122.7 | 1.84 | 1.3 | 2293 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 33 - 45 | 30 - 40 |
| 53.5 | 126.3 | 113.2 | 0.75 | 0.6 | 2157 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 54.0 | 154.1 | 137.8 | 0.31 | 0.2 | 1797 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 22 - 34 | 20 - 30 |
| 54.5 | 163.0 | 145.4 | 1.45 | 0.9 | 2339 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 55.0 | 83.6 | 74.4 | 1.02 | 0.9 | 2951 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 55.5 | 65.7 | 58.4 | 0.97 | 1.3 | 3019 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 56.0 | 60.4 | 53.5 | 0.84 | 1.4 | 2883 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 56.5 | 43.7 | 38.6 | 0.91 | 1.6 | 2804 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 07 - 11 | 06 - 10 |
| 57.0 | 44.8 | 39.5 | 0.87 | 1.8 | 2683 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 57.5 | 49.1 | 43.3 | 0.73 | 1.4 | 2534 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 07 - 11 | 06 - 10 |
| 58.0 | 59.1 | 51.9 | 0.93 | 1.7 | 2535 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 58.5 | 45.5 | 39.9 | 1.01 | 1.8 | 2570 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 59.0 | 56.2 | 49.2 | 1.31 | 1.9 | 2035 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 59.5 | 89.0 | 77.8 | 0.84 | 0.8 | 2068 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 60.0 | 95.6 | 83.4 | 0.99 | 1.0 | 2279 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 60.5 | 116.3 | 101.2 | 1.21 | 1.0 | 2524 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 61.0 | 135.9 | 118.1 | 1.23 | 0.9 | 2655 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 61.5 | 97.9 | 84.9 | 2.63 | 2.0 | 2736 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 62.0 | 55.8 | 48.3 | 1.20 | 1.8 | 2552 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 12 - 17 | 10 - 15 |
| 62.5 | 63.1 | 54.5 | 1.03 | 1.5 | 2544 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 12 - 17 | 10 - 15 |
| 63.0 | 71.7 | 61.8 | 0.84 | 1.0 | 2147 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 12 - 17 | 10 - 15 |
| 63.5 | 92.7 | 79.8 | 0.82 | 0.8 | 2254 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 64.0 | 103.4 | 88.8 | 0.94 | 1.0 | 2355 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 64.5 | 93.0 | 79.7 | 1.04 | 1.0 | 2450 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 18 - 23 | 15 - 20 |
| 65.0 | 110.9 | 94.9 | 0.84 | 0.7 | 2271 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 65.5 | 135.7 | 115.9 | 1.58 | 1.1 | 2731 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 66.0 | 137.0 | 116.8 | 1.97 | 1.5 | 2642 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 66.5 | 139.8 | 118.9 | 1.72 | 1.2 | 2218 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 67.0 | 151.2 | 128.3 | 1.99 | 1.3 | 2668 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 67.5 | 133.9 | 113.5 | 1.64 | 1.1 | 2161 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 68.0 | 134.9 | 114.1 | 1.54 | 1.2 | 2783 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 68.5 | 140.8 | 118.8 | 2.09 | 1.4 | 2883 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 47 | 30 - 40 |
| 69.0 | 150.4 | 126.7 | 1.93 | 1.3 | 2966 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 47 | 30 - 40 |
| 69.5 | 138.7 | 116.7 | 2.45 | 1.6 | 2851 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 70.0 | 132.7 | 111.4 | 1.75 | 1.3 | 2821 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 48 | 30 - 40 |
| 70.5 | 145.6 | 122.0 | 2.17 | 1.5 | 2750 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 71.0 | 151.4 | 126.7 | 1.88 | 1.3 | 2569 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 71.5 | 127.2 | 106.2 | 1.97 | 1.4 | 2693 | Dense, Sand to silty sand | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 72.0 | 112.3 | 93.7 | 2.13 | 1.8 | 2711 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 72.5 | 125.7 | 104.7 | 1.79 | 1.6 | 2992 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 73.0 | 98.1 | 81.5 | 1.84 | 1.5 | 2719 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 73.5 | 147.9 | 122.7 | 2.01 | 1.3 | 1578 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 74.0 | 163.0 | 135.0 | 1.01 | 0.6 | 3047 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 74.5 | 149.8 | 123.8 | 2.04 | 1.3 | 2931 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 75.0 | 113.7 | 93.8 | 1.53 | 1.3 | 2425 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 24 - 36 | 20 - 30 |

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PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-06-1999 TIME:08:39:23.18
SOUNDING NUMBER:cp-9902

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 105.3 | 86.7 | 1.86 | 1.6 | 2688 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 76.0 | 98.9 | 81.4 | 2.03 | 2.0 | 2081 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 76.5 | 98.4 | 80.7 | 1.69 | 1.7 | 2768 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 37 | 20 - 30 |
| 77.0 | 109.8 | 90.0 | 1.88 | 1.5 | 2839 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 24 - 37 | 20 - 30 |
| 77.5 | 141.0 | 115.3 | 2.16 | 1.5 | 2975 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 78.0 | 138.4 | 113.1 | 2.63 | 1.8 | 2875 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 78.5 | 165.7 | 135.1 | 2.33 | 1.5 | 3053 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 79.0 | 131.7 | 107.2 | 2.59 | 1.7 | 2877 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 79.5 | 120.2 | 97.7 | 2.04 | 1.6 | 3036 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 37 | 20 - 30 |
| 80.0 | 134.6 | 109.3 | 2.45 | 1.9 | 2961 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 80.5 | 124.5 | 100.8 | 2.37 | 1.9 | 2994 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 81.0 | 113.3 | 91.6 | 2.54 | 2.1 | 2891 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 81.5 | 134.8 | 108.9 | 1.97 | 1.4 | 3037 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 82.0 | 137.9 | 111.2 | 2.49 | 1.8 | 2802 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 82.5 | 138.2 | 111.3 | 1.95 | 1.2 | 2791 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 83.0 | 183.5 | 147.5 | 2.64 | 1.4 | 3038 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 83.5 | 193.9 | 155.6 | 2.66 | 1.4 | 2984 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 84.0 | 158.5 | 127.0 | 2.40 | 1.4 | 3083 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 84.5 | 161.5 | 129.2 | 1.69 | 1.0 | 3260 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 38 - 50 | 30 - 40 |
| 85.0 | 194.3 | 155.2 | 1.72 | 0.9 | 3202 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 38 - 50 | 30 - 40 |
| 85.5 | 180.0 | 143.6 | 1.95 | 1.0 | 3189 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 86.0 | 152.2 | 121.2 | 1.43 | 0.8 | 3126 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 86.5 | 208.3 | 165.6 | 1.48 | 0.7 | 3062 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 50 | 30 - 40 |
| 87.0 | 220.3 | 174.9 | 1.95 | 0.9 | 3079 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 87.5 | 213.0 | 168.8 | 2.42 | 1.1 | 3082 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 88.0 | 168.3 | 133.2 | 2.19 | 1.2 | 3140 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 88.5 | 174.0 | 137.5 | 2.22 | 1.2 | 3162 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 89.0 | 214.8 | 169.5 | 2.39 | 1.0 | 3255 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 89.5 | 249.9 | 196.8 | 3.04 | 1.2 | 3300 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 90.0 | 237.8 | 187.0 | 2.80 | 1.1 | 3330 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 90.5 | 231.7 | 182.0 | 2.43 | 1.0 | 3437 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 91.0 | 243.5 | 191.0 | 2.51 | 1.1 | 3380 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 91.5 | 225.0 | 176.2 | 2.22 | 1.0 | 3456 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 92.0 | 234.9 | 183.7 | 1.97 | 0.8 | 3401 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 92.5 | 239.5 | 187.0 | 2.28 | 0.9 | 3225 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 93.0 | 238.8 | 186.1 | 2.91 | 1.2 | 3289 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 93.5 | 241.3 | 187.9 | 2.83 | 1.2 | 3387 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 94.0 | 223.7 | 173.9 | 2.85 | 1.2 | 3436 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 94.5 | 210.1 | 163.1 | 3.05 | 1.4 | 3345 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 95.0 | 186.2 | 144.3 | 2.80 | 1.4 | 3433 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 95.5 | 192.6 | 149.1 | 3.18 | 1.6 | 3323 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 96.0 | 181.4 | 140.2 | 3.03 | 1.7 | 3364 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 96.5 | 171.0 | 132.0 | 2.64 | 1.5 | 3030 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 97.0 | 164.5 | 126.8 | 2.14 | 1.3 | 3311 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 97.5 | 147.1 | 113.2 | 2.77 | 1.8 | 3353 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 98.0 | 146.3 | 112.4 | 2.84 | 2.0 | 3296 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 98.5 | 126.9 | 97.4 | 2.59 | 1.8 | 3166 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 99.0 | 132.9 | 101.8 | 2.52 | 2.0 | 3293 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 99.5 | 129.3 | 99.0 | 2.51 | 1.7 | 3428 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 100.0 | 159.0 | 121.5 | 2.70 | 1.7 | 3495 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 79 | 40 - 60 |

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PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-06-1999 TIME:08:39:23.18
SOUNDING NUMBER:cp-9902

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.5 | 148.2 | 113.1 | 2.72 | 1.8 | 3476 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 101.0 | 115.1 | 87.7 | 2.29 | 1.8 | 3369 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 26 - 39 | 20 - 30 |
| 101.5 | 109.3 | 83.2 | 2.02 | 1.8 | 3517 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 26 - 39 | 20 - 30 |
| 102.0 | 104.6 | 79.5 | 2.28 | 2.1 | 3575 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 26 - 39 | 20 - 30 |
| 102.5 | 102.3 | 77.6 | 2.03 | 1.9 | 3356 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 26 - 40 | 20 - 30 |
| 103.0 | 99.5 | 75.4 | 1.92 | 1.9 | 3434 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 26 - 40 | 20 - 30 |
| 103.5 | 90.8 | 68.8 | 1.88 | 2.0 | 3421 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 26 - 40 | 20 - 30 |
| 104.0 | 91.9 | 69.5 | 1.72 | 1.8 | 3253 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 26 - 40 | 20 - 30 |
| 104.5 | 97.0 | 73.2 | 1.82 | 1.8 | 3308 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 26 - 40 | 20 - 30 |
| 105.0 | 106.7 | 80.4 | 1.87 | 1.7 | 3267 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 105.5 | 114.1 | 85.9 | 2.22 | 2.0 | 3235 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 27 - 40 | 20 - 30 |
| 106.0 | 126.1 | 94.8 | 1.94 | 1.6 | 3112 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 27 - 40 | 20 - 30 |
| 106.5 | 119.5 | 89.7 | 2.18 | 1.8 | 3193 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 27 - 40 | 20 - 30 |
| 107.0 | 127.3 | 95.5 | 2.09 | 1.7 | 3071 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 27 - 40 | 20 - 30 |
| 107.5 | 119.9 | 89.8 | 2.53 | 2.0 | 3039 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 40 - 53 | 30 - 40 |
| 108.0 | 116.4 | 87.1 | 2.48 | 2.0 | 2925 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 27 - 40 | 20 - 30 |
| 108.5 | 144.9 | 108.2 | 1.57 | 0.9 | 2920 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 109.0 | 192.0 | 143.2 | 2.38 | 1.3 | 3270 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 109.5 | 186.4 | 138.8 | 3.05 | 1.6 | 3452 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 110.0 | 166.5 | 123.9 | 2.85 | 1.6 | 3361 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 110.5 | 145.2 | 107.9 | 2.93 | 1.9 | 3381 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 40 - 54 | 30 - 40 |
| 111.0 | 118.1 | 87.6 | 1.88 | 1.5 | 2978 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 111.5 | 122.8 | 91.0 | 2.38 | 1.8 | 2964 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 27 - 40 | 20 - 30 |
| 112.0 | 141.6 | 104.8 | 2.64 | 1.8 | 3256 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 54 | 30 - 40 |
| 112.5 | 138.1 | 102.1 | 2.96 | 2.1 | 3072 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 54 | 30 - 40 |
| 113.0 | 116.2 | 85.8 | 3.13 | 2.4 | 2286 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 41 - 54 | 30 - 40 |
| 113.5 | 130.7 | 96.4 | 2.70 | 2.0 | 3044 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 54 | 30 - 40 |
| 114.0 | 148.1 | 109.1 | 2.69 | 1.9 | 3171 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 114.5 | 137.9 | 101.4 | 2.94 | 1.9 | 3070 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 54 | 30 - 40 |
| 115.0 | 178.0 | 130.8 | 2.53 | 1.3 | 3418 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 54 | 30 - 40 |
| 115.5 | 190.9 | 140.1 | 3.96 | 2.0 | 3362 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 116.0 | 185.3 | 135.7 | 3.09 | 1.6 | 3395 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 116.5 | 198.8 | 145.4 | 3.28 | 1.6 | 3475 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 117.0 | 225.2 | 164.6 | 3.15 | 1.4 | 3521 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 117.5 | 216.1 | 157.7 | 2.94 | 1.3 | 3678 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 118.0 | 261.6 | 190.7 | 2.50 | 0.9 | 3669 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 118.5 | 276.1 | 201.0 | 1.16 | 0.5 | 3532 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 55 - 82 | 40 - 60 |
| 119.0 | 223.4 | 162.5 | 2.80 | 1.1 | 3456 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 119.5 | 214.3 | 155.7 | 2.44 | 1.1 | 3522 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 120.0 | 237.0 | 171.9 | 2.42 | 1.0 | 3704 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 120.5 | 265.8 | 192.6 | 2.17 | 0.8 | 3782 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 121.0 | 258.1 | 186.8 | 1.02 | 0.4 | 3701 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 121.5 | 269.2 | 194.6 | 2.15 | 0.8 | 3880 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 122.0 | 279.8 | 201.9 | 2.85 | 1.0 | 3702 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 122.5 | 248.0 | 178.8 | 3.09 | 1.2 | 3893 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 123.0 | 191.2 | 137.7 | 3.01 | 1.4 | 3663 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 123.5 | 166.3 | 119.6 | 2.70 | 1.5 | 3854 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 56 | 30 - 40 |
| 124.0 | 169.0 | 121.4 | 2.33 | 1.4 | 3713 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 56 | 30 - 40 |
| 124.5 | 122.0 | 87.5 | 2.41 | 1.5 | 2754 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 125.0 | 165.6 | 118.7 | 3.03 | 1.9 | 4057 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |

Notes:

* Indicates lightly overconsolidated soil
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT. Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-06-1999 TIME:08:39:23.18
SOUNDING NUMBER:cp-9902

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125.5 | 156.3 | 111.9 | 3.24 | 2.0 | 3759 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 126.0 | 158.9 | 113.6 | 3.00 | 1.8 | 3844 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 126.5 | 177.8 | 127.0 | 2.90 | 1.6 | 3796 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 127.0 | 176.8 | 126.1 | 3.31 | 1.8 | 3880 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 127.5 | 172.0 | 122.5 | 3.31 | 1.9 | 3896 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 128.0 | 190.1 | 135.3 | 3.07 | 1.7 | 3974 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 128.5 | 168.1 | 119.5 | 3.88 | 2.1 | 3764 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 129.0 | 197.6 | 140.3 | 3.05 | 1.4 | 3930 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 85 | 40 - 60 |
| 129.5 | 239.6 | 169.9 | 3.07 | 1.2 | 3961 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 85 | 40 - 60 |
| 130.0 | 250.7 | 177.5 | 3.13 | 1.3 | 4089 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 85 | 40 - 60 |
| 130.5 | 249.9 | 176.8 | 3.05 | 1.2 | 4109 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 131.0 | 276.4 | 195.3 | 2.64 | 0.9 | 4150 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 131.5 | 302.6 | 213.6 | 0.61 | 0.3 | 4229 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 57 - 85 | 40 - 60 |
| 132.0 | 291.3 | 205.4 | 2.61 | 0.9 | 4107 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 132.5 | 327.6 | 230.7 | 2.09 | 0.5 | 3880 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 133.0 | 335.5 | 236.0 | 1.34 | 0.4 | 3975 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 133.5 | 320.8 | 225.4 | 2.41 | 0.7 | 3635 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 134.0 | 281.2 | 197.4 | 3.02 | 1.1 | 4065 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 134.5 | 227.7 | 159.6 | 2.28 | 0.9 | 4060 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 135.0 | 216.6 | 151.7 | 2.15 | 0.9 | 3921 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 43 - 57 | 30 - 40 |
| 135.5 | 314.6 | 220.0 | 2.30 | 0.6 | 3835 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 136.0 | 443.9 | 310.1 | 1.54 | 0.3 | 3733 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 57 - 86 | 40 - 60 |

Notes:

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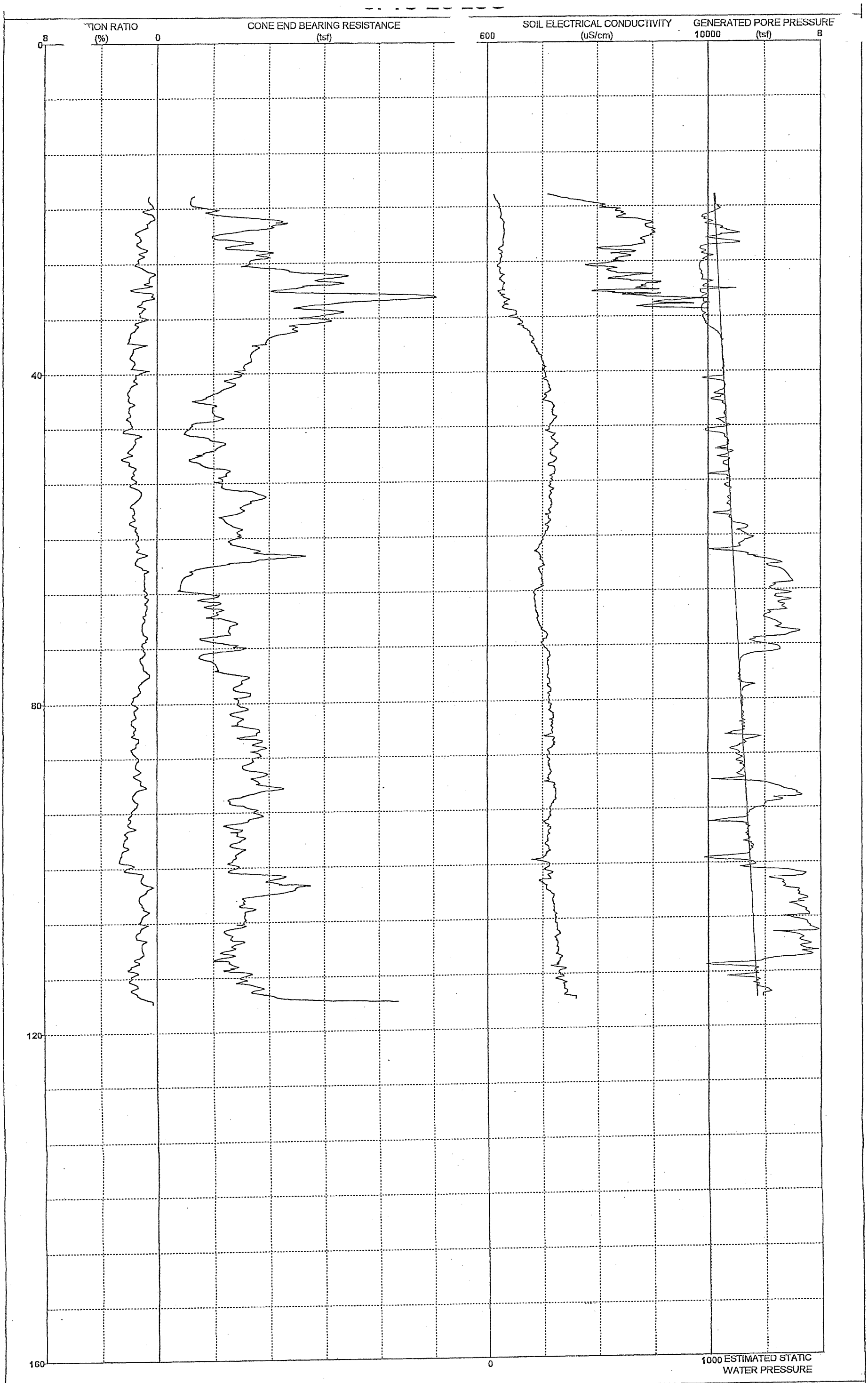
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

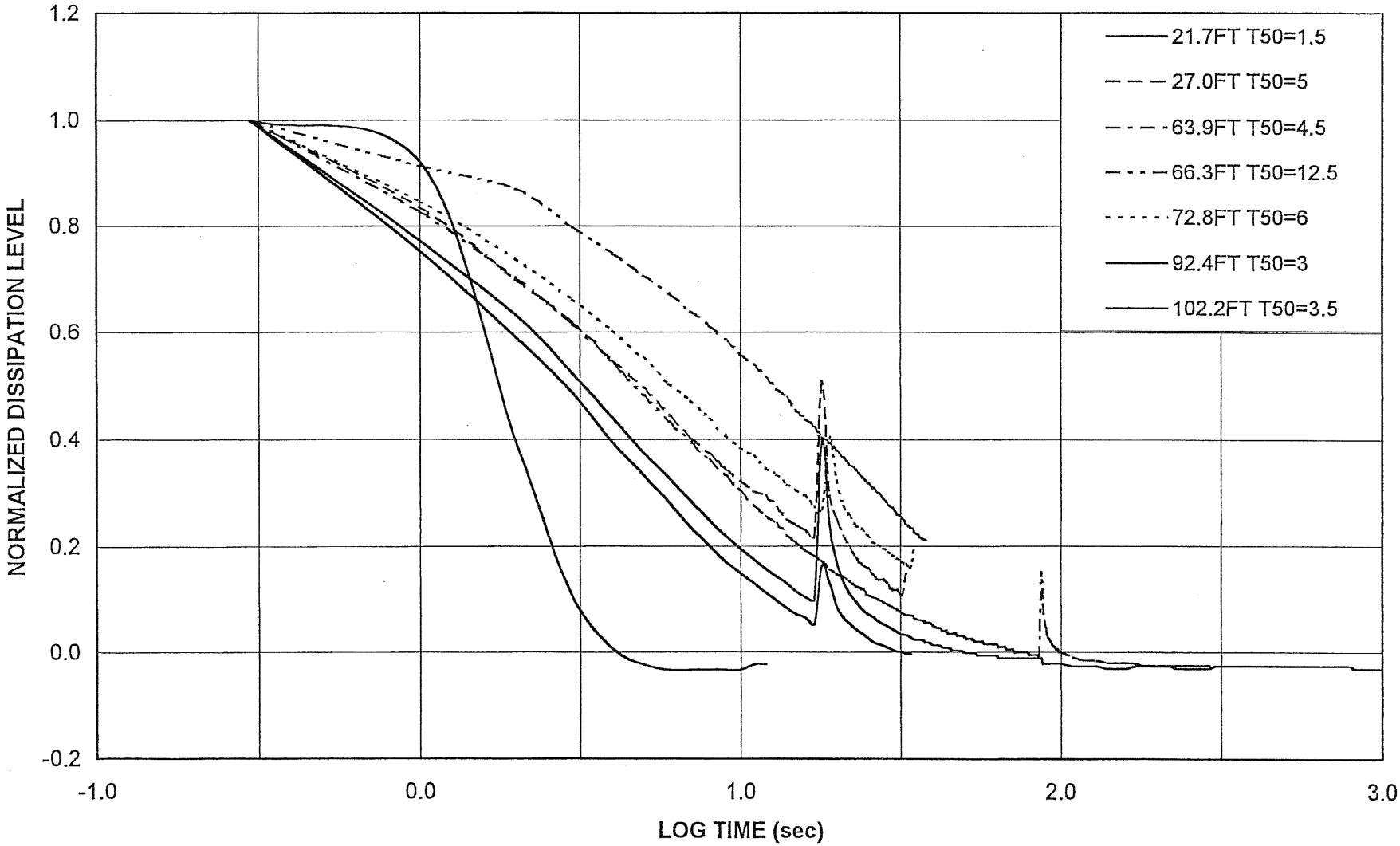
**STRATIGRAPHICS**

R2DATE: 5-10-1999 TIME:08:21:07.97
SOUNDING NUMBER:cp-9903

*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

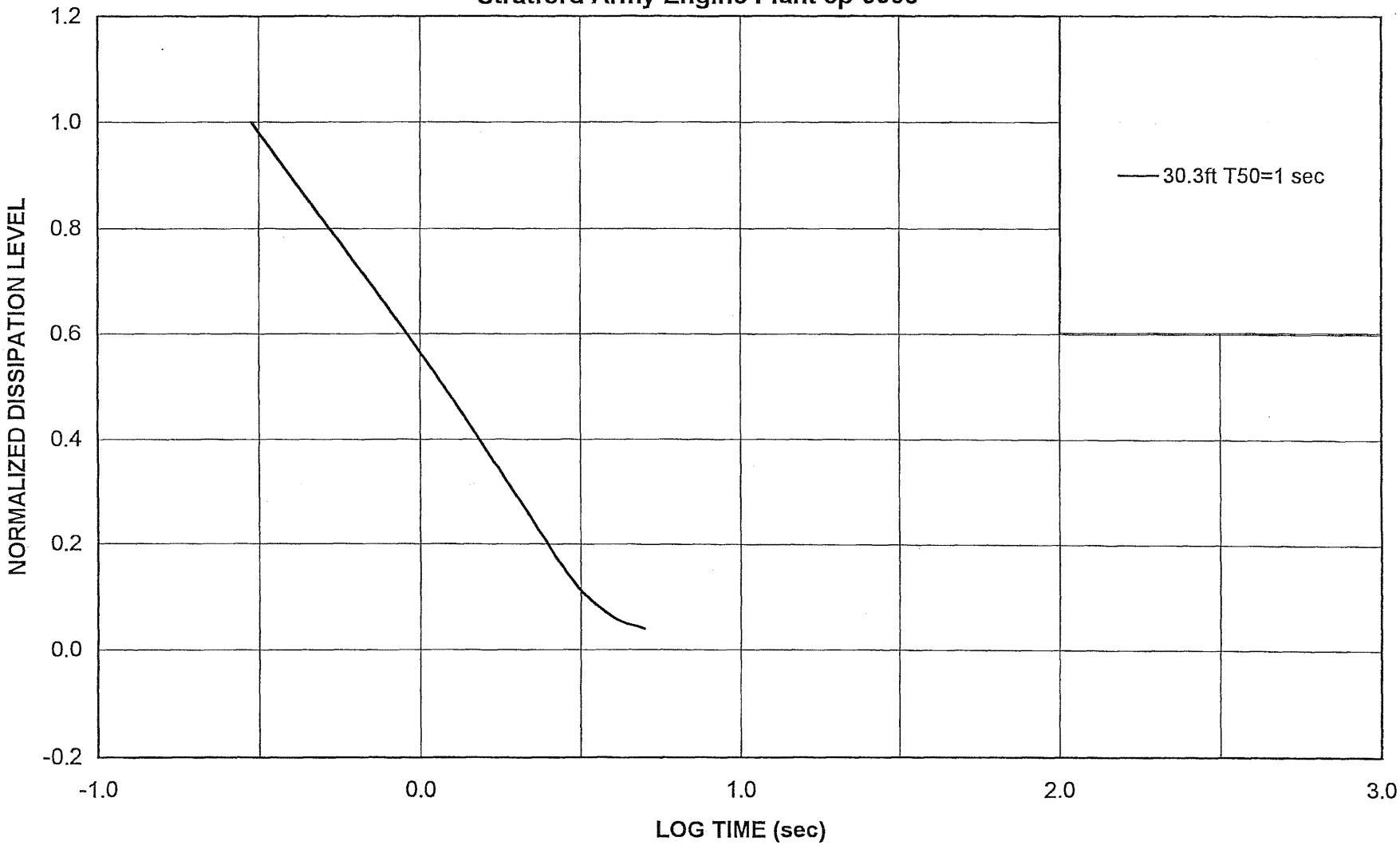
**Stratford Army Engine Plant cp-9903**



*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

**Stratford Army Engine Plant cp-9903**



***STRATIGRAPHICS***

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-10-1999 TIME:08:21:07.97
SOUNDING NUMBER:cp-9903

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 1.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 2.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 2.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 3.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 3.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 4.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 4.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 5.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 5.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 6.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 6.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 7.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 7.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 8.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 8.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 9.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 9.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 10.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 10.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 11.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 11.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 12.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 12.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 13.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 13.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 14.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 14.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 15.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 15.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 16.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 16.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 17.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 17.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 18.0 | Prepunched To 18.50' | | | | | | | | | | | | |
| 18.5 | Prepunched To 18.50' | | | | | | | | | | | | |
| 19.0 | 59.6 | 63.5 | 0.39 | 0.6 | 366 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 09 - 14 | 10 - 15 |
| 19.5 | 59.2 | 62.8 | 0.29 | 0.4 | 462 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 06 - 09 | 06 - 10 |
| 20.0 | 88.4 | 93.6 | 0.34 | 0.4 | 525 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 19 | 15 - 20 |
| 20.5 | 88.1 | 92.9 | 0.83 | 0.8 | 583 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 21.0 | 135.9 | 142.7 | 0.38 | 0.2 | 624 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 21.5 | 216.1 | 226.1 | 1.24 | 0.5 | 661 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 22.0 | 220.5 | 229.7 | 1.61 | 0.7 | 751 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 58 | 40 - 60 |
| 22.5 | 192.0 | 199.4 | 2.30 | 1.1 | 723 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 23.0 | 128.4 | 132.8 | 2.46 | 1.6 | 750 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 23.5 | 98.0 | 101.0 | 1.48 | 1.3 | 744 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 24.0 | 148.4 | 152.5 | 2.05 | 1.3 | 696 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 24.5 | 141.5 | 144.8 | 2.16 | 1.3 | 715 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 25.0 | 147.5 | 150.5 | 1.26 | 0.7 | 525 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 39 | 30 - 40 |

Notes:

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Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-10-1999 TIME:08:21:07.97
SOUNDING NUMBER:cp-9903

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 199.3 | 202.6 | 2.40 | 1.2 | 672 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 26.0 | 200.5 | 203.2 | 2.44 | 1.3 | 652 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 26.5 | 164.4 | 166.1 | 2.35 | 1.3 | 590 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 59 | 40 - 60 |
| 27.0 | 153.4 | 154.4 | 2.49 | 1.3 | 513 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 27.5 | 232.5 | 233.3 | 1.94 | 0.8 | 587 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 28.0 | 309.0 | 309.2 | 0.75 | 0.2 | 586 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 28.5 | 311.4 | 310.6 | 1.96 | 0.6 | 626 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 29.0 | 316.7 | 314.9 | 2.65 | 0.9 | 650 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 60 - 100 | 60 - 99 |
| 29.5 | 263.1 | 260.8 | 3.37 | 1.1 | 719 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 61 - 100 | 60 - 99 |
| 30.0 | 204.4 | 202.0 | 3.69 | 1.3 | 711 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 61 | 40 - 60 |
| 30.5 | 428.6 | 422.3 | 1.94 | 0.4 | 577 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 61 - 100 | 60 - 99 |
| 31.0 | 478.8 | 470.3 | 4.05 | 0.8 | 765 | V dense, Sa gravel to gr sand | +46 | 80-100 | | | | + 102 | + 100 |
| 31.5 | 326.1 | 319.3 | 4.73 | 1.2 | 788 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 102 | + 100 |
| 32.0 | 254.6 | 248.6 | 2.49 | 0.9 | 718 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 32.5 | 329.0 | 320.4 | 3.79 | 1.2 | 1170 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 62 - 102 | 60 - 99 |
| 33.0 | 298.6 | 290.0 | 4.12 | 1.2 | 1324 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 62 - 102 | 60 - 99 |
| 33.5 | 305.6 | 295.9 | 3.07 | 1.0 | 1393 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 62 - 102 | 60 - 99 |
| 34.0 | 268.3 | 259.1 | 4.61 | 1.5 | 1589 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 62 - 103 | 60 - 99 |
| 34.5 | 246.0 | 236.8 | 3.80 | 1.5 | 1631 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 62 - 103 | 60 - 99 |
| 35.0 | 244.0 | 234.3 | 4.68 | 1.9 | 1876 | V dense, Gr si sand to cl gr sand | 40-42 | 80-100 | | | | + 104 | + 100 |
| 35.5 | 206.1 | 197.4 | 4.31 | 1.9 | 1941 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 63 - 103 | 60 - 99 |
| 36.0 | 195.3 | 186.6 | 4.08 | 2.0 | 2100 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 63 - 104 | 60 - 99 |
| 36.5 | 186.5 | 177.7 | 1.59 | 0.8 | 2029 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 37.0 | 178.8 | 169.8 | 3.08 | 1.7 | 2177 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 37.5 | 168.8 | 160.0 | 3.10 | 1.8 | 2258 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 38.0 | 166.9 | 157.7 | 3.28 | 1.9 | 2465 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 38.5 | 168.3 | 158.7 | 2.74 | 1.6 | 2485 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 64 | 40 - 60 |
| 39.0 | 155.3 | 146.0 | 2.77 | 1.7 | 2551 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 39.5 | 156.9 | 147.2 | 0.71 | 1.0 | 2621 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 40.0 | 151.0 | 141.3 | 2.05 | 1.3 | 2612 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 40.5 | 140.7 | 131.3 | 2.26 | 1.5 | 2651 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 41.0 | 124.2 | 115.7 | 2.03 | 1.5 | 2610 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 41.5 | 135.1 | 125.4 | 2.48 | 1.8 | 2775 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 42.0 | 115.7 | 107.1 | 2.50 | 2.0 | 2820 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 42.5 | 101.4 | 93.7 | 2.32 | 2.1 | 2804 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 43.0 | 86.4 | 79.6 | 1.83 | 2.1 | 2686 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 43.5 | 72.9 | 67.1 | 1.74 | 1.9 | 2562 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 44.0 | 101.9 | 93.5 | 1.92 | 1.9 | 2983 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 44.5 | 97.8 | 89.5 | 2.02 | 2.0 | 2975 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 45.0 | 100.8 | 92.1 | 2.09 | 1.9 | 2933 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 45.5 | 117.2 | 106.8 | 2.43 | 2.2 | 3144 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 46.0 | 73.2 | 66.6 | 1.91 | 1.9 | 3007 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 46.5 | 59.1 | 53.6 | 1.13 | 1.8 | 2845 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 47.0 | 49.9 | 45.1 | 1.35 | 2.5 | 2818 | V stiff, Sandy silt to sandy clay | | | 25 | 3.77 | 2.70 | 17 - 22 | 15 - 20 |
| 47.5 | 58.7 | 53.0 | 0.91 | 1.2 | 2981 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 48.0 | 93.2 | 84.0 | 1.76 | 1.6 | 2902 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 48.5 | 120.5 | 108.3 | 1.88 | 1.6 | 3075 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 49.0 | 107.9 | 96.8 | 2.10 | 1.8 | 3140 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 45 | 30 - 40 |
| 49.5 | 91.9 | 82.2 | 2.13 | 2.1 | 2920 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 34 | 20 - 30 |
| 50.0 | 76.7 | 68.5 | 1.64 | 2.0 | 2855 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 34 | 20 - 30 |

Notes:

* Indicates lightly overconsolidated soil
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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT. Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design. Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-10-1999 TIME:08:21:07.97
SOUNDING NUMBER:cp-9903

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 56.7 | 50.5 | 1.60 | 2.4 | 3122 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 17 - 22 | 15 - 20 |
| 51.0 | 76.4 | 67.9 | 1.73 | 2.0 | 3039 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 34 | 20 - 30 |
| 51.5 | 102.0 | 90.5 | 1.83 | 1.5 | 2820 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 52.0 | 126.0 | 111.6 | 2.16 | 1.7 | 3073 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 52.5 | 121.3 | 107.2 | 2.24 | 1.8 | 3037 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 53.0 | 116.3 | 102.6 | 1.73 | 1.5 | 2932 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 53.5 | 115.1 | 101.3 | 2.28 | 2.0 | 2857 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 54.0 | 120.0 | 105.4 | 2.10 | 1.4 | 2806 | Dense, Sand to silty sand | 37-40 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 54.5 | 175.1 | 153.5 | 2.09 | 1.1 | 2888 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 68 | 40 - 60 |
| 55.0 | 193.9 | 169.6 | 2.31 | 1.2 | 2864 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 55.5 | 168.6 | 147.2 | 2.87 | 1.6 | 2860 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 56.0 | 155.8 | 135.7 | 3.13 | 1.9 | 2931 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 56.5 | 152.3 | 132.4 | 2.52 | 1.7 | 2903 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 57.0 | 141.7 | 123.0 | 2.51 | 1.7 | 2834 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 57.5 | 113.9 | 98.6 | 1.98 | 1.6 | 2786 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 46 | 30 - 40 |
| 58.0 | 122.4 | 105.8 | 2.55 | 2.0 | 2874 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 46 | 30 - 40 |
| 58.5 | 134.5 | 116.0 | 2.28 | 1.6 | 2708 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 46 | 30 - 40 |
| 59.0 | 150.9 | 129.9 | 2.31 | 1.6 | 2782 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 46 - 70 | 40 - 60 |
| 59.5 | 148.0 | 127.2 | 2.09 | 1.4 | 2642 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 60.0 | 141.3 | 121.2 | 1.96 | 1.4 | 2586 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 60.5 | 131.7 | 112.7 | 2.06 | 1.5 | 2511 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 61.0 | 154.3 | 131.9 | 2.12 | 1.3 | 2399 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 61.5 | 184.0 | 156.9 | 2.80 | 1.4 | 2298 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 62.0 | 232.5 | 197.9 | 1.87 | 0.8 | 2334 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 62.5 | 197.9 | 168.1 | 3.40 | 1.4 | 2452 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 63.0 | 128.1 | 108.7 | 2.60 | 1.5 | 2505 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 63.5 | 85.6 | 72.5 | 1.17 | 1.1 | 2577 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 64.0 | 59.8 | 50.6 | 0.53 | 0.7 | 2342 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 07 - 12 | 06 - 10 |
| 64.5 | 53.3 | 45.0 | 0.53 | 0.9 | 2436 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 07 - 12 | 06 - 10 |
| 65.0 | 44.4 | 37.4 | 0.44 | 0.9 | 2491 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 07 - 12 | 06 - 10 |
| 65.5 | 41.7 | 35.0 | 0.40 | 0.9 | 2490 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 05 - 07 | 04 - 06 |
| 66.0 | 40.4 | 33.9 | 0.37 | 0.9 | 2483 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 05 - 07 | 04 - 06 |
| 66.5 | 65.4 | 54.8 | 0.68 | 0.7 | 2216 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 07 - 12 | 06 - 10 |
| 67.0 | 108.6 | 90.8 | 0.85 | 0.9 | 2115 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 67.5 | 75.8 | 63.2 | 0.76 | 0.7 | 2128 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 12 - 18 | 10 - 15 |
| 68.0 | 107.1 | 89.2 | 0.78 | 0.8 | 2175 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 68.5 | 108.3 | 90.1 | 0.84 | 0.7 | 2173 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 69.0 | 106.0 | 88.0 | 0.90 | 0.8 | 2210 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 69.5 | 93.3 | 77.3 | 1.15 | 1.0 | 2290 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 70.0 | 131.2 | 108.5 | 1.27 | 0.9 | 2257 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 70.5 | 137.8 | 113.8 | 1.50 | 1.1 | 2329 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 71.0 | 128.3 | 105.8 | 1.43 | 1.1 | 2411 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 71.5 | 129.8 | 106.8 | 1.30 | 1.0 | 2540 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 72.0 | 87.9 | 72.2 | 0.77 | 0.7 | 2743 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 12 - 18 | 10 - 15 |
| 72.5 | 95.5 | 78.4 | 0.91 | 0.9 | 2614 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 73.0 | 143.4 | 117.4 | 1.64 | 1.1 | 2457 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 37 | 20 - 30 |
| 73.5 | 149.5 | 122.2 | 1.43 | 1.0 | 2597 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 74.0 | 85.6 | 69.8 | 1.01 | 0.9 | 2764 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 18 - 25 | 15 - 20 |
| 74.5 | 74.8 | 60.9 | 1.05 | 1.2 | 2837 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 12 - 18 | 10 - 15 |
| 75.0 | 100.0 | 81.3 | 1.18 | 1.1 | 2739 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 25 - 37 | 20 - 30 |

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Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-10-1999 TIME:08:21:07.97
SOUNDING NUMBER:cp-9903

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 105.7 | 85.8 | 1.07 | 1.0 | 2734 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 76.0 | 108.5 | 88.0 | 0.96 | 0.9 | 2777 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 76.5 | 133.6 | 108.2 | 0.80 | 0.5 | 2760 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 77.0 | 162.6 | 131.4 | 1.29 | 0.8 | 2732 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 77.5 | 150.9 | 121.7 | 1.78 | 1.2 | 2835 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 50 | 30 - 40 |
| 78.0 | 140.0 | 112.8 | 1.95 | 1.3 | 2801 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 78.5 | 140.3 | 112.9 | 1.82 | 1.2 | 2856 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 79.0 | 166.9 | 134.0 | 2.32 | 1.5 | 2838 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 79.5 | 144.1 | 115.5 | 2.65 | 1.7 | 2808 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 80.0 | 143.5 | 114.9 | 2.57 | 1.7 | 2816 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 80.5 | 155.9 | 124.6 | 2.19 | 1.4 | 2924 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 81.0 | 148.1 | 118.2 | 2.60 | 1.6 | 2864 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 81.5 | 135.4 | 107.9 | 2.22 | 1.5 | 2936 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 82.0 | 152.3 | 121.2 | 2.67 | 1.8 | 2985 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 82.5 | 144.6 | 114.8 | 2.59 | 1.8 | 2986 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 83.0 | 169.9 | 134.7 | 2.75 | 1.5 | 2921 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 83.5 | 181.5 | 143.7 | 2.98 | 1.7 | 2971 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 84.0 | 165.5 | 130.9 | 3.10 | 1.7 | 2971 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 84.5 | 187.2 | 147.8 | 2.44 | 1.3 | 3025 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 85.0 | 170.4 | 134.3 | 2.82 | 1.5 | 3023 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 85.5 | 191.9 | 151.0 | 3.33 | 1.8 | 3004 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 86.0 | 175.6 | 138.0 | 3.17 | 1.7 | 2774 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 86.5 | 182.9 | 143.6 | 2.62 | 1.4 | 2825 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 87.0 | 170.9 | 133.9 | 2.45 | 1.4 | 2752 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 87.5 | 158.3 | 123.8 | 2.57 | 1.5 | 2767 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 88.0 | 153.9 | 120.3 | 2.31 | 1.3 | 2791 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 88.5 | 193.2 | 150.7 | 2.60 | 1.4 | 2862 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 89.0 | 181.8 | 141.6 | 2.85 | 1.5 | 2852 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 89.5 | 177.8 | 138.3 | 2.08 | 1.2 | 2741 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 51 | 30 - 40 |
| 90.0 | 187.7 | 145.8 | 1.94 | 0.9 | 2807 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 39 - 51 | 30 - 40 |
| 90.5 | 224.6 | 174.2 | 2.89 | 1.3 | 3030 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 91.0 | 175.4 | 135.9 | 3.20 | 1.6 | 3120 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 91.5 | 142.8 | 110.4 | 2.73 | 1.7 | 3116 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 92.0 | 130.7 | 100.9 | 1.91 | 1.4 | 3129 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 92.5 | 154.5 | 119.1 | 2.39 | 1.5 | 2981 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 93.0 | 179.1 | 137.9 | 3.17 | 1.8 | 2863 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 93.5 | 179.5 | 138.0 | 3.34 | 1.8 | 2889 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 94.0 | 175.5 | 134.8 | 3.65 | 2.0 | 2891 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 94.5 | 158.1 | 121.3 | 3.31 | 2.0 | 2765 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 95.0 | 125.5 | 96.1 | 2.58 | 1.8 | 2633 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 95.5 | 151.3 | 115.7 | 3.00 | 2.1 | 2871 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 96.0 | 142.4 | 108.7 | 3.28 | 2.2 | 2756 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 79 | 40 - 60 |
| 96.5 | 156.3 | 119.2 | 3.50 | 2.3 | 2732 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 52 - 79 | 40 - 60 |
| 97.0 | 139.7 | 106.4 | 3.55 | 2.4 | 2733 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 97.5 | 134.5 | 102.2 | 3.03 | 2.1 | 2625 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 53 | 30 - 40 |
| 98.0 | 151.0 | 114.7 | 3.79 | 2.5 | 2777 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 53 - 79 | 40 - 60 |
| 98.5 | 140.0 | 106.2 | 3.68 | 2.5 | 2725 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 53 - 79 | 40 - 60 |
| 99.0 | 136.0 | 103.0 | 3.72 | 2.7 | 2620 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 53 - 79 | 40 - 60 |
| 99.5 | 126.4 | 95.6 | 2.65 | 2.0 | 2225 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 40 - 53 | 30 - 40 |
| 100.0 | 144.8 | 109.3 | 3.04 | 2.2 | 2813 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 79 | 40 - 60 |

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-10-1999 TIME:08:21:07.97
SOUNDING NUMBER:cp-9903

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.5 | 127.6 | 96.3 | 2.60 | 1.6 | 2627 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 27 - 40 | 20 - 30 |
| 101.0 | 214.8 | 161.8 | 2.30 | 1.0 | 2958 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 101.5 | 209.0 | 157.2 | 2.60 | 1.2 | 2804 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 102.0 | 217.1 | 163.1 | 1.70 | 0.8 | 2354 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 53 - 80 | 40 - 60 |
| 102.5 | 251.0 | 188.3 | 1.39 | 0.6 | 2619 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 53 - 80 | 40 - 60 |
| 103.0 | 240.3 | 180.0 | 2.02 | 0.8 | 2666 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 103.5 | 186.7 | 139.7 | 2.74 | 1.3 | 2883 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 104.0 | 155.5 | 116.2 | 2.09 | 1.3 | 3000 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 54 | 30 - 40 |
| 104.5 | 155.4 | 116.0 | 1.68 | 1.1 | 2951 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 105.0 | 165.2 | 123.2 | 1.61 | 1.0 | 3018 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 40 - 54 | 30 - 40 |
| 105.5 | 156.9 | 116.8 | 1.14 | 0.7 | 3023 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 106.0 | 156.4 | 116.2 | 1.66 | 1.1 | 3115 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 106.5 | 156.8 | 116.4 | 1.91 | 1.2 | 3121 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 40 - 54 | 30 - 40 |
| 107.0 | 148.1 | 109.8 | 1.24 | 0.8 | 3092 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 107.5 | 130.2 | 96.4 | 1.74 | 1.2 | 3168 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 108.0 | 123.3 | 91.2 | 1.92 | 1.5 | 3165 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 108.5 | 132.6 | 97.9 | 1.96 | 1.4 | 3310 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 109.0 | 154.7 | 114.1 | 1.39 | 0.9 | 3108 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 109.5 | 135.9 | 100.2 | 1.58 | 1.1 | 3191 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 110.0 | 133.9 | 98.5 | 1.44 | 1.1 | 3172 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 110.5 | 122.4 | 90.0 | 1.26 | 1.0 | 3204 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 111.0 | 115.9 | 85.1 | 1.98 | 1.5 | 3198 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 111.5 | 129.4 | 94.8 | 1.66 | 1.3 | 3312 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 112.0 | 142.6 | 104.4 | 2.72 | 1.9 | 3231 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 55 | 30 - 40 |
| 112.5 | 118.8 | 86.9 | 2.54 | 1.7 | 3079 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 27 - 41 | 20 - 30 |
| 113.0 | 167.0 | 122.0 | 2.69 | 1.7 | 3273 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 113.5 | 150.9 | 110.1 | 2.91 | 1.9 | 3437 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 55 | 30 - 40 |
| 114.0 | 143.7 | 104.7 | 2.59 | 1.6 | 3206 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 55 | 30 - 40 |
| 114.5 | 181.6 | 132.1 | 2.71 | 1.5 | 3500 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 115.0 | 171.0 | 124.2 | 3.09 | 1.7 | 3489 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 115.5 | 200.5 | 145.5 | 2.80 | 1.3 | 3619 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 116.0 | 240.6 | 174.4 | 1.48 | 0.5 | 3849 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 41 - 55 | 30 - 40 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
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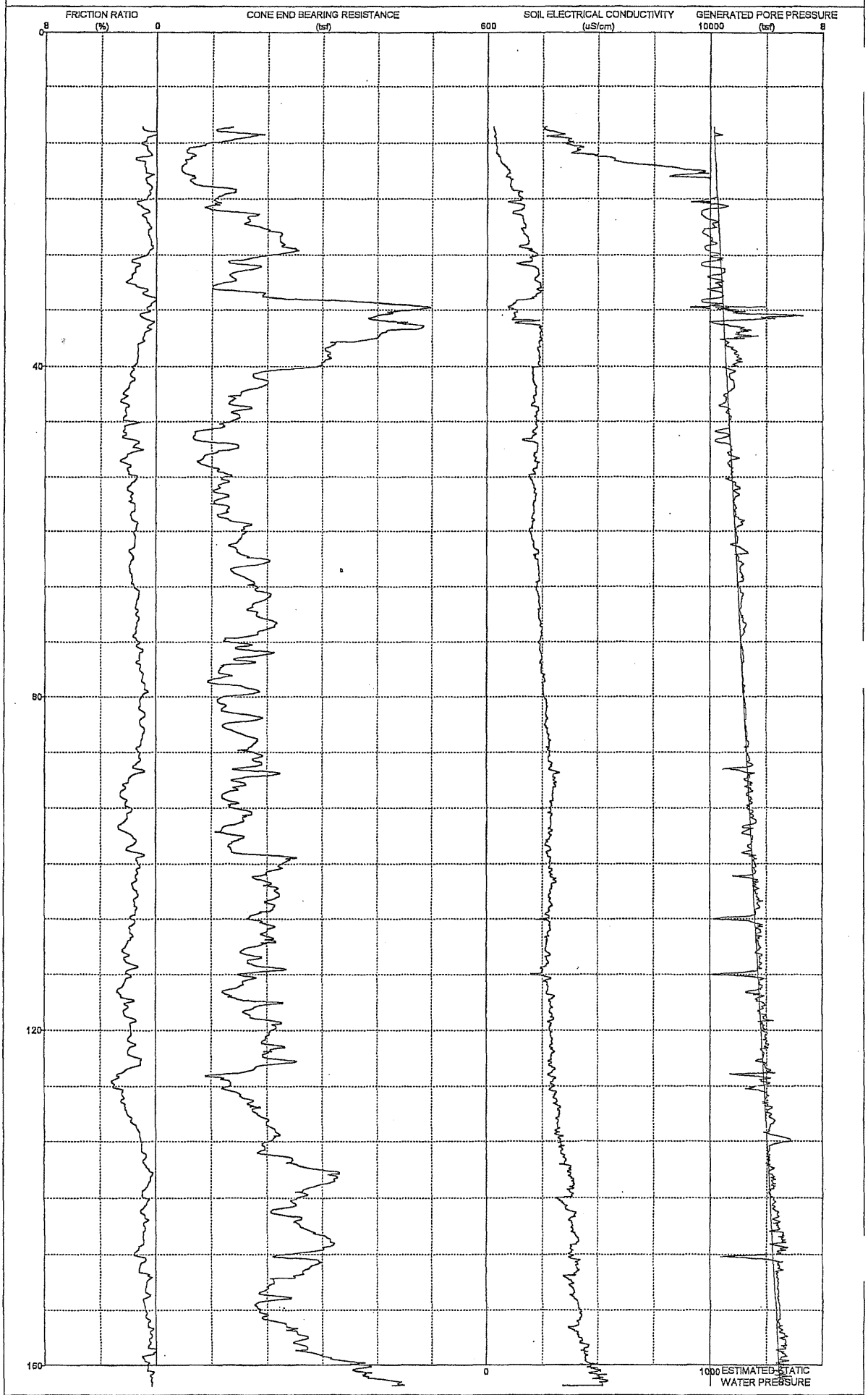
# CPTU-EC LOG

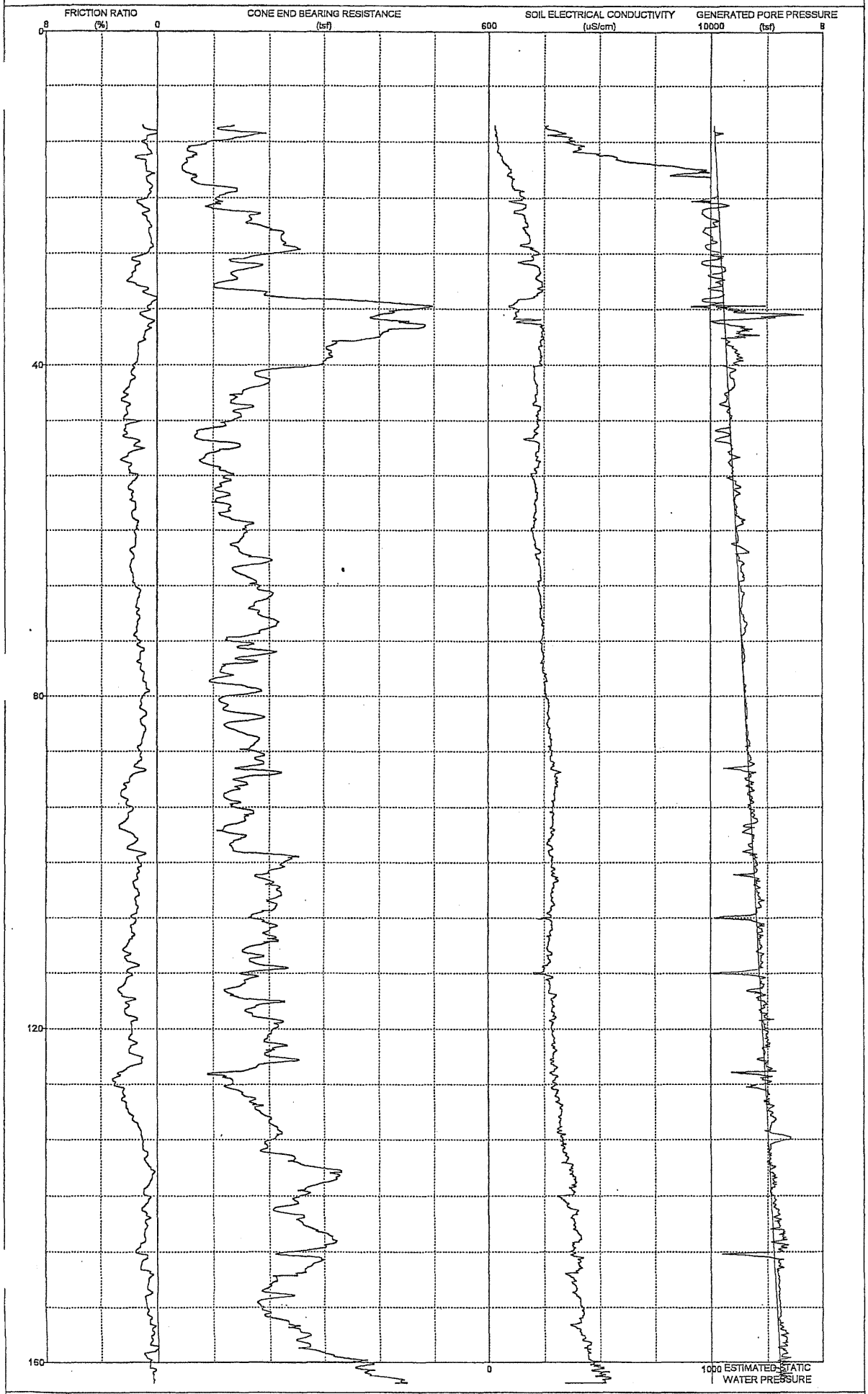



PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

STRATIGRAPHICS

05/06/99
SOUNDING NUMBER:cpt9904

# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

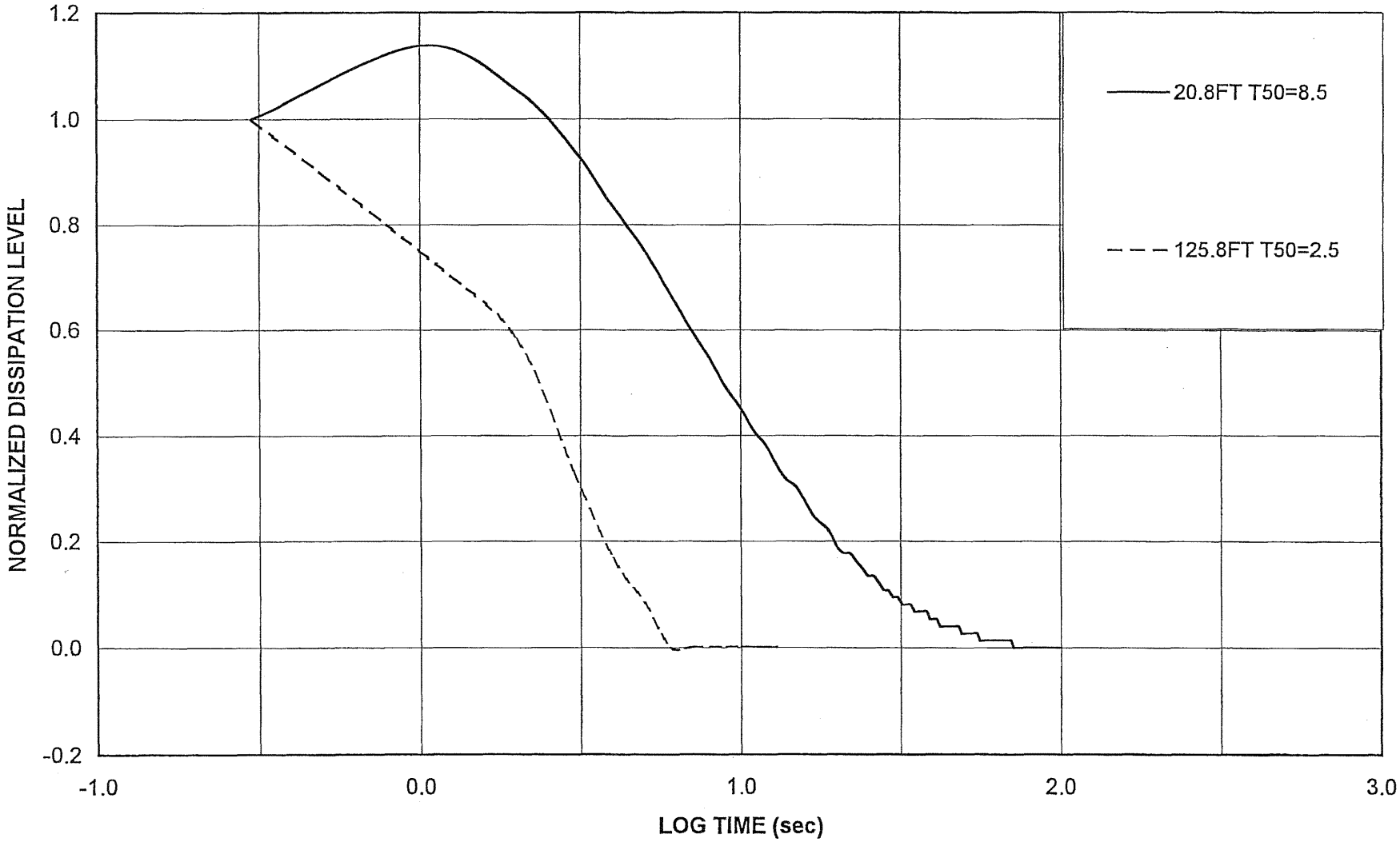
STRATIGRAPHICS

05/06/99
SOUNDING NUMBER:cp9904

*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

**Stratford Army Engine Plant cp9904**



*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
05/06/99
SOUNDING NUMBER:cp9904

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 1.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 2.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 2.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 3.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 3.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 4.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 4.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 5.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 5.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 6.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 6.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 7.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 7.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 8.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 8.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 9.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 9.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 10.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 10.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 11.0 | Prepunched To 11.50' | | | | | | | | | | | | |
| 11.5 | Prepunched To 11.50' | | | | | | | | | | | | |
| 12.0 | 119.4 | 138.9 | 0.40 | 0.3 | 300 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 17 - 26 | 20 - 30 |
| 12.5 | 173.5 | 200.7 | 0.58 | 0.4 | 286 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 35 - 52 | 40 - 60 |
| 13.0 | 134.0 | 154.1 | 1.12 | 0.8 | 365 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 26 - 35 | 30 - 40 |
| 13.5 | 87.5 | 100.1 | 0.95 | 0.9 | 376 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 26 | 20 - 30 |
| 14.0 | 58.1 | 66.1 | 0.54 | 0.7 | 405 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 09 - 13 | 10 - 15 |
| 14.5 | 58.6 | 66.3 | 0.28 | 0.4 | 392 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 09 - 13 | 10 - 15 |
| 15.0 | 63.5 | 71.5 | 0.87 | 1.3 | 556 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 13 - 18 | 15 - 20 |
| 15.5 | 52.9 | 59.3 | 0.47 | 0.9 | 592 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 09 - 13 | 10 - 15 |
| 16.0 | 46.4 | 51.7 | 0.46 | 0.9 | 763 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 05 - 09 | 06 - 10 |
| 16.5 | 44.4 | 49.3 | 0.39 | 0.8 | 927 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 05 - 09 | 06 - 10 |
| 17.0 | 55.9 | 61.7 | 0.09 | 0.3 | 897 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 05 - 09 | 06 - 10 |
| 17.5 | 68.6 | 75.4 | 0.52 | 0.8 | 1008 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 18 | 15 - 20 |
| 18.0 | 64.4 | 70.5 | 0.53 | 0.7 | 1057 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 09 - 14 | 10 - 15 |
| 18.5 | 91.1 | 99.3 | 0.41 | 0.3 | 1031 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 18 | 15 - 20 |
| 19.0 | 142.2 | 154.3 | 0.72 | 0.6 | 1184 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 37 | 30 - 40 |
| 19.5 | 121.4 | 131.2 | 0.67 | 0.5 | 1378 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 20.0 | 106.3 | 114.4 | 0.78 | 0.7 | 1572 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 20.5 | 106.8 | 114.4 | 1.57 | 1.4 | 1180 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 28 - 37 | 30 - 40 |
| 21.0 | 87.5 | 93.4 | 1.09 | 1.0 | 1651 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 21.5 | 134.5 | 143.0 | 0.87 | 0.5 | 1158 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 38 | 30 - 40 |
| 22.0 | 174.5 | 184.8 | 1.77 | 1.0 | 1579 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 22.5 | 167.7 | 176.9 | 1.25 | 0.8 | 1627 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 23.0 | 159.9 | 168.0 | 0.94 | 0.5 | 1701 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 38 | 30 - 40 |
| 23.5 | 193.5 | 202.6 | 0.77 | 0.5 | 1562 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 57 | 40 - 60 |
| 24.0 | 224.0 | 233.7 | 1.38 | 0.6 | 1652 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 58 | 40 - 60 |
| 24.5 | 222.2 | 231.0 | 1.11 | 0.5 | 1822 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 58 | 40 - 60 |
| 25.0 | 222.2 | 230.1 | 0.93 | 0.4 | 1873 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 58 | 40 - 60 |

Notes:

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
05/06/99
SOUNDING NUMBER:cp9904

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 228.5 | 235.8 | 0.95 | 0.4 | 1649 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 26.0 | 250.4 | 257.5 | 1.07 | 0.4 | 2006 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 26.5 | 227.6 | 233.2 | 1.50 | 0.6 | 2248 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 27.0 | 172.9 | 176.6 | 2.50 | 1.3 | 1950 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 27.5 | 130.0 | 132.3 | 2.77 | 1.7 | 1847 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 28.0 | 185.4 | 188.1 | 2.28 | 1.3 | 2006 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 28.5 | 162.8 | 164.6 | 2.77 | 1.5 | 2293 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 59 | 40 - 60 |
| 29.0 | 132.8 | 133.8 | 2.53 | 1.7 | 2322 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 29.5 | 139.1 | 139.8 | 2.47 | 1.8 | 2148 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 30.0 | 126.3 | 126.4 | 3.03 | 2.2 | 2352 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 30.5 | 101.4 | 101.2 | 1.65 | 1.4 | 2407 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 31.0 | 138.6 | 137.9 | 1.18 | 0.7 | 2404 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 31.5 | 193.1 | 191.6 | 1.63 | 0.8 | 2188 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 32.0 | 235.4 | 232.8 | 0.29 | 0.1 | 1921 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 40 - 61 | 40 - 60 |
| 32.5 | 400.2 | 394.6 | 1.63 | 0.3 | 1252 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 61 - 100 | 60 - 99 |
| 33.0 | 496.3 | 487.9 | 3.02 | 0.6 | 917 | V dense, Sa gravel to gr sand | +46 | 80-100 | | | | + 102 | + 100 |
| 33.5 | 432.5 | 423.9 | 2.12 | 0.5 | 1354 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 61 - 101 | 60 - 99 |
| 34.0 | 401.8 | 392.6 | 5.01 | 1.2 | 1210 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 102 | + 100 |
| 34.5 | 391.7 | 381.7 | 2.78 | 0.6 | 1285 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 62 - 102 | 60 - 99 |
| 35.0 | 456.4 | 443.5 | 1.91 | 0.4 | 1861 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 62 - 102 | 60 - 99 |
| 35.5 | 478.6 | 463.8 | 2.58 | 0.5 | 2421 | V dense, Sa gravel to gr sand | +46 | 80-100 | | | | 62 - 102 | 60 - 99 |
| 36.0 | 412.8 | 398.9 | 3.67 | 0.8 | 2403 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 103 | + 100 |
| 36.5 | 401.8 | 387.2 | 3.70 | 0.9 | 2413 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 104 | + 100 |
| 37.0 | 365.5 | 351.2 | 3.26 | 0.9 | 2368 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 62 - 103 | 60 - 99 |
| 37.5 | 319.2 | 305.9 | 4.54 | 1.4 | 2349 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 104 | + 100 |
| 38.0 | 304.6 | 291.1 | 4.15 | 1.3 | 2273 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 63 - 104 | 60 - 99 |
| 38.5 | 313.3 | 298.7 | 4.32 | 1.4 | 2368 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 105 | + 100 |
| 39.0 | 315.2 | 299.6 | 4.32 | 1.4 | 2341 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 105 | + 100 |
| 39.5 | 301.2 | 285.6 | 4.29 | 1.4 | 2316 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 63 - 104 | 60 - 99 |
| 40.0 | 289.8 | 274.1 | 5.11 | 1.7 | 2328 | V dense, Sa gravel to si gr sand | 40-42 | 80-100 | | | | + 106 | + 100 |
| 40.5 | 209.0 | 197.1 | 4.23 | 1.7 | 2072 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 64 - 105 | 60 - 99 |
| 41.0 | 174.3 | 164.0 | 3.49 | 1.9 | 2099 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 41.5 | 186.4 | 174.9 | 3.03 | 1.6 | 2057 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 42.0 | 200.4 | 187.6 | 3.83 | 1.9 | 2136 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 64 - 106 | 60 - 99 |
| 42.5 | 186.3 | 174.0 | 3.87 | 2.0 | 2197 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 64 - 106 | 60 - 99 |
| 43.0 | 156.0 | 145.3 | 3.84 | 2.3 | 2178 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 43 - 64 | 40 - 60 |
| 43.5 | 145.4 | 135.1 | 3.07 | 2.1 | 2148 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 44.0 | 139.1 | 128.9 | 3.49 | 2.5 | 2142 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 43 - 65 | 40 - 60 |
| 44.5 | 130.8 | 121.0 | 3.26 | 2.2 | 2067 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 45.0 | 172.0 | 158.7 | 3.42 | 2.2 | 2324 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 65 - 107 | 60 - 99 |
| 45.5 | 136.4 | 125.5 | 3.34 | 2.2 | 2233 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 46.0 | 149.8 | 137.5 | 3.26 | 2.2 | 2166 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 44 - 65 | 40 - 60 |
| 46.5 | 138.9 | 127.2 | 3.50 | 2.4 | 2203 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 44 - 66 | 40 - 60 |
| 47.0 | 120.3 | 109.9 | 2.36 | 1.9 | 2196 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 47.5 | 106.6 | 97.2 | 2.61 | 2.2 | 2198 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 48.0 | 70.6 | 64.2 | 1.88 | 2.2 | 2112 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 48.5 | 67.2 | 61.0 | 1.76 | 2.4 | 2058 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 49.0 | 80.4 | 72.8 | 1.55 | 1.3 | 1821 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 49.5 | 147.3 | 133.1 | 2.24 | 1.5 | 2308 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 50.0 | 135.2 | 121.9 | 1.40 | 1.0 | 2250 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
05/06/99
SOUNDING NUMBER:cp9904

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 100.0 | 90.0 | 2.24 | 2.0 | 2127 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 51.0 | 85.0 | 76.3 | 1.97 | 2.2 | 2210 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 51.5 | 75.1 | 67.3 | 2.06 | 2.5 | 2304 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 52.0 | 93.1 | 83.2 | 1.92 | 1.8 | 2247 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 34 | 20 - 30 |
| 52.5 | 110.2 | 98.3 | 2.43 | 2.1 | 2065 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 53.0 | 129.7 | 115.4 | 2.60 | 1.9 | 2074 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 53.5 | 118.6 | 105.3 | 1.81 | 1.4 | 1973 | Dense, Sand to silty sand | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 54.0 | 127.8 | 113.2 | 2.12 | 1.7 | 2088 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 54.5 | 113.8 | 100.6 | 2.31 | 2.0 | 2119 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 55.0 | 102.8 | 90.7 | 2.25 | 2.0 | 2134 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 55.5 | 127.6 | 112.4 | 2.22 | 1.8 | 2210 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 56.0 | 114.2 | 100.3 | 2.16 | 1.7 | 2201 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 46 | 30 - 40 |
| 56.5 | 106.4 | 93.3 | 1.89 | 1.7 | 2104 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 57.0 | 131.3 | 114.9 | 2.01 | 1.5 | 2137 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 46 | 30 - 40 |
| 57.5 | 127.0 | 110.9 | 2.03 | 1.6 | 2133 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 46 | 30 - 40 |
| 58.0 | 110.7 | 96.5 | 2.23 | 1.8 | 2085 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 46 | 30 - 40 |
| 58.5 | 129.6 | 112.7 | 2.47 | 1.7 | 2095 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 46 | 30 - 40 |
| 59.0 | 161.1 | 139.8 | 2.23 | 1.4 | 2083 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 59.5 | 157.0 | 136.0 | 2.31 | 1.4 | 2056 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 60.0 | 161.0 | 139.3 | 2.50 | 1.6 | 1955 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 60.5 | 154.8 | 133.6 | 2.40 | 1.5 | 2011 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 70 | 40 - 60 |
| 61.0 | 149.9 | 129.1 | 2.32 | 1.5 | 2063 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 70 | 40 - 60 |
| 61.5 | 140.8 | 121.0 | 2.23 | 1.5 | 2135 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 62.0 | 142.8 | 122.5 | 2.34 | 1.6 | 2136 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 62.5 | 146.2 | 125.3 | 2.94 | 1.9 | 2335 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 63.0 | 165.6 | 141.6 | 2.94 | 1.6 | 2165 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 63.5 | 204.3 | 174.3 | 3.53 | 1.8 | 2297 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 64.0 | 183.8 | 156.6 | 3.75 | 1.9 | 2286 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 64.5 | 135.7 | 115.4 | 2.93 | 1.9 | 2319 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 65.0 | 140.9 | 119.6 | 2.75 | 1.8 | 2344 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 65.5 | 159.2 | 134.8 | 2.90 | 1.7 | 2363 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 66.0 | 173.8 | 146.9 | 2.90 | 1.7 | 2343 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 66.5 | 174.3 | 147.1 | 2.87 | 1.6 | 2276 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 67.0 | 178.5 | 150.3 | 2.57 | 1.4 | 2233 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 67.5 | 205.3 | 172.6 | 2.59 | 1.3 | 2299 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 71 | 40 - 60 |
| 68.0 | 201.6 | 169.2 | 2.65 | 1.3 | 2350 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 71 | 40 - 60 |
| 68.5 | 184.3 | 154.4 | 2.77 | 1.4 | 2341 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 69.0 | 173.5 | 145.1 | 2.56 | 1.5 | 2372 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 69.5 | 165.6 | 138.2 | 2.24 | 1.3 | 2323 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 70.0 | 180.1 | 150.1 | 2.72 | 1.5 | 2338 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 70.5 | 193.7 | 161.2 | 2.51 | 1.2 | 2351 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 71.0 | 216.7 | 180.0 | 3.03 | 1.4 | 2454 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 71.5 | 212.6 | 176.3 | 3.06 | 1.4 | 2453 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 72.0 | 188.4 | 155.9 | 2.89 | 1.4 | 2465 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 72.5 | 177.4 | 146.6 | 2.94 | 1.6 | 2475 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 73 | 40 - 60 |
| 73.0 | 125.5 | 103.5 | 2.20 | 1.5 | 2410 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 73.5 | 156.9 | 129.2 | 1.97 | 1.2 | 2363 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 49 | 30 - 40 |
| 74.0 | 144.1 | 118.4 | 2.13 | 1.3 | 2388 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 49 | 30 - 40 |
| 74.5 | 202.1 | 165.9 | 2.07 | 1.0 | 2421 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 75.0 | 182.0 | 149.1 | 2.51 | 1.2 | 2469 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
05/06/99
SOUNDING NUMBER:cp9904

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 144.6 | 118.2 | 1.90 | 1.2 | 2468 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 76.0 | 147.2 | 120.2 | 1.88 | 1.2 | 2451 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 76.5 | 115.2 | 93.9 | 1.49 | 1.2 | 2444 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 77.0 | 112.6 | 91.7 | 1.26 | 1.0 | 2444 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 77.5 | 129.9 | 105.6 | 1.23 | 1.0 | 2529 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 78.0 | 95.8 | 77.7 | 1.17 | 1.1 | 2617 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 18 - 25 | 15 - 20 |
| 78.5 | 127.4 | 103.1 | 1.19 | 0.8 | 2541 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 79.0 | 170.8 | 138.1 | 1.48 | 0.8 | 2552 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 79.5 | 180.0 | 145.3 | 1.27 | 0.7 | 2551 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 50 | 30 - 40 |
| 80.0 | 122.0 | 98.4 | 1.59 | 1.0 | 2602 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 80.5 | 109.7 | 88.2 | 1.39 | 1.2 | 2698 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 81.0 | 124.5 | 100.0 | 1.39 | 1.1 | 2695 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 81.5 | 118.1 | 94.7 | 1.52 | 1.2 | 2718 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 82.0 | 145.7 | 116.7 | 1.36 | 0.8 | 2659 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 82.5 | 190.9 | 152.7 | 1.73 | 1.0 | 2730 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 83.0 | 153.3 | 122.4 | 2.07 | 1.2 | 2676 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 38 - 50 | 30 - 40 |
| 83.5 | 119.6 | 95.4 | 1.40 | 1.1 | 2671 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 84.0 | 136.4 | 108.6 | 1.21 | 0.8 | 2753 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 84.5 | 157.6 | 125.2 | 1.61 | 1.0 | 2779 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 38 - 50 | 30 - 40 |
| 85.0 | 181.7 | 144.2 | 1.87 | 1.0 | 2782 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 85.5 | 178.6 | 141.5 | 1.96 | 1.1 | 2855 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 86.0 | 170.3 | 134.7 | 2.16 | 1.3 | 2799 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 86.5 | 164.0 | 129.5 | 2.34 | 1.3 | 2843 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 87.0 | 190.1 | 149.9 | 2.23 | 1.2 | 2847 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 87.5 | 174.3 | 137.2 | 2.09 | 1.1 | 2792 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 88.0 | 190.9 | 150.1 | 2.55 | 1.4 | 2977 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 88.5 | 157.1 | 123.4 | 3.01 | 1.6 | 2873 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 89.0 | 206.6 | 162.0 | 1.84 | 0.9 | 3131 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 89.5 | 194.5 | 152.2 | 3.75 | 1.8 | 3026 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 90.0 | 136.7 | 106.8 | 3.15 | 2.0 | 3032 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 90.5 | 160.4 | 125.2 | 3.62 | 2.3 | 3046 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 51 - 77 | 40 - 60 |
| 91.0 | 144.3 | 112.5 | 3.32 | 2.2 | 3009 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 91.5 | 127.4 | 99.1 | 3.56 | 2.6 | 2988 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 51 - 77 | 40 - 60 |
| 92.0 | 119.0 | 92.5 | 3.13 | 2.5 | 2977 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 92.5 | 132.4 | 102.7 | 2.85 | 2.1 | 2990 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 93.0 | 134.6 | 104.3 | 3.14 | 2.2 | 2926 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 93.5 | 154.5 | 119.5 | 2.83 | 1.7 | 2897 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 94.0 | 172.6 | 133.3 | 3.59 | 2.1 | 2883 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 94.5 | 156.1 | 120.4 | 3.35 | 2.1 | 2886 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 95.0 | 154.0 | 118.6 | 3.58 | 2.3 | 2899 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 52 - 78 | 40 - 60 |
| 95.5 | 124.7 | 95.9 | 3.81 | 2.7 | 2900 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 52 - 78 | 40 - 60 |
| 96.0 | 118.0 | 90.7 | 2.83 | 2.4 | 2968 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 96.5 | 140.1 | 107.5 | 2.74 | 1.8 | 2889 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 97.0 | 151.1 | 115.7 | 2.27 | 1.5 | 2841 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 97.5 | 136.7 | 104.6 | 2.13 | 1.5 | 2686 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 98.0 | 132.8 | 101.5 | 2.75 | 2.0 | 2834 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 98.5 | 135.9 | 103.6 | 2.83 | 1.7 | 2768 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 99.0 | 213.5 | 162.6 | 2.03 | 0.9 | 2753 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 99.5 | 241.7 | 183.9 | 3.41 | 1.4 | 2855 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 100.0 | 226.1 | 171.8 | 2.98 | 1.3 | 2870 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT. Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
05/06/99
SOUNDING NUMBER:cp9904

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.5 | 227.2 | 172.4 | 2.72 | 1.2 | 2815 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 101.0 | 198.7 | 150.5 | 2.69 | 1.3 | 2865 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 101.5 | 177.9 | 134.6 | 2.83 | 1.5 | 2855 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 102.0 | 192.3 | 145.3 | 2.86 | 1.4 | 3049 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 102.5 | 205.4 | 155.0 | 3.57 | 1.7 | 2932 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 103.0 | 219.2 | 165.2 | 3.50 | 1.6 | 2949 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 103.5 | 220.1 | 165.7 | 3.01 | 1.4 | 2912 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 104.0 | 220.0 | 165.3 | 2.95 | 1.3 | 2829 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 104.5 | 198.5 | 149.0 | 3.31 | 1.6 | 2845 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 105.0 | 213.9 | 160.3 | 3.26 | 1.5 | 2972 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 105.5 | 211.1 | 158.0 | 2.85 | 1.4 | 2812 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 106.0 | 185.8 | 138.9 | 2.86 | 1.5 | 2696 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 106.5 | 168.7 | 126.0 | 3.33 | 1.9 | 2833 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 107.0 | 191.7 | 142.9 | 2.88 | 1.5 | 2824 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 107.5 | 211.4 | 157.4 | 3.73 | 1.8 | 2860 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 108.0 | 200.9 | 149.4 | 3.76 | 1.8 | 2901 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 108.5 | 188.7 | 140.2 | 3.44 | 1.7 | 2748 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 109.0 | 211.9 | 157.2 | 3.71 | 1.8 | 2726 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 109.5 | 206.9 | 153.2 | 4.19 | 2.0 | 2700 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 110.0 | 176.4 | 130.5 | 4.13 | 2.2 | 2688 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 110.5 | 154.1 | 113.8 | 3.98 | 2.4 | 2677 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 111.0 | 169.4 | 125.0 | 3.40 | 1.9 | 2889 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 111.5 | 176.0 | 129.7 | 4.15 | 2.3 | 2690 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 112.0 | 169.1 | 124.4 | 3.50 | 1.9 | 2779 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 112.5 | 210.5 | 154.8 | 2.77 | 1.3 | 2454 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 113.0 | 193.2 | 141.8 | 4.65 | 2.1 | 2503 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 82 | 40 - 60 |
| 113.5 | 158.7 | 116.4 | 2.95 | 1.7 | 2604 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 114.0 | 164.2 | 120.2 | 3.74 | 2.2 | 2698 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 114.5 | 156.6 | 114.6 | 3.63 | 2.3 | 2739 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 115.0 | 141.4 | 103.3 | 3.91 | 2.6 | 2761 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 115.5 | 121.3 | 88.5 | 3.52 | 2.7 | 2703 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 116.0 | 131.5 | 95.8 | 3.82 | 2.5 | 3057 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 116.5 | 178.8 | 130.1 | 3.15 | 1.5 | 2818 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 117.0 | 191.5 | 139.2 | 4.34 | 2.1 | 2889 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 83 | 40 - 60 |
| 117.5 | 170.6 | 123.9 | 3.88 | 2.2 | 2867 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 118.0 | 164.0 | 118.9 | 3.85 | 2.3 | 2947 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 83 | 40 - 60 |
| 118.5 | 171.7 | 124.3 | 3.54 | 1.8 | 3002 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 119.0 | 222.8 | 161.1 | 3.26 | 1.5 | 2749 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 119.5 | 216.0 | 156.0 | 3.94 | 1.8 | 2883 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 120.0 | 208.3 | 150.3 | 3.88 | 1.8 | 2866 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 120.5 | 204.3 | 147.2 | 3.60 | 1.8 | 2863 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 121.0 | 197.5 | 142.2 | 4.00 | 2.0 | 2973 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 121.5 | 191.7 | 137.8 | 3.42 | 1.6 | 2968 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 122.0 | 230.6 | 165.6 | 4.10 | 1.8 | 2908 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 122.5 | 204.1 | 146.4 | 4.29 | 2.0 | 3062 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 123.0 | 191.8 | 137.4 | 3.62 | 1.7 | 2918 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 123.5 | 233.5 | 167.1 | 2.44 | 1.0 | 2912 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 124.0 | 211.9 | 151.4 | 2.51 | 1.1 | 2820 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 124.5 | 177.7 | 126.9 | 3.67 | 1.9 | 3076 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 125.0 | 154.3 | 110.0 | 3.97 | 2.4 | 2961 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 56 - 84 | 40 - 60 |

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Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
05/06/99
SOUNDING NUMBER:cp9904

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125.5 | 100.0 | 71.2 | 3.22 | 2.7 | 2928 | Hard, Sandy silt to sandy clay | | | 25 | 7.40 | 6.45 | 28 - 42 | 20 - 30 |
| 126.0 | 133.1 | 94.7 | 4.30 | 3.1 | 3016 | Hard, Sandy silt to sandy clay | | | 30 | 8.37 | 8.60 | 56 - 84 | 40 - 60 |
| 126.5 | 135.5 | 96.3 | 3.96 | 2.9 | 3013 | Hard, Sandy silt to sandy clay | | | 30 | 8.53 | 7.92 | 56 - 84 | 40 - 60 |
| 127.0 | 123.2 | 87.4 | 3.49 | 2.6 | 2871 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 42 - 56 | 30 - 40 |
| 127.5 | 149.6 | 106.1 | 3.71 | 2.4 | 3115 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 56 - 85 | 40 - 60 |
| 128.0 | 155.7 | 110.3 | 3.82 | 2.3 | 3026 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 85 | 40 - 60 |
| 128.5 | 174.1 | 123.1 | 4.32 | 2.5 | 3194 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 57 - 85 | 40 - 60 |
| 129.0 | 177.6 | 125.5 | 3.89 | 2.2 | 3219 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 57 - 85 | 40 - 60 |
| 129.5 | 174.3 | 123.0 | 3.86 | 2.2 | 3217 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 130.0 | 183.4 | 129.3 | 3.89 | 2.0 | 3286 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 130.5 | 196.4 | 138.3 | 3.39 | 1.7 | 3187 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 131.0 | 199.9 | 140.6 | 3.44 | 1.7 | 3230 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 131.5 | 204.9 | 143.9 | 2.94 | 1.4 | 3220 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 132.0 | 215.0 | 150.8 | 2.72 | 1.2 | 3107 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 132.5 | 223.0 | 156.3 | 2.51 | 1.2 | 3185 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 133.0 | 211.5 | 148.0 | 2.36 | 1.1 | 3276 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 133.5 | 195.0 | 136.3 | 2.07 | 1.0 | 3278 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 43 - 57 | 30 - 40 |
| 134.0 | 195.7 | 136.7 | 2.00 | 1.0 | 3306 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 43 - 57 | 30 - 40 |
| 134.5 | 188.9 | 131.8 | 1.97 | 1.0 | 3349 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 43 - 57 | 30 - 40 |
| 135.0 | 215.7 | 150.3 | 1.60 | 0.7 | 3522 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 43 - 57 | 30 - 40 |
| 135.5 | 247.1 | 172.0 | 2.09 | 0.9 | 3578 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 136.0 | 250.8 | 174.4 | 2.10 | 0.8 | 3379 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 86 | 40 - 60 |
| 136.5 | 276.2 | 191.8 | 1.70 | 0.6 | 3755 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 58 - 86 | 40 - 60 |
| 137.0 | 330.4 | 229.2 | 0.54 | 0.3 | 3700 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 58 - 86 | 40 - 60 |
| 137.5 | 326.9 | 226.5 | 1.21 | 0.4 | 3787 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 58 - 87 | 40 - 60 |
| 138.0 | 322.4 | 223.2 | 1.34 | 0.4 | 3876 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 138.5 | 293.1 | 202.7 | 1.73 | 0.6 | 3935 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 139.0 | 267.9 | 185.0 | 2.13 | 0.8 | 3685 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 139.5 | 270.3 | 186.5 | 2.57 | 1.0 | 3900 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 140.0 | 255.0 | 175.7 | 1.61 | 0.6 | 3098 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 58 - 87 | 40 - 60 |
| 140.5 | 246.1 | 169.4 | 1.58 | 0.6 | 3397 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 44 - 58 | 30 - 40 |
| 141.0 | 247.7 | 170.3 | 2.08 | 0.8 | 3601 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 141.5 | 208.7 | 143.4 | 2.49 | 1.1 | 3742 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 58 | 30 - 40 |
| 142.0 | 228.0 | 156.5 | 1.96 | 0.8 | 3951 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 44 - 58 | 30 - 40 |
| 142.5 | 262.6 | 180.0 | 1.35 | 0.6 | 3737 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 58 - 88 | 40 - 60 |
| 143.0 | 256.0 | 175.3 | 2.35 | 0.9 | 3854 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 88 | 40 - 60 |
| 143.5 | 264.3 | 180.8 | 1.99 | 0.7 | 3847 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 88 | 40 - 60 |
| 144.0 | 283.9 | 194.0 | 2.71 | 0.9 | 3862 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 59 - 88 | 40 - 60 |
| 144.5 | 305.8 | 208.7 | 2.89 | 0.9 | 4056 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 59 - 88 | 40 - 60 |
| 145.0 | 314.9 | 214.7 | 2.80 | 0.9 | 4141 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 59 - 88 | 40 - 60 |
| 145.5 | 321.0 | 218.6 | 2.84 | 0.9 | 3962 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 59 - 88 | 40 - 60 |
| 146.0 | 303.2 | 206.3 | 3.76 | 1.2 | 3796 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 59 - 88 | 40 - 60 |
| 146.5 | 259.1 | 176.1 | 4.35 | 1.5 | 3779 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 59 - 88 | 40 - 60 |
| 147.0 | 217.9 | 147.9 | 2.31 | 0.9 | 3709 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 44 - 59 | 30 - 40 |
| 147.5 | 294.5 | 199.8 | 2.39 | 0.8 | 4084 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 59 - 88 | 40 - 60 |
| 148.0 | 282.5 | 191.4 | 3.27 | 1.1 | 4037 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 59 - 89 | 40 - 60 |
| 148.5 | 269.6 | 182.4 | 3.35 | 1.2 | 4162 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 59 - 89 | 40 - 60 |
| 149.0 | 265.7 | 179.6 | 1.18 | 0.5 | 3953 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 44 - 59 | 30 - 40 |
| 149.5 | 210.6 | 142.2 | 1.04 | 0.4 | 3660 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 30 - 44 | 20 - 30 |
| 150.0 | 213.1 | 143.8 | 1.41 | 0.7 | 3896 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 44 - 59 | 30 - 40 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
05/06/99
SOUNDING NUMBER:cp9904

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 150.5 | 199.7 | 134.6 | 1.44 | 0.7 | 3854 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 45 - 59 | 30 - 40 |
| 151.0 | 194.7 | 131.1 | 1.52 | 0.8 | 3975 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 45 - 59 | 30 - 40 |
| 151.5 | 201.1 | 135.3 | 0.86 | 0.4 | 3819 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 30 - 45 | 20 - 30 |
| 152.0 | 228.4 | 153.5 | 2.12 | 0.9 | 4045 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 45 - 60 | 30 - 40 |
| 152.5 | 181.4 | 121.8 | 1.61 | 0.8 | 4123 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 30 - 45 | 20 - 30 |
| 153.0 | 183.8 | 123.3 | 1.40 | 0.8 | 4135 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 30 - 45 | 20 - 30 |
| 153.5 | 186.7 | 125.0 | 1.32 | 0.7 | 4278 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 30 - 45 | 20 - 30 |
| 154.0 | 200.9 | 134.4 | 1.50 | 0.7 | 4288 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 45 - 60 | 30 - 40 |
| 154.5 | 198.4 | 132.6 | 0.95 | 0.4 | 4233 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 30 - 45 | 20 - 30 |
| 155.0 | 233.9 | 156.2 | 1.36 | 0.6 | 4143 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 45 - 60 | 30 - 40 |
| 155.5 | 246.9 | 164.7 | 0.40 | 0.3 | 3724 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 45 - 60 | 30 - 40 |
| 156.0 | 254.4 | 169.5 | 1.16 | 0.4 | 4137 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 45 - 60 | 30 - 40 |
| 156.5 | 271.8 | 180.9 | 0.79 | 0.3 | 4150 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 45 - 60 | 30 - 40 |
| 157.0 | 257.9 | 171.5 | 1.36 | 0.5 | 4345 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 45 - 60 | 30 - 40 |
| 157.5 | 260.6 | 173.1 | 1.36 | 0.5 | 4554 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 45 - 60 | 30 - 40 |
| 158.0 | 272.9 | 181.1 | 1.49 | 0.5 | 4417 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 60 - 90 | 40 - 60 |
| 158.5 | 282.5 | 187.3 | 1.29 | 0.4 | 4417 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 60 - 90 | 40 - 60 |
| 159.0 | 310.7 | 205.8 | 3.16 | 1.0 | 4480 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 60 - 91 | 40 - 60 |
| 159.5 | 345.7 | 228.7 | 2.91 | 0.7 | 4477 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 60 - 91 | 40 - 60 |
| 160.0 | 380.4 | 251.4 | 2.27 | 0.6 | 4757 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 61 - 91 | 40 - 60 |
| 160.5 | 356.2 | 235.2 | 2.38 | 0.6 | 4961 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 61 - 91 | 40 - 60 |
| 161.0 | 377.3 | 248.9 | 1.11 | 0.3 | 4782 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 61 - 91 | 40 - 60 |
| 161.5 | 382.6 | 252.1 | 1.49 | 0.4 | 5089 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 61 - 91 | 40 - 60 |
| 162.0 | 442.7 | 291.5 | 1.12 | 0.3 | 5176 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 61 - 91 | 40 - 60 |

Notes:

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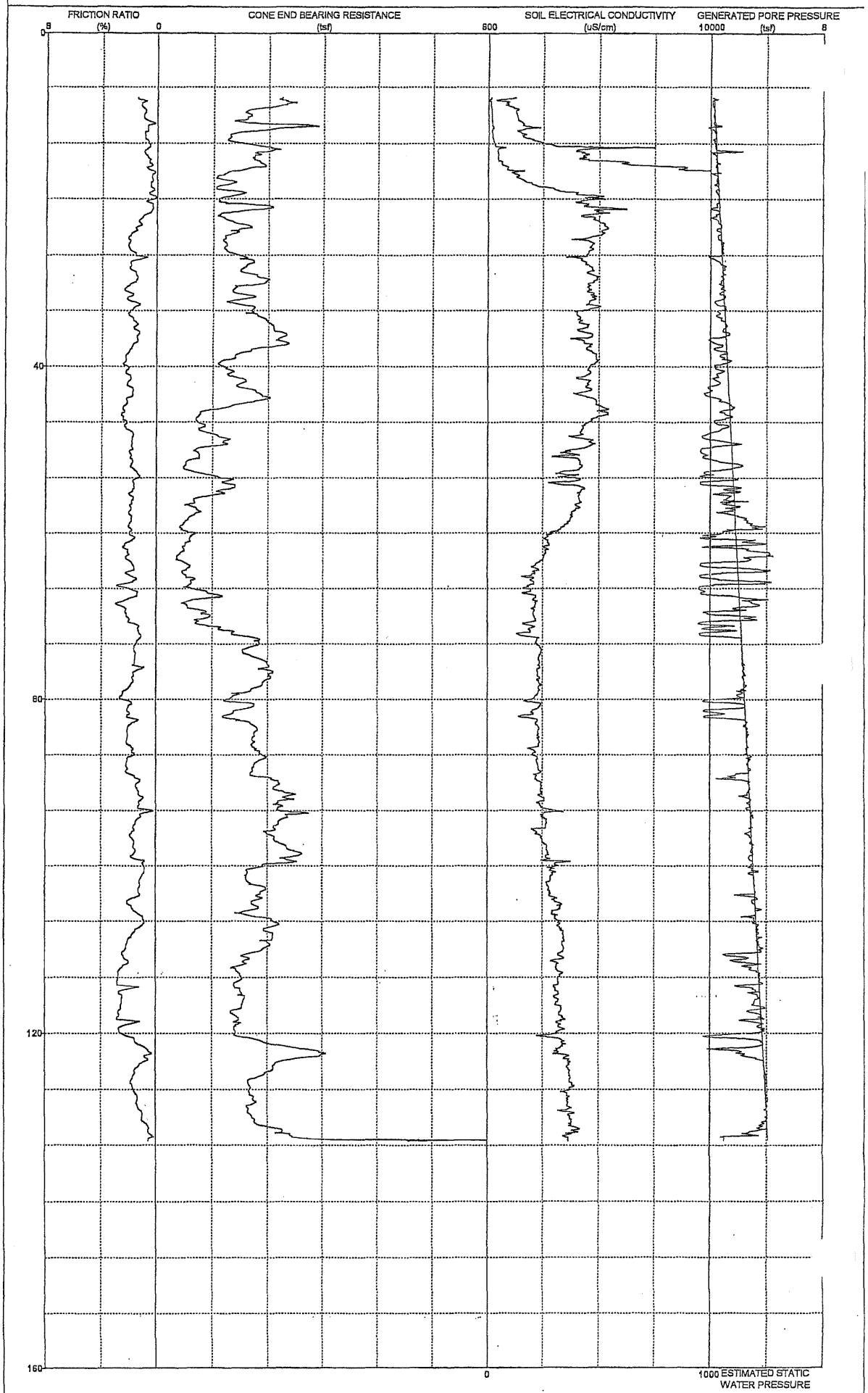
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

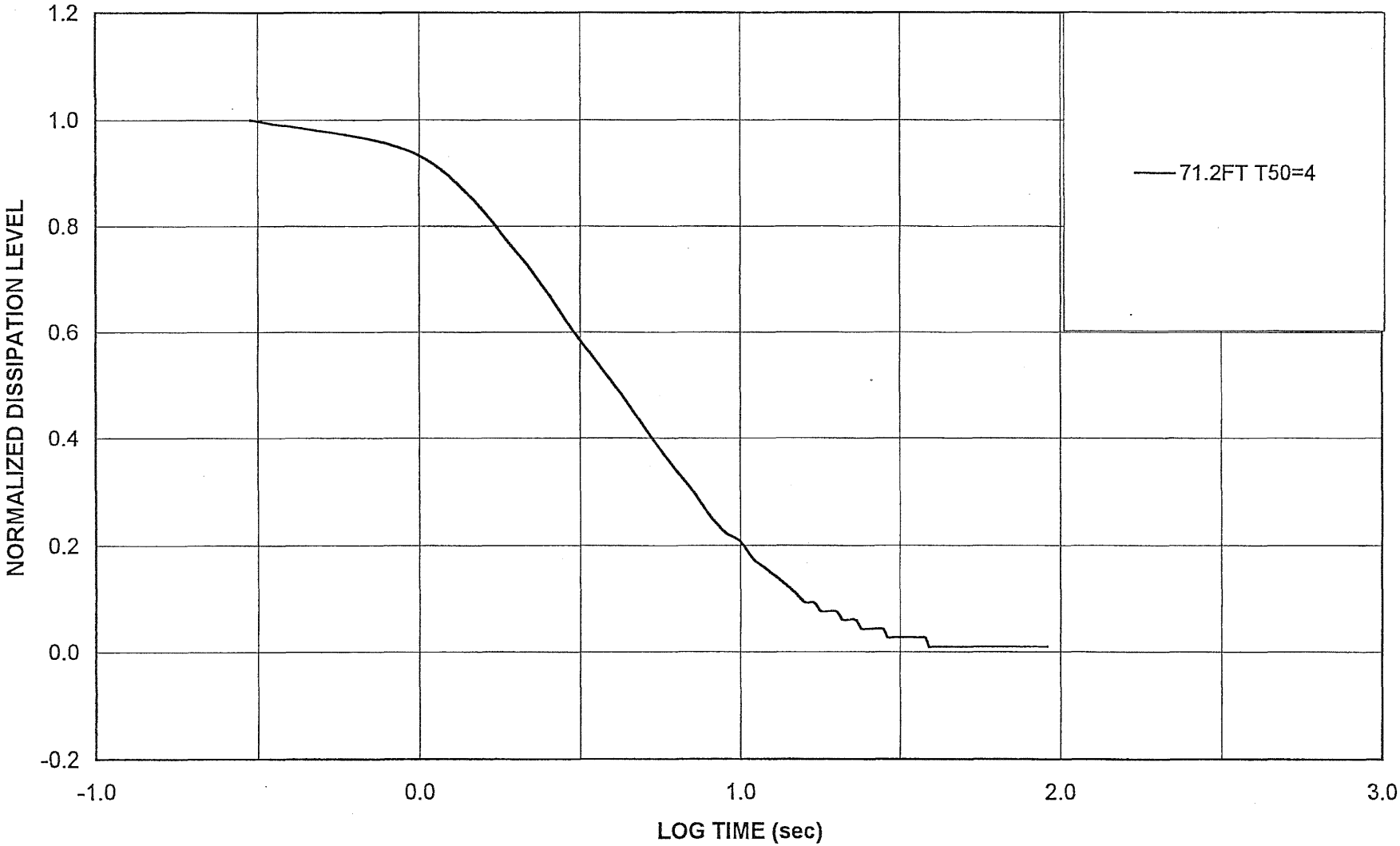
STRATIGRAPHICS

R2DATE: 5-07-1999 TIME:11:20:49.02

***STRATIGRAPHICS***

PORE WATER PRESSURE DISSIPATION TEST

Stratford Army Engine Plant CP-9905



***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-07-1999 TIME:11:20:49.02
SOUNDING NUMBER:CP-9905

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 8.00' | | | | | | | | | | | | |
| 1.5 | Prepunched To 8.00' | | | | | | | | | | | | |
| 2.0 | Prepunched To 8.00' | | | | | | | | | | | | |
| 2.5 | Prepunched To 8.00' | | | | | | | | | | | | |
| 3.0 | Prepunched To 8.00' | | | | | | | | | | | | |
| 3.5 | Prepunched To 8.00' | | | | | | | | | | | | |
| 4.0 | Prepunched To 8.00' | | | | | | | | | | | | |
| 4.5 | Prepunched To 8.00' | | | | | | | | | | | | |
| 5.0 | Prepunched To 8.00' | | | | | | | | | | | | |
| 5.5 | Prepunched To 8.00' | | | | | | | | | | | | |
| 6.0 | Prepunched To 8.00' | | | | | | | | | | | | |
| 6.5 | Prepunched To 8.00' | | | | | | | | | | | | |
| 7.0 | Prepunched To 8.00' | | | | | | | | | | | | |
| 7.5 | Prepunched To 8.00' | | | | | | | | | | | | |
| 8.0 | Prepunched To 8.00' | | | | | | | | | | | | |
| 8.5 | 244.4 | 306.8 | 2.38 | 1.0 | 91 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 79 | 60 - 99 |
| 9.0 | 216.3 | 269.4 | 2.70 | 1.2 | 99 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 79 | 60 - 99 |
| 9.5 | 162.1 | 200.4 | 1.55 | 0.8 | 126 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 32 - 49 | 40 - 60 |
| 10.0 | 169.2 | 207.5 | 1.64 | 1.0 | 131 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 33 - 49 | 40 - 60 |
| 10.5 | 160.5 | 195.5 | 1.44 | 0.9 | 137 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 33 - 49 | 40 - 60 |
| 11.0 | 194.5 | 235.2 | 0.34 | 0.2 | 160 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 33 - 50 | 40 - 60 |
| 11.5 | 233.8 | 280.9 | 1.77 | 0.7 | 221 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 33 - 50 | 40 - 60 |
| 12.0 | 155.7 | 185.8 | 1.54 | 0.8 | 146 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 34 - 50 | 40 - 60 |
| 12.5 | 130.0 | 154.2 | 1.25 | 0.9 | 156 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 34 | 30 - 40 |
| 13.0 | 126.9 | 149.6 | 1.03 | 0.7 | 209 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 25 - 34 | 30 - 40 |
| 13.5 | 171.1 | 200.5 | 1.08 | 0.6 | 290 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 34 - 51 | 40 - 60 |
| 14.0 | 215.8 | 251.3 | 1.47 | 0.8 | 439 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 34 - 52 | 40 - 60 |
| 14.5 | 178.6 | 206.9 | 1.82 | 0.9 | 437 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 35 - 52 | 40 - 60 |
| 15.0 | 171.7 | 197.7 | 1.26 | 0.7 | 424 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 35 - 52 | 40 - 60 |
| 15.5 | 184.0 | 210.8 | 1.32 | 0.6 | 621 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 35 - 52 | 40 - 60 |
| 16.0 | 194.3 | 221.4 | 0.92 | 0.4 | 771 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 35 - 53 | 40 - 60 |
| 16.5 | 154.0 | 174.5 | 0.98 | 0.5 | 949 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 26 - 35 | 30 - 40 |
| 17.0 | 120.5 | 135.9 | 0.43 | 0.3 | 1268 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 18 - 27 | 20 - 30 |
| 17.5 | 107.5 | 120.7 | 0.49 | 0.4 | 1419 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 27 | 20 - 30 |
| 18.0 | 140.2 | 156.5 | 0.54 | 0.4 | 1793 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 27 - 36 | 30 - 40 |
| 18.5 | 109.6 | 121.8 | 0.63 | 0.5 | 2250 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 27 | 20 - 30 |
| 19.0 | 126.8 | 140.3 | 0.36 | 0.3 | 3162 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 18 - 27 | 20 - 30 |
| 19.5 | 148.2 | 163.2 | 0.82 | 0.5 | 4111 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 27 - 36 | 30 - 40 |
| 20.0 | 111.6 | 122.3 | 0.14 | 0.2 | 5164 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 18 - 27 | 20 - 30 |
| 20.5 | 123.8 | 135.2 | 0.92 | 0.5 | 4249 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 27 | 20 - 30 |
| 21.0 | 207.7 | 225.7 | 0.57 | 0.3 | 4863 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 37 - 55 | 40 - 60 |
| 21.5 | 145.0 | 156.9 | 0.81 | 0.5 | 4867 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 37 | 30 - 40 |
| 22.0 | 109.0 | 117.5 | 1.21 | 1.0 | 4214 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 22.5 | 128.1 | 137.5 | 1.77 | 1.3 | 4845 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 56 | 40 - 60 |
| 23.0 | 151.3 | 161.7 | 1.81 | 1.1 | 5224 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 56 | 40 - 60 |
| 23.5 | 156.6 | 166.7 | 2.68 | 1.6 | 5366 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 56 | 40 - 60 |
| 24.0 | 143.7 | 152.3 | 2.59 | 1.8 | 5209 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 24.5 | 121.3 | 128.1 | 2.66 | 2.0 | 4656 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 25.0 | 119.3 | 125.5 | 2.39 | 2.0 | 4561 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 57 | 40 - 60 |

Notes:

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-07-1999 TIME:11:20:49.02
SOUNDING NUMBER:CP-9905

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 125.0 | 131.0 | 2.60 | 2.1 | 4660 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 26.0 | 123.1 | 128.5 | 2.53 | 2.0 | 4711 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 26.5 | 137.9 | 143.5 | 2.30 | 1.5 | 4492 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 58 | 40 - 60 |
| 27.0 | 162.6 | 168.6 | 1.40 | 0.9 | 4182 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 27.5 | 174.4 | 180.2 | 3.27 | 1.9 | 4429 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 58 - 96 | 60 - 99 |
| 28.0 | 160.9 | 165.6 | 3.14 | 1.9 | 4584 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 28.5 | 149.7 | 153.6 | 2.76 | 1.7 | 4734 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 29.0 | 177.3 | 181.2 | 2.83 | 1.5 | 4663 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 29.5 | 194.6 | 198.3 | 2.79 | 1.4 | 4905 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 30.0 | 195.0 | 198.0 | 3.36 | 1.7 | 4719 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 59 - 98 | 60 - 99 |
| 30.5 | 144.6 | 146.3 | 3.69 | 2.2 | 4484 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 40 - 59 | 40 - 60 |
| 31.0 | 135.6 | 136.7 | 3.28 | 2.2 | 4486 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 40 - 59 | 40 - 60 |
| 31.5 | 167.4 | 168.3 | 2.90 | 1.8 | 4698 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 32.0 | 152.4 | 152.7 | 3.64 | 2.1 | 4819 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 40 - 60 | 40 - 60 |
| 32.5 | 142.1 | 142.0 | 2.02 | 1.3 | 4537 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 33.0 | 175.4 | 174.7 | 2.93 | 1.7 | 4883 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 33.5 | 173.8 | 172.6 | 3.27 | 2.0 | 4009 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 60 - 100 | 60 - 99 |
| 34.0 | 182.0 | 180.2 | 3.73 | 2.0 | 4096 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 61 - 100 | 60 - 99 |
| 34.5 | 196.7 | 194.1 | 3.49 | 1.7 | 4217 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 61 - 100 | 60 - 99 |
| 35.0 | 206.6 | 203.2 | 2.91 | 1.4 | 4497 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 35.5 | 210.8 | 206.8 | 3.61 | 1.7 | 4258 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 61 - 101 | 60 - 99 |
| 36.0 | 228.1 | 223.1 | 2.95 | 1.3 | 4490 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 36.5 | 226.8 | 221.2 | 3.38 | 1.4 | 4647 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 62 - 102 | 60 - 99 |
| 37.0 | 224.5 | 218.4 | 3.26 | 1.4 | 4346 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 62 - 102 | 60 - 99 |
| 37.5 | 226.7 | 219.9 | 4.09 | 1.8 | 4577 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 62 - 102 | 60 - 99 |
| 38.0 | 170.2 | 164.5 | 3.77 | 1.9 | 4525 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 41 - 62 | 40 - 60 |
| 38.5 | 146.4 | 141.2 | 3.47 | 2.2 | 4877 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 41 - 62 | 40 - 60 |
| 39.0 | 139.8 | 134.5 | 3.15 | 2.2 | 4872 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 42 - 62 | 40 - 60 |
| 39.5 | 112.2 | 107.6 | 2.90 | 2.4 | 4865 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 40.0 | 121.5 | 116.2 | 2.59 | 2.1 | 4590 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 40.5 | 135.7 | 129.4 | 2.94 | 2.2 | 4558 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 42 - 63 | 40 - 60 |
| 41.0 | 128.2 | 122.0 | 2.80 | 2.0 | 4464 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 41.5 | 155.5 | 147.5 | 3.01 | 1.9 | 4283 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 42.0 | 153.2 | 145.0 | 3.37 | 2.1 | 4495 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 42 - 63 | 40 - 60 |
| 42.5 | 149.5 | 141.2 | 3.04 | 1.8 | 4467 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 64 | 40 - 60 |
| 43.0 | 178.0 | 167.6 | 3.22 | 1.7 | 4387 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 64 | 40 - 60 |
| 43.5 | 190.0 | 178.4 | 3.46 | 1.8 | 4357 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 44.0 | 189.5 | 177.5 | 4.31 | 2.2 | 4850 | V dense, Gr si sand to cl gr sand | 37-40 | 80-100 | | | | 64 - 106 | 60 - 99 |
| 44.5 | 148.1 | 138.4 | 3.76 | 2.2 | 4870 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 43 - 64 | 40 - 60 |
| 45.0 | 116.7 | 108.7 | 3.33 | 2.5 | 5278 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 43 - 64 | 40 - 60 |
| 45.5 | 78.0 | 72.5 | 2.27 | 2.4 | 5349 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 32 | 20 - 30 |
| 46.0 | 74.7 | 69.3 | 1.87 | 2.5 | 4979 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 22 - 32 | 20 - 30 |
| 46.5 | 71.3 | 66.0 | 1.78 | 2.3 | 4660 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 32 | 20 - 30 |
| 47.0 | 86.0 | 79.4 | 1.92 | 2.3 | 4372 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 32 | 20 - 30 |
| 47.5 | 75.4 | 69.4 | 1.85 | 2.2 | 4283 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 48.0 | 97.0 | 89.1 | 1.86 | 1.7 | 4238 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 48.5 | 119.3 | 109.3 | 2.27 | 1.8 | 4059 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 49.0 | 119.7 | 109.4 | 2.26 | 1.8 | 4583 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 49.5 | 98.8 | 90.1 | 2.15 | 1.8 | 4530 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 50.0 | 67.6 | 61.5 | 1.52 | 1.9 | 3555 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 16 - 22 | 15 - 20 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-07-1999 TIME:11:20:49.02
SOUNDING NUMBER:CP-9905

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 76.2 | 69.2 | 1.41 | 1.9 | 4104 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 51.0 | 75.1 | 68.0 | 1.42 | 1.9 | 4080 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 51.5 | 52.4 | 47.4 | 1.07 | 1.8 | 4186 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 52.0 | 48.3 | 43.6 | 1.01 | 1.9 | 4230 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 52.5 | 61.5 | 55.4 | 1.16 | 1.5 | 3618 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 53.0 | 97.1 | 87.2 | 1.45 | 1.3 | 4025 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 53.5 | 136.8 | 122.6 | 2.03 | 1.6 | 4185 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 54.0 | 124.9 | 111.7 | 2.24 | 1.6 | 2987 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 54.5 | 139.8 | 124.7 | 2.21 | 1.6 | 4345 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 55.0 | 110.3 | 98.2 | 2.20 | 1.8 | 4192 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 55.5 | 94.1 | 83.6 | 2.06 | 1.9 | 4087 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 56.0 | 66.2 | 58.7 | 1.36 | 1.8 | 4136 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 56.5 | 61.6 | 54.5 | 1.19 | 1.8 | 4031 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 57.0 | 71.5 | 63.2 | 1.38 | 1.9 | 4107 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 57.5 | 75.8 | 66.7 | 1.50 | 2.0 | 3779 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 58.0 | 61.7 | 54.2 | 1.23 | 1.8 | 3808 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 58.5 | 53.6 | 47.0 | 1.05 | 1.8 | 3723 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 59.0 | 47.8 | 41.9 | 1.00 | 2.0 | 3523 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 59.5 | 46.9 | 41.0 | 1.01 | 1.9 | 3311 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 60.0 | 69.8 | 60.9 | 1.25 | 2.0 | 2937 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 60.5 | 60.2 | 52.4 | 1.02 | 1.6 | 2727 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 61.0 | 59.0 | 51.2 | 1.19 | 2.0 | 2726 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 61.5 | 50.7 | 43.9 | 1.22 | 2.3 | 2745 | V stiff, Sandy silt to sandy clay | | | 25 | 3.76 | 2.44 | 17 - 23 | 15 - 20 |
| 62.0 | 49.9 | 43.2 | 1.01 | 2.1 | 2667 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 12 - 17 | 10 - 15 |
| 62.5 | 41.4 | 35.8 | 0.91 | 2.0 | 2605 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 07 - 12 | 06 - 10 |
| 63.0 | 37.5 | 32.3 | 0.96 | 2.2 | 2525 | V stiff, Sandy silt to sandy clay | | | 20 | 3.37 | 1.92 | 07 - 12 | 06 - 10 |
| 63.5 | 50.0 | 43.0 | 1.02 | 1.8 | 2323 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 12 - 17 | 10 - 15 |
| 64.0 | 60.4 | 51.8 | 0.93 | 1.6 | 2071 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 12 - 17 | 10 - 15 |
| 64.5 | 49.3 | 42.2 | 0.99 | 1.8 | 2210 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 12 - 18 | 10 - 15 |
| 65.0 | 52.4 | 44.8 | 1.16 | 2.0 | 2026 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 12 - 18 | 10 - 15 |
| 65.5 | 69.7 | 59.5 | 0.90 | 1.4 | 2023 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 18 - 23 | 15 - 20 |
| 66.0 | 62.5 | 53.2 | 1.31 | 2.1 | 2105 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 18 - 23 | 15 - 20 |
| 66.5 | 52.0 | 44.3 | 1.63 | 2.4 | 1814 | V stiff, Sandy silt to sandy clay | | | 25 | 3.84 | 3.26 | 18 - 24 | 15 - 20 |
| 67.0 | 89.3 | 75.8 | 1.38 | 1.4 | 1933 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 67.5 | 115.6 | 98.0 | 1.45 | 1.4 | 2161 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 68.0 | 69.7 | 58.9 | 2.17 | 2.2 | 2063 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 24 - 35 | 20 - 30 |
| 68.5 | 51.8 | 43.7 | 1.70 | 3.0 | 2205 | V stiff, Sandy silt to sandy clay | | | 25 | 3.82 | 3.39 | 18 - 24 | 15 - 20 |
| 69.0 | 56.1 | 47.3 | 1.71 | 2.3 | 2056 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 69.5 | 89.3 | 75.2 | 2.08 | 2.3 | 2095 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 70.0 | 96.5 | 81.1 | 1.99 | 2.2 | 2128 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 70.5 | 69.5 | 58.2 | 1.72 | 2.0 | 2184 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 71.0 | 76.2 | 63.8 | 1.42 | 1.4 | 1721 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 71.5 | 110.1 | 91.9 | 1.74 | 1.4 | 1896 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 72.0 | 134.5 | 112.2 | 1.89 | 1.3 | 1548 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 48 | 30 - 40 |
| 72.5 | 171.3 | 142.6 | 2.08 | 1.1 | 2152 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 73.0 | 179.4 | 149.1 | 2.61 | 1.4 | 2228 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 73.5 | 180.4 | 149.6 | 2.90 | 1.6 | 2336 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 74.0 | 156.7 | 129.8 | 2.78 | 1.7 | 2465 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 74.5 | 160.9 | 133.0 | 2.58 | 1.5 | 2429 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 73 | 40 - 60 |
| 75.0 | 181.5 | 149.8 | 2.98 | 1.6 | 2319 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 73 | 40 - 60 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-07-1999 TIME:11:20:49.02
SOUNDING NUMBER:CP-9905

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 198.2 | 163.3 | 3.19 | 1.6 | 2379 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 76.0 | 203.3 | 167.2 | 2.96 | 1.3 | 2388 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 76.5 | 205.4 | 168.6 | 2.99 | 1.4 | 2241 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 77.0 | 201.0 | 164.7 | 3.42 | 1.7 | 2272 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 77.5 | 203.1 | 166.2 | 3.63 | 1.8 | 2350 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 78.0 | 190.9 | 156.0 | 3.49 | 1.8 | 2348 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 78.5 | 181.9 | 148.4 | 3.70 | 2.0 | 2320 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 79.0 | 168.1 | 136.9 | 4.20 | 2.4 | 2308 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 49 - 74 | 40 - 60 |
| 79.5 | 141.7 | 115.2 | 3.76 | 2.5 | 2227 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 49 - 74 | 40 - 60 |
| 80.0 | 126.4 | 102.6 | 3.41 | 2.4 | 2007 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 80.5 | 173.9 | 140.9 | 3.05 | 1.8 | 2434 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 81.0 | 169.5 | 137.1 | 3.55 | 2.0 | 2322 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 81.5 | 139.1 | 112.3 | 3.03 | 2.0 | 2018 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 74 | 40 - 60 |
| 82.0 | 120.0 | 96.8 | 2.88 | 2.1 | 1459 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 82.5 | 145.7 | 117.3 | 2.17 | 1.3 | 2277 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 83.0 | 172.4 | 138.5 | 3.34 | 1.9 | 2221 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 83.5 | 181.7 | 145.8 | 3.73 | 2.1 | 2369 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 50 - 75 | 40 - 60 |
| 84.0 | 175.8 | 140.9 | 3.75 | 2.1 | 2282 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 50 - 75 | 40 - 60 |
| 84.5 | 174.3 | 139.4 | 3.67 | 2.1 | 2369 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 85.0 | 175.1 | 139.8 | 3.77 | 2.2 | 2361 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 50 - 75 | 40 - 60 |
| 85.5 | 171.5 | 136.8 | 3.47 | 2.0 | 2334 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 86.0 | 178.1 | 141.8 | 2.99 | 1.6 | 2007 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 86.5 | 187.0 | 148.6 | 3.02 | 1.6 | 2086 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 87.0 | 197.8 | 157.0 | 4.01 | 2.0 | 2252 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 50 - 76 | 40 - 60 |
| 87.5 | 181.0 | 143.5 | 4.04 | 2.1 | 2235 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 50 - 76 | 40 - 60 |
| 88.0 | 175.5 | 138.9 | 3.89 | 2.2 | 2308 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 51 - 76 | 40 - 60 |
| 88.5 | 173.4 | 137.0 | 3.74 | 2.2 | 2338 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 51 - 76 | 40 - 60 |
| 89.0 | 168.9 | 133.3 | 3.47 | 1.8 | 2146 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 89.5 | 208.8 | 164.5 | 2.89 | 1.3 | 2169 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 90.0 | 221.0 | 173.8 | 2.90 | 1.3 | 2485 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 90.5 | 213.4 | 167.6 | 3.18 | 1.4 | 2459 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 91.0 | 225.6 | 176.9 | 3.06 | 1.3 | 2453 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 91.5 | 244.3 | 191.3 | 2.99 | 1.2 | 2338 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 92.0 | 247.7 | 193.7 | 2.46 | 1.0 | 2597 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 92.5 | 217.4 | 169.8 | 2.73 | 1.2 | 2380 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 93.0 | 220.2 | 171.7 | 3.03 | 1.3 | 2485 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 93.5 | 252.3 | 196.4 | 0.95 | 0.5 | 3138 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 51 - 77 | 40 - 60 |
| 94.0 | 236.2 | 183.6 | 2.72 | 1.1 | 2514 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 94.5 | 223.2 | 173.3 | 3.33 | 1.4 | 2689 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 95.0 | 219.2 | 169.9 | 3.45 | 1.6 | 2655 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 95.5 | 215.3 | 166.6 | 3.66 | 1.6 | 2030 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 96.0 | 198.7 | 153.6 | 3.71 | 1.8 | 2223 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 96.5 | 214.0 | 165.2 | 3.91 | 1.8 | 2457 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 97.0 | 216.4 | 166.8 | 3.59 | 1.6 | 2507 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 97.5 | 232.4 | 178.9 | 3.87 | 1.6 | 2724 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 98.0 | 238.7 | 183.5 | 3.90 | 1.6 | 2687 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 98.5 | 262.4 | 201.4 | 4.16 | 1.6 | 2741 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 78 - 129 | 60 - 99 |
| 99.0 | 231.7 | 177.6 | 4.38 | 1.7 | 2673 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 99.5 | 251.5 | 192.5 | 1.97 | 0.9 | 3636 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 100.0 | 192.1 | 146.8 | 1.98 | 0.9 | 3153 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 39 - 52 | 30 - 40 |

Notes:

* Indicates lightly overconsolidated soil
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT. Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-07-1999 TIME:11:20:49.02
SOUNDING NUMBER:CP-9905

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.5 | 162.9 | 124.3 | 1.54 | 0.9 | 2856 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 101.0 | 164.0 | 125.0 | 1.55 | 0.9 | 3003 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 39 - 52 | 30 - 40 |
| 101.5 | 162.2 | 123.5 | 1.84 | 1.1 | 2919 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 39 - 53 | 30 - 40 |
| 102.0 | 167.8 | 127.5 | 2.20 | 1.2 | 2713 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 53 | 30 - 40 |
| 102.5 | 194.2 | 147.4 | 2.32 | 1.2 | 2811 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 103.0 | 194.2 | 147.2 | 2.47 | 1.3 | 2821 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 103.5 | 183.6 | 139.0 | 2.11 | 1.2 | 2819 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 53 | 30 - 40 |
| 104.0 | 187.7 | 141.9 | 3.42 | 1.8 | 3062 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 104.5 | 171.2 | 129.2 | 3.78 | 2.1 | 3279 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 105.0 | 184.6 | 139.2 | 3.17 | 1.8 | 3291 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 105.5 | 158.0 | 119.0 | 2.68 | 1.5 | 2963 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 53 | 30 - 40 |
| 106.0 | 169.0 | 127.0 | 2.06 | 1.1 | 3125 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 40 - 53 | 30 - 40 |
| 106.5 | 207.5 | 155.8 | 1.95 | 0.9 | 3154 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 107.0 | 222.4 | 166.8 | 2.02 | 0.9 | 3292 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 107.5 | 196.0 | 146.7 | 2.85 | 1.4 | 3313 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 108.0 | 208.4 | 155.9 | 3.36 | 1.6 | 3440 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 108.5 | 210.2 | 157.0 | 3.76 | 1.8 | 3466 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 109.0 | 194.8 | 145.3 | 4.24 | 2.1 | 3495 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 80 | 40 - 60 |
| 109.5 | 204.7 | 152.5 | 4.43 | 2.2 | 3414 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 110.0 | 191.7 | 142.6 | 4.39 | 2.2 | 3444 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 110.5 | 166.3 | 123.5 | 4.48 | 2.5 | 3233 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 111.0 | 167.4 | 124.2 | 3.74 | 2.3 | 3477 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 111.5 | 157.4 | 116.7 | 3.21 | 2.0 | 3115 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 112.0 | 145.5 | 107.7 | 3.77 | 2.4 | 3147 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 112.5 | 144.5 | 106.8 | 3.99 | 2.7 | 3198 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 113.0 | 151.0 | 111.5 | 4.12 | 2.7 | 3284 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 113.5 | 155.0 | 114.3 | 4.20 | 2.7 | 3222 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 114.0 | 141.2 | 103.9 | 4.18 | 2.8 | 3232 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 114.5 | 141.5 | 104.1 | 2.00 | 1.4 | 3060 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 115.0 | 151.2 | 111.0 | 4.06 | 2.6 | 3189 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 54 - 82 | 40 - 60 |
| 115.5 | 156.6 | 114.9 | 3.85 | 2.4 | 3108 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 116.0 | 157.3 | 115.2 | 4.01 | 2.5 | 3250 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 116.5 | 154.9 | 113.3 | 3.93 | 2.5 | 3113 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 117.0 | 153.5 | 112.2 | 3.91 | 2.5 | 3335 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 117.5 | 134.5 | 98.2 | 3.89 | 2.7 | 3270 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 118.0 | 145.1 | 105.8 | 3.99 | 2.7 | 3409 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 118.5 | 146.0 | 106.3 | 2.00 | 1.7 | 3354 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 55 | 30 - 40 |
| 119.0 | 144.2 | 104.9 | 3.14 | 2.2 | 3278 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 119.5 | 139.9 | 101.6 | 3.83 | 2.7 | 3494 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 55 - 83 | 40 - 60 |
| 120.0 | 141.6 | 102.7 | 3.70 | 2.5 | 3165 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 55 - 83 | 40 - 60 |
| 120.5 | 165.1 | 119.6 | 3.00 | 1.7 | 2907 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 121.0 | 191.9 | 138.9 | 3.14 | 1.5 | 3406 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 121.5 | 232.9 | 168.3 | 2.39 | 0.9 | 3410 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 122.0 | 290.5 | 209.7 | 1.68 | 0.6 | 3204 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 122.5 | 298.9 | 215.5 | 1.37 | 0.5 | 3513 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 123.0 | 247.7 | 178.3 | 1.51 | 0.6 | 3566 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 56 - 83 | 40 - 60 |
| 123.5 | 215.4 | 154.9 | 2.46 | 1.1 | 3685 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 124.0 | 211.6 | 152.0 | 2.88 | 1.3 | 3620 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 124.5 | 202.6 | 145.4 | 3.29 | 1.6 | 3727 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 125.0 | 188.5 | 135.1 | 3.28 | 1.7 | 3707 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT. Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-07-1999 TIME:11:20:49.02
SOUNDING NUMBER:CP-9905

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125.5 | 167.1 | 119.6 | 3.18 | 1.8 | 3715 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 126.0 | 166.5 | 119.1 | 3.01 | 1.8 | 3840 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 126.5 | 169.9 | 121.3 | 2.84 | 1.7 | 3729 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 127.0 | 168.2 | 120.0 | 2.65 | 1.5 | 3488 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 56 | 30 - 40 |
| 127.5 | 175.7 | 125.2 | 2.37 | 1.4 | 3698 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 56 | 30 - 40 |
| 128.0 | 177.2 | 126.1 | 2.43 | 1.4 | 3604 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 56 | 30 - 40 |
| 128.5 | 169.4 | 120.4 | 2.35 | 1.3 | 3621 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 56 | 30 - 40 |
| 129.0 | 166.9 | 118.5 | 2.04 | 1.2 | 3670 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 129.5 | 168.1 | 119.2 | 1.68 | 1.0 | 3891 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 130.0 | 172.3 | 122.1 | 1.84 | 1.0 | 3713 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 130.5 | 176.0 | 124.5 | 1.68 | 0.9 | 3789 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 57 | 30 - 40 |
| 131.0 | 193.4 | 136.6 | 1.28 | 0.6 | 3704 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 131.5 | 227.4 | 160.5 | 1.36 | 0.6 | 4001 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 43 - 57 | 30 - 40 |
| 132.0 | 241.7 | 170.4 | 1.04 | 0.4 | 3783 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 43 - 57 | 30 - 40 |
| 132.5 | 269.0 | 189.4 | 1.21 | 0.5 | 3673 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 57 - 85 | 40 - 60 |

Notes:

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Both undrained and drained parameters can be estimated for these soils.

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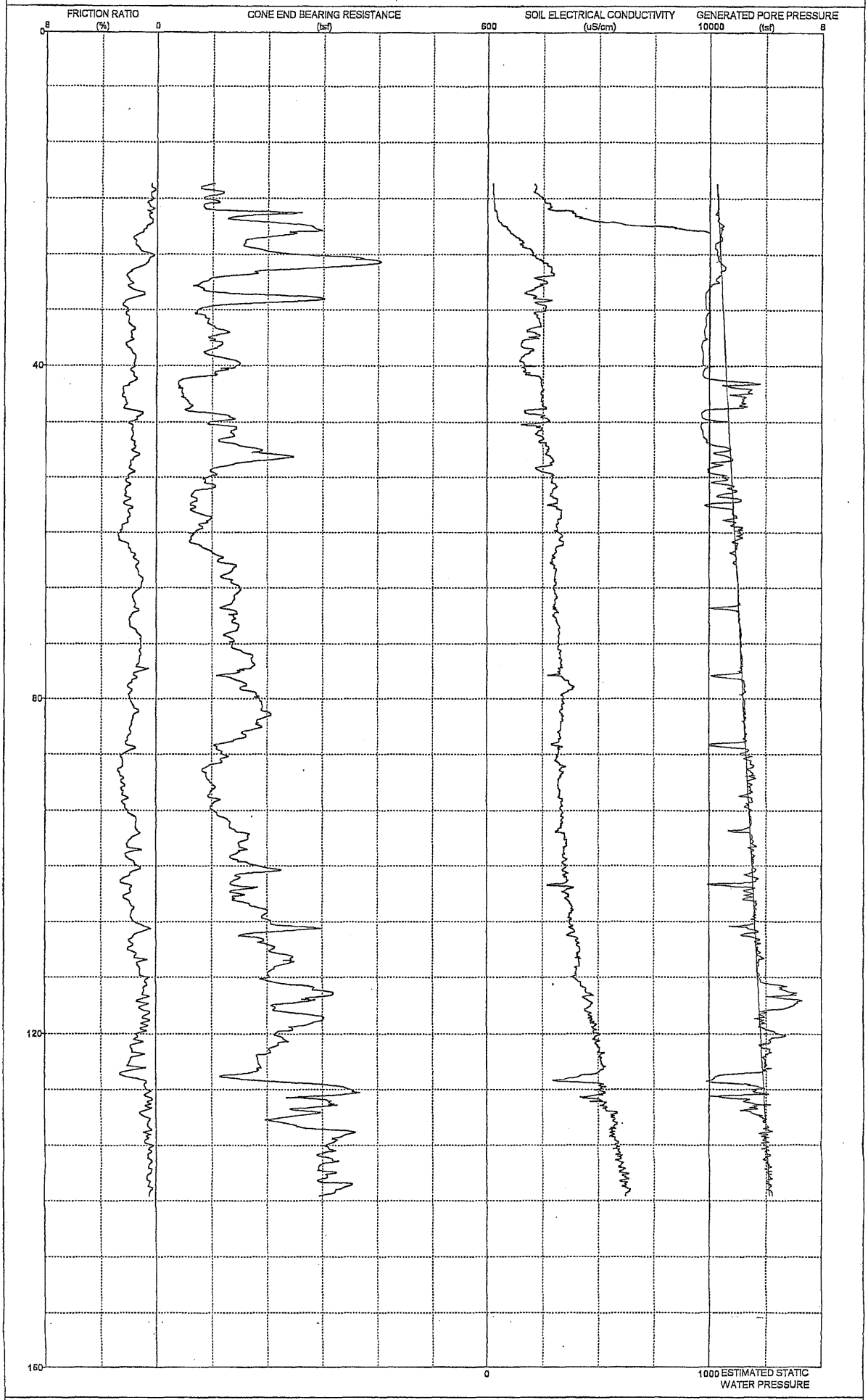
# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

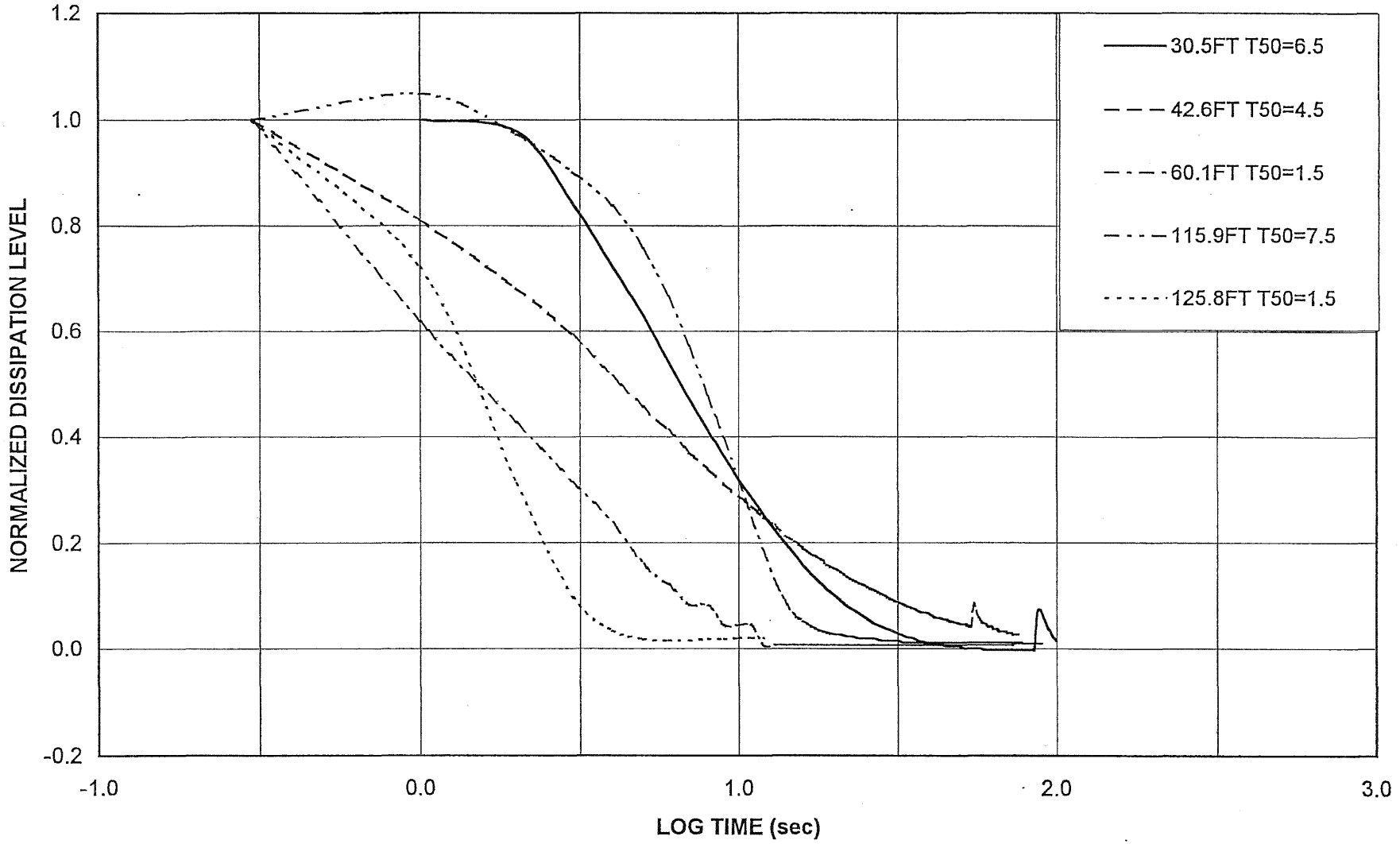
STRATIGRAPHICS

R2DATE: 5-08-1999 TIME:16:44:36.88
SOUNDING NUMBER:cp0006

*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

**Stratford Army Engine Plant cp-9906**



***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-08-1999 TIME:16:44:36.88
SOUNDING NUMBER:cp-9906

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 1.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 2.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 2.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 3.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 3.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 4.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 4.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 5.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 5.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 6.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 6.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 7.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 7.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 8.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 8.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 9.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 9.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 10.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 10.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 11.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 11.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 12.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 12.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 13.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 13.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 14.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 14.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 15.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 15.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 16.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 16.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 17.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 17.5 | Prepunched To 18.30' | | | | | | | | | | | | |
| 18.0 | Prepunched To 18.30' | | | | | | | | | | | | |
| 18.5 | 86.8 | 94.6 | 0.47 | 0.5 | 215 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 18 | 15 - 20 |
| 19.0 | 91.7 | 99.6 | 0.16 | 0.2 | 213 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 18 | 15 - 20 |
| 19.5 | 113.6 | 122.8 | 0.56 | 0.5 | 227 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 20.0 | 83.7 | 90.1 | 0.32 | 0.3 | 246 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 19 | 15 - 20 |
| 20.5 | 109.9 | 117.8 | 0.68 | 0.7 | 264 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 21.0 | 84.7 | 90.4 | 0.47 | 0.4 | 288 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 19 | 15 - 20 |
| 21.5 | 161.9 | 172.1 | 1.80 | 0.6 | 376 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 38 | 30 - 40 |
| 22.0 | 172.1 | 182.3 | 1.25 | 0.6 | 390 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 57 | 40 - 60 |
| 22.5 | 138.3 | 145.9 | 0.52 | 0.3 | 457 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 23.0 | 247.1 | 259.7 | 1.30 | 0.5 | 609 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 23.5 | 284.4 | 297.8 | 2.24 | 0.8 | 855 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 95 | 60 - 99 |
| 24.0 | 244.6 | 255.1 | 2.93 | 1.1 | 1000 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 95 | 60 - 99 |
| 24.5 | 208.0 | 216.2 | 3.84 | 1.6 | 1265 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 58 - 95 | 60 - 99 |
| 25.0 | 158.5 | 164.1 | 2.68 | 1.5 | 1539 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 58 | 40 - 60 |

Notes:

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Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-08-1999 TIME:16:44:36.88
SOUNDING NUMBER:cp-9906

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 156.1 | 161.1 | 2.55 | 1.5 | 1497 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 26.0 | 182.7 | 187.8 | 2.50 | 1.2 | 1687 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 58 | 40 - 60 |
| 26.5 | 221.1 | 226.5 | 1.75 | 0.6 | 2037 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 27.0 | 351.8 | 359.3 | 1.81 | 0.4 | 2145 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 59 - 97 | 60 - 99 |
| 27.5 | 403.7 | 410.8 | 2.39 | 0.6 | 2479 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 59 - 97 | 60 - 99 |
| 28.0 | 362.6 | 367.9 | 3.76 | 1.0 | 2703 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 99 | + 100 |
| 28.5 | 232.0 | 234.5 | 5.24 | 1.7 | 2855 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 59 - 98 | 60 - 99 |
| 29.0 | 179.1 | 180.5 | 4.03 | 2.1 | 2970 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 60 - 98 | 60 - 99 |
| 29.5 | 103.4 | 103.9 | 2.88 | 2.1 | 2111 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 30 - 40 | 30 - 40 |
| 30.0 | 83.5 | 83.7 | 1.77 | 1.9 | 2652 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 20 - 30 | 20 - 30 |
| 30.5 | 64.5 | 64.4 | 1.69 | 2.1 | 2343 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 20 - 30 | 20 - 30 |
| 31.0 | 84.6 | 84.2 | 1.83 | 1.6 | 1976 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 31.5 | 170.7 | 169.3 | 2.28 | 0.9 | 1859 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 32.0 | 301.6 | 298.2 | 5.14 | 1.9 | 2247 | V dense, Sa gravel to si gr sand | 40-42 | 80-100 | | | | + 101 | + 100 |
| 32.5 | 199.3 | 196.5 | 6.22 | 2.4 | 2149 | V dense, Gr si sand to cl gr sand | 37-40 | 80-100 | | | | + 101 | + 100 |
| 33.0 | 89.7 | 88.2 | 3.04 | 2.3 | 2633 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 31 - 41 | 30 - 40 |
| 33.5 | 71.6 | 70.2 | 1.60 | 2.1 | 2470 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 20 - 31 | 20 - 30 |
| 34.0 | 86.8 | 84.8 | 1.90 | 2.1 | 2240 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 31 - 41 | 30 - 40 |
| 34.5 | 93.9 | 91.5 | 1.86 | 2.0 | 2305 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 31 - 41 | 30 - 40 |
| 35.0 | 93.8 | 91.1 | 1.99 | 2.0 | 2350 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 31 - 41 | 30 - 40 |
| 35.5 | 105.0 | 101.7 | 1.87 | 1.6 | 1992 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 31 - 41 | 30 - 40 |
| 36.0 | 129.5 | 125.1 | 2.28 | 1.9 | 2064 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 36.5 | 100.2 | 96.5 | 2.12 | 1.8 | 2071 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 31 - 42 | 30 - 40 |
| 37.0 | 99.9 | 96.0 | 2.08 | 1.8 | 1581 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 31 - 42 | 30 - 40 |
| 37.5 | 117.3 | 112.4 | 2.53 | 2.2 | 1497 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 38.0 | 103.8 | 99.2 | 2.07 | 1.9 | 2002 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 31 - 42 | 30 - 40 |
| 38.5 | 86.7 | 82.7 | 1.71 | 1.8 | 1867 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 21 - 31 | 20 - 30 |
| 39.0 | 114.5 | 108.9 | 1.96 | 1.5 | 1536 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 42 | 30 - 40 |
| 39.5 | 145.1 | 137.6 | 2.38 | 1.6 | 1487 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 40.0 | 143.3 | 135.5 | 2.42 | 1.6 | 1908 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 40.5 | 125.9 | 118.7 | 2.57 | 1.9 | 1702 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 64 | 40 - 60 |
| 41.0 | 107.3 | 101.0 | 1.87 | 1.7 | 1694 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 41.5 | 53.5 | 50.2 | 1.18 | 1.4 | 2403 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 16 | 10 - 15 |
| 42.0 | 39.2 | 36.7 | 0.84 | 1.9 | 2414 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 06 - 11 | 06 - 10 |
| 42.5 | 42.7 | 39.8 | 1.08 | 2.4 | 2472 | V stiff, Sandy silt to sandy clay | | | 25 | 3.21 | 2.15 | 11 - 16 | 10 - 15 |
| 43.0 | 45.4 | 42.3 | 1.10 | 2.4 | 2479 | V stiff, Sandy silt to sandy clay | | | 25 | 3.42 | 2.19 | 16 - 21 | 15 - 20 |
| 43.5 | 48.4 | 45.0 | 1.25 | 2.5 | 2480 | V stiff, Sandy silt to sandy clay | | | 25 | 3.66 | 2.51 | 16 - 22 | 15 - 20 |
| 44.0 | 53.4 | 49.5 | 1.27 | 2.2 | 2429 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 16 - 22 | 15 - 20 |
| 44.5 | 60.0 | 55.5 | 1.30 | 2.1 | 2513 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 16 - 22 | 15 - 20 |
| 45.0 | 59.3 | 54.7 | 1.50 | 2.4 | 2652 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 16 - 22 | 15 - 20 |
| 45.5 | 82.0 | 75.4 | 1.14 | 1.1 | 1688 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 16 - 22 | 15 - 20 |
| 46.0 | 130.4 | 119.8 | 1.78 | 1.3 | 2447 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 46.5 | 119.2 | 109.2 | 2.12 | 1.6 | 2801 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 47.0 | 97.5 | 89.1 | 2.34 | 1.8 | 1565 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 47.5 | 142.9 | 130.3 | 2.50 | 1.8 | 2471 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 48.0 | 136.7 | 124.3 | 2.33 | 1.7 | 2202 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 48.5 | 130.9 | 118.8 | 2.47 | 1.8 | 2508 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 49.0 | 114.2 | 103.4 | 2.08 | 1.6 | 2311 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 49.5 | 150.6 | 136.1 | 2.64 | 1.6 | 2667 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 50.0 | 189.7 | 171.0 | 3.40 | 1.8 | 2690 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 44 - 67 | 40 - 60 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT. Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design. Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-08-1999 TIME:16:44:36.88
SOUNDING NUMBER:cp-9906

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 206.1 | 185.4 | 2.83 | 1.3 | 2623 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 44 - 67 | 40 - 60 |
| 51.0 | 231.4 | 207.7 | 3.85 | 1.7 | 2895 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 67 - 110 | 60 - 99 |
| 51.5 | 159.4 | 142.7 | 3.73 | 1.9 | 2926 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 52.0 | 121.9 | 108.9 | 2.68 | 1.9 | 2591 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 52.5 | 97.4 | 86.9 | 1.77 | 1.7 | 2356 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 34 | 20 - 30 |
| 53.0 | 107.9 | 96.0 | 1.99 | 2.0 | 2980 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 53.5 | 83.9 | 74.5 | 1.98 | 2.1 | 2926 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 54.0 | 86.9 | 77.0 | 2.05 | 2.1 | 2890 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 54.5 | 106.2 | 93.9 | 2.12 | 2.1 | 3152 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 55.0 | 69.1 | 60.9 | 1.98 | 2.2 | 2930 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 55.5 | 62.8 | 55.3 | 1.56 | 2.3 | 2839 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 17 - 23 | 15 - 20 |
| 56.0 | 73.2 | 64.3 | 1.32 | 1.9 | 3156 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 56.5 | 62.3 | 54.7 | 1.66 | 2.4 | 3082 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 17 - 23 | 15 - 20 |
| 57.0 | 69.1 | 60.5 | 1.09 | 1.7 | 3127 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 57.5 | 68.2 | 59.5 | 1.60 | 2.0 | 3344 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 17 - 23 | 15 - 20 |
| 58.0 | 91.3 | 79.6 | 1.85 | 1.9 | 3330 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 58.5 | 95.4 | 83.0 | 2.04 | 2.1 | 3191 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 59.0 | 77.6 | 67.4 | 2.07 | 2.3 | 3157 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 59.5 | 83.2 | 72.1 | 1.99 | 2.5 | 3180 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 60.0 | 70.3 | 60.8 | 1.87 | 2.5 | 3245 | Hard, Sandy silt to sandy clay | | | 25 | 5.34 | 3.74 | 23 - 35 | 20 - 30 |
| 60.5 | 63.0 | 54.4 | 1.78 | 2.7 | 3378 | Hard, Sandy silt to sandy clay | | | 25 | 4.75 | 3.55 | 23 - 35 | 20 - 30 |
| 61.0 | 59.3 | 51.1 | 1.69 | 2.6 | 3351 | Hard, Sandy silt to sandy clay | | | 25 | 4.45 | 3.39 | 17 - 23 | 15 - 20 |
| 61.5 | 76.7 | 66.0 | 1.63 | 2.0 | 3378 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 62.0 | 90.2 | 77.4 | 1.84 | 1.9 | 3068 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 62.5 | 101.0 | 86.5 | 1.86 | 1.7 | 3054 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 63.0 | 119.3 | 102.0 | 1.96 | 1.7 | 3064 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 63.5 | 110.8 | 94.6 | 1.62 | 1.3 | 2949 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 64.0 | 144.3 | 122.9 | 2.10 | 1.5 | 3053 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 64.5 | 137.3 | 116.7 | 1.89 | 1.4 | 3126 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 65.0 | 126.7 | 107.5 | 1.72 | 1.3 | 3087 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 65.5 | 120.9 | 102.4 | 1.23 | 0.9 | 3039 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 66.0 | 134.3 | 113.6 | 1.48 | 1.0 | 3086 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 66.5 | 149.0 | 125.8 | 1.58 | 1.1 | 2993 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 47 | 30 - 40 |
| 67.0 | 150.5 | 126.8 | 2.13 | 1.4 | 3046 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 47 | 30 - 40 |
| 67.5 | 142.0 | 119.4 | 2.50 | 1.7 | 3117 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 71 | 40 - 60 |
| 68.0 | 140.6 | 118.0 | 2.34 | 1.7 | 3099 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 68.5 | 136.4 | 114.3 | 2.14 | 1.5 | 3077 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 69.0 | 118.2 | 98.8 | 2.08 | 1.6 | 3022 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 69.5 | 143.8 | 120.0 | 1.93 | 1.4 | 3150 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 70.0 | 138.6 | 115.5 | 2.53 | 1.8 | 2967 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 70.5 | 138.9 | 115.6 | 2.76 | 2.0 | 3145 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 71.0 | 146.8 | 121.9 | 2.80 | 1.9 | 3201 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 71.5 | 146.4 | 121.4 | 2.45 | 1.7 | 3252 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 72.0 | 132.2 | 109.4 | 2.01 | 1.4 | 3258 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 72.5 | 129.5 | 107.0 | 1.50 | 1.1 | 3214 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 73.0 | 140.4 | 115.8 | 1.50 | 1.1 | 3221 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 73.5 | 136.3 | 112.2 | 1.61 | 1.1 | 3244 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 74.0 | 146.6 | 120.5 | 1.90 | 1.2 | 3228 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 49 | 30 - 40 |
| 74.5 | 165.2 | 135.6 | 1.89 | 1.1 | 3282 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 75.0 | 172.5 | 141.3 | 2.06 | 1.2 | 3279 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |

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** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT. Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design. Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-08-1999 TIME:16:44:36.88
SOUNDING NUMBER:cp-9906

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 172.6 | 141.1 | 2.16 | 1.2 | 3345 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 76.0 | 175.9 | 143.6 | 2.50 | 1.4 | 3372 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 76.5 | 157.3 | 128.3 | 1.47 | 0.9 | 3304 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 77.0 | 131.7 | 107.2 | 2.52 | 1.7 | 3213 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 77.5 | 136.6 | 111.0 | 2.09 | 1.5 | 3447 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 78.0 | 156.8 | 127.2 | 2.85 | 1.8 | 3659 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 78.5 | 156.8 | 127.0 | 3.33 | 2.1 | 3856 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 79.0 | 161.6 | 130.7 | 3.02 | 1.7 | 3707 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 79.5 | 179.9 | 145.2 | 3.62 | 2.0 | 3392 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 74 | 40 - 60 |
| 80.0 | 185.5 | 149.5 | 3.59 | 1.9 | 3442 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 50 - 74 | 40 - 60 |
| 80.5 | 190.3 | 153.1 | 3.41 | 1.8 | 3484 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 81.0 | 191.8 | 154.1 | 3.12 | 1.6 | 3412 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 81.5 | 193.4 | 155.1 | 2.54 | 1.3 | 3286 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 82.0 | 207.0 | 165.8 | 3.33 | 1.6 | 3362 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 82.5 | 186.1 | 148.8 | 3.39 | 1.7 | 3405 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 83.0 | 181.5 | 144.9 | 3.30 | 1.8 | 3338 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 83.5 | 188.5 | 150.2 | 3.57 | 1.9 | 3324 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 84.0 | 155.9 | 124.1 | 3.12 | 1.8 | 3201 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 84.5 | 162.0 | 128.8 | 3.22 | 2.0 | 3263 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 85.0 | 139.7 | 110.8 | 3.20 | 2.1 | 3257 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 85.5 | 109.0 | 86.3 | 2.76 | 2.1 | 2909 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 86.0 | 108.2 | 85.6 | 1.74 | 1.6 | 3253 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 86.5 | 117.3 | 92.6 | 2.77 | 2.2 | 3222 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 87.0 | 129.6 | 102.2 | 3.18 | 2.6 | 3173 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 51 - 76 | 40 - 60 |
| 87.5 | 117.7 | 92.7 | 2.89 | 2.4 | 3131 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 88.0 | 95.2 | 74.9 | 2.66 | 2.4 | 3379 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 25 - 38 | 20 - 30 |
| 88.5 | 82.4 | 64.7 | 2.48 | 2.8 | 3275 | Hard, Sandy silt to sandy clay | | | 25 | 6.17 | 4.97 | 25 - 38 | 20 - 30 |
| 89.0 | 89.3 | 70.0 | 2.39 | 2.7 | 3347 | Hard, Sandy silt to sandy clay | | | 25 | 6.71 | 4.77 | 26 - 38 | 20 - 30 |
| 89.5 | 91.4 | 71.6 | 2.20 | 2.3 | 3258 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 26 - 38 | 20 - 30 |
| 90.0 | 97.4 | 76.1 | 2.58 | 2.5 | 3202 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 90.5 | 106.5 | 83.1 | 2.45 | 2.4 | 3217 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 91.0 | 99.6 | 77.6 | 2.54 | 2.4 | 3290 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 91.5 | 94.1 | 73.3 | 2.48 | 2.5 | 3275 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 26 - 39 | 20 - 30 |
| 92.0 | 114.8 | 89.2 | 2.37 | 2.2 | 3419 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 51 | 30 - 40 |
| 92.5 | 103.5 | 80.3 | 2.61 | 2.4 | 3337 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 93.0 | 96.8 | 75.0 | 2.33 | 2.3 | 3279 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 26 - 39 | 20 - 30 |
| 93.5 | 107.1 | 82.9 | 2.27 | 2.1 | 3403 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 26 - 39 | 20 - 30 |
| 94.0 | 113.9 | 88.0 | 1.96 | 1.6 | 3359 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 26 - 39 | 20 - 30 |
| 94.5 | 129.4 | 99.8 | 1.91 | 1.5 | 3335 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 26 - 39 | 20 - 30 |
| 95.0 | 132.0 | 101.7 | 2.04 | 1.5 | 3324 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 95.5 | 137.0 | 105.4 | 2.14 | 1.5 | 3213 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 96.0 | 158.7 | 121.9 | 1.87 | 1.2 | 3403 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 39 - 52 | 30 - 40 |
| 96.5 | 165.3 | 126.8 | 2.80 | 1.7 | 3522 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 97.0 | 156.5 | 119.9 | 3.25 | 2.0 | 3590 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 97.5 | 149.6 | 114.5 | 3.26 | 2.1 | 3616 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 98.0 | 163.5 | 124.9 | 1.23 | 1.1 | 3475 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 39 - 52 | 30 - 40 |
| 98.5 | 144.5 | 110.2 | 3.37 | 2.2 | 3508 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 79 | 40 - 60 |
| 99.0 | 134.2 | 102.2 | 2.96 | 2.1 | 3485 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 53 | 30 - 40 |
| 99.5 | 156.4 | 119.0 | 2.71 | 1.6 | 3430 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 39 - 53 | 30 - 40 |
| 100.0 | 183.4 | 139.3 | 2.75 | 1.4 | 3571 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |

Notes:

* Indicates lightly overconsolidated soil
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-08-1999 TIME:16:44:36.88
SOUNDING NUMBER:cp-9906

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.5 | 225.3 | 171.0 | 2.82 | 1.4 | 3402 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 101.0 | 148.4 | 112.4 | 3.54 | 1.9 | 3504 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 101.5 | 149.1 | 112.8 | 3.57 | 2.4 | 3615 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 53 - 79 | 40 - 60 |
| 102.0 | 134.5 | 101.6 | 3.66 | 2.5 | 3569 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 53 - 79 | 40 - 60 |
| 102.5 | 166.5 | 125.6 | 2.78 | 1.8 | 3704 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 103.0 | 135.8 | 102.3 | 2.92 | 1.8 | 3526 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 40 - 53 | 30 - 40 |
| 103.5 | 155.7 | 117.2 | 3.41 | 2.3 | 3699 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 53 - 80 | 40 - 60 |
| 104.0 | 138.0 | 103.7 | 3.22 | 2.1 | 3593 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 104.5 | 166.7 | 125.1 | 3.28 | 1.9 | 3736 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 105.0 | 184.2 | 138.0 | 3.14 | 1.6 | 3821 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 105.5 | 200.9 | 150.4 | 3.57 | 1.8 | 3810 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 106.0 | 190.7 | 142.6 | 3.73 | 1.9 | 3720 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 106.5 | 205.1 | 153.2 | 3.51 | 1.7 | 3726 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 107.0 | 213.3 | 159.0 | 2.73 | 1.1 | 3768 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 107.5 | 294.3 | 219.1 | 1.27 | 0.5 | 3833 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 108.0 | 183.4 | 136.4 | 3.09 | 1.3 | 3815 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 108.5 | 171.9 | 127.7 | 3.15 | 1.7 | 3909 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 109.0 | 193.2 | 143.3 | 3.75 | 2.0 | 3996 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 109.5 | 205.4 | 152.2 | 3.50 | 1.7 | 4036 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 110.0 | 209.5 | 155.0 | 4.36 | 2.0 | 4197 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 110.5 | 222.9 | 164.7 | 3.43 | 1.4 | 4038 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 111.0 | 244.9 | 180.7 | 3.78 | 1.6 | 4007 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 111.5 | 244.7 | 180.3 | 3.13 | 1.3 | 4162 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 112.0 | 218.0 | 160.5 | 3.01 | 1.3 | 4158 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 112.5 | 208.6 | 153.3 | 2.59 | 1.2 | 4000 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 113.0 | 201.4 | 147.9 | 2.37 | 1.2 | 4019 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 113.5 | 188.8 | 138.5 | 1.27 | 0.6 | 3983 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 114.0 | 218.7 | 160.2 | 1.76 | 0.7 | 4205 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 114.5 | 284.6 | 208.2 | 2.66 | 0.9 | 4379 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 115.0 | 311.0 | 227.2 | 2.79 | 0.9 | 4458 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 115.5 | 312.3 | 227.9 | 1.97 | 0.7 | 4687 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 116.0 | 281.5 | 205.1 | 3.71 | 1.3 | 4526 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 116.5 | 225.3 | 164.0 | 1.46 | 0.6 | 4700 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 117.0 | 215.9 | 156.9 | 2.68 | 1.2 | 4507 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 117.5 | 245.8 | 178.4 | 1.22 | 0.5 | 4630 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 118.0 | 302.2 | 219.1 | 2.87 | 1.0 | 4702 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 118.5 | 291.4 | 211.1 | 1.72 | 0.6 | 4793 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 119.0 | 266.6 | 192.8 | 1.60 | 0.6 | 4870 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 119.5 | 245.5 | 177.4 | 2.12 | 0.9 | 4900 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 120.0 | 214.4 | 154.7 | 3.32 | 1.4 | 5040 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 120.5 | 229.0 | 165.0 | 3.35 | 1.4 | 4840 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 121.0 | 224.8 | 161.8 | 2.43 | 1.1 | 4895 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 121.5 | 214.9 | 154.5 | 4.14 | 1.9 | 4991 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 122.0 | 205.8 | 147.8 | 3.47 | 1.7 | 5042 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 122.5 | 181.2 | 130.0 | 2.06 | 1.0 | 5104 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 123.0 | 183.3 | 131.3 | 3.41 | 1.9 | 5096 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 123.5 | 184.8 | 132.2 | 3.68 | 2.0 | 5146 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 124.0 | 189.9 | 135.7 | 1.27 | 0.9 | 5253 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 124.5 | 178.8 | 127.7 | 4.33 | 2.3 | 5030 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 56 - 84 | 40 - 60 |
| 125.0 | 117.9 | 84.1 | 3.61 | 2.4 | 4201 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 42 - 56 | 30 - 40 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-08-1999 TIME:16:44:36.88
SOUNDING NUMBER:cp-9906

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125.5 | 168.2 | 119.8 | 2.08 | 0.9 | 3195 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 126.0 | 294.6 | 209.5 | 2.77 | 0.8 | 5178 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 126.5 | 343.1 | 243.8 | 2.60 | 0.7 | 5101 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 127.0 | 364.9 | 259.0 | 1.94 | 0.5 | 5301 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 85 | 40 - 60 |
| 127.5 | 276.4 | 195.9 | 1.80 | 0.7 | 4654 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 85 | 40 - 60 |
| 128.0 | 311.2 | 220.3 | 1.17 | 0.4 | 5145 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 56 - 85 | 40 - 60 |
| 128.5 | 316.9 | 224.2 | 1.79 | 0.5 | 5251 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 129.0 | 243.8 | 172.2 | 1.27 | 0.4 | 5289 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 57 | 30 - 40 |
| 129.5 | 296.0 | 208.9 | 3.37 | 1.2 | 5869 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 130.0 | 235.2 | 165.7 | 2.05 | 0.7 | 5586 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 43 - 57 | 30 - 40 |
| 130.5 | 213.3 | 150.2 | 1.28 | 0.5 | 5669 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 43 - 57 | 30 - 40 |
| 131.0 | 254.0 | 178.6 | 1.64 | 0.6 | 5748 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 57 - 85 | 40 - 60 |
| 131.5 | 323.4 | 227.2 | 1.00 | 0.3 | 5583 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 57 - 85 | 40 - 60 |
| 132.0 | 347.1 | 243.5 | 1.16 | 0.4 | 5689 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 132.5 | 318.9 | 223.5 | 1.73 | 0.5 | 5786 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 133.0 | 319.8 | 223.9 | 2.68 | 0.8 | 5914 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 133.5 | 308.5 | 215.7 | 1.10 | 0.4 | 5897 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 57 - 86 | 40 - 60 |
| 134.0 | 321.7 | 224.7 | 0.95 | 0.4 | 5939 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 57 - 86 | 40 - 60 |
| 134.5 | 291.0 | 203.0 | 1.85 | 0.6 | 5868 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 135.0 | 317.9 | 221.5 | 1.29 | 0.5 | 6063 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 135.5 | 304.1 | 211.7 | 1.42 | 0.4 | 6129 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 57 - 86 | 40 - 60 |
| 136.0 | 293.6 | 204.1 | 1.74 | 0.6 | 5928 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 86 | 40 - 60 |
| 136.5 | 308.7 | 214.4 | 1.20 | 0.4 | 6008 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 58 - 86 | 40 - 60 |
| 137.0 | 307.6 | 213.4 | 1.95 | 0.6 | 6083 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 86 | 40 - 60 |
| 137.5 | 295.2 | 204.6 | 1.97 | 0.6 | 6268 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 138.0 | 352.5 | 244.0 | 1.78 | 0.5 | 6187 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 138.5 | 335.8 | 232.2 | 0.65 | 0.2 | 6287 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 58 - 87 | 40 - 60 |
| 139.0 | 322.2 | 222.6 | 1.49 | 0.5 | 6335 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 87 | 40 - 60 |

Notes:

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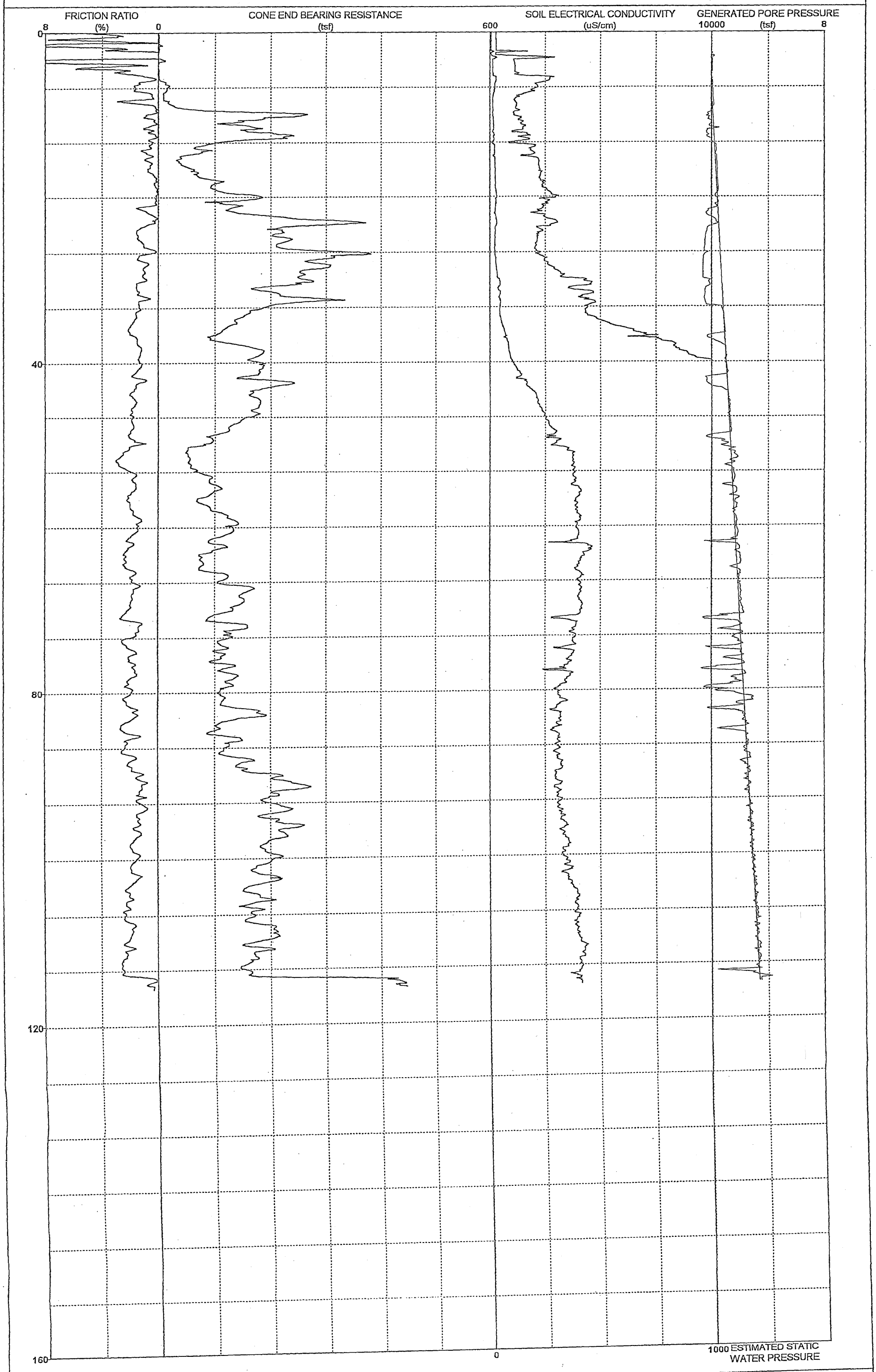
Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT. Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design. Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

STRATIGRAPHICS

R2DATE: 5-11-1999 TIME:08:18:37.47
SOUNDING NUMBER:cp-9907

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-11-1999 TIME:08:18:37.47
SOUNDING NUMBER:cp-9907

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 1.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 2.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 2.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 3.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 3.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 4.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 4.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 5.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 5.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 6.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 6.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 7.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 7.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 8.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 8.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 9.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 9.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 10.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 10.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 11.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 11.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 12.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 12.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 13.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 13.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 14.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 14.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 15.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 15.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 16.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 16.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 17.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 17.5 | Prepunched To 18.20' | | | | | | | | | | | | |
| 18.0 | Prepunched To 18.20' | | | | | | | | | | | | |
| 18.5 | 95.3 | 100.3 | 0.25 | 0.3 | 240 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 19 | 15 - 20 |
| 19.0 | 98.7 | 103.5 | 0.12 | 0.1 | 253 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 14 - 19 | 15 - 20 |
| 19.5 | 124.6 | 130.2 | 0.09 | 0.0 | 276 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 20.0 | 185.1 | 192.7 | 0.20 | 0.1 | 299 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 29 - 38 | 30 - 40 |
| 20.5 | 106.5 | 110.5 | 0.38 | 0.2 | 267 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 19 | 15 - 20 |
| 21.0 | 146.8 | 151.8 | 0.55 | 0.5 | 240 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 21.5 | 120.5 | 124.1 | 1.48 | 1.1 | 227 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 22.0 | 157.9 | 162.0 | 1.11 | 0.6 | 206 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 22.5 | 233.5 | 238.8 | 0.11 | 0.1 | 250 | Med dense, Sa gravel to gr sand | +46 | 40-60 | | | | 39 - 59 | 40 - 60 |
| 23.0 | 360.4 | 367.4 | 0.51 | 0.2 | 303 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 23.5 | 237.9 | 241.7 | 3.44 | 1.1 | 267 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 24.0 | 220.0 | 222.8 | 3.38 | 1.5 | 237 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 59 - 98 | 60 - 99 |
| 24.5 | 204.1 | 205.9 | 3.18 | 1.5 | 215 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 59 | 40 - 60 |
| 25.0 | 238.1 | 239.5 | 3.22 | 1.4 | 215 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 60 - 98 | 60 - 99 |

Notes:

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Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-11-1999 TIME:08:18:37.47
SOUNDING NUMBER:cp-9907

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 217.3 | 217.9 | 2.39 | 1.1 | 211 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 26.0 | 213.9 | 213.8 | 2.10 | 0.9 | 207 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 26.5 | 303.7 | 302.6 | 0.53 | 0.2 | 209 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 27.0 | 336.0 | 333.8 | 4.90 | 1.4 | 224 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 101 | + 100 |
| 27.5 | 290.7 | 287.9 | 4.39 | 1.4 | 251 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 61 - 100 | 60 - 99 |
| 28.0 | 284.5 | 280.9 | 2.06 | 0.7 | 263 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 28.5 | 303.5 | 298.7 | 3.27 | 1.1 | 286 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 61 - 101 | 60 - 99 |
| 29.0 | 251.7 | 247.1 | 2.53 | 0.9 | 312 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 29.5 | 254.5 | 249.1 | 2.87 | 1.1 | 334 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 61 - 101 | 60 - 99 |
| 30.0 | 270.4 | 263.8 | 2.28 | 0.9 | 436 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 30.5 | 248.0 | 241.3 | 4.02 | 1.5 | 458 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 62 - 102 | 60 - 99 |
| 31.0 | 165.5 | 160.6 | 3.12 | 1.6 | 359 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 31.5 | 208.0 | 201.2 | 3.00 | 1.4 | 465 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 32.0 | 231.7 | 223.5 | 2.19 | 0.8 | 414 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 32.5 | 309.0 | 297.3 | 3.97 | 1.4 | 429 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 104 | + 100 |
| 33.0 | 204.5 | 196.2 | 3.34 | 1.4 | 459 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 33.5 | 179.9 | 172.2 | 2.40 | 1.3 | 441 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 34.0 | 161.2 | 153.9 | 2.67 | 1.6 | 434 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 34.5 | 147.7 | 140.6 | 2.45 | 1.6 | 467 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 35.0 | 137.0 | 130.0 | 2.43 | 1.8 | 504 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 35.5 | 125.9 | 119.2 | 2.67 | 2.0 | 554 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 36.0 | 114.2 | 107.8 | 2.57 | 2.1 | 634 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 64 | 40 - 60 |
| 36.5 | 104.9 | 98.8 | 2.20 | 2.0 | 683 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 42 | 30 - 40 |
| 37.0 | 92.7 | 87.0 | 1.50 | 1.5 | 649 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 37.5 | 116.5 | 109.2 | 2.08 | 1.5 | 785 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 38.0 | 158.4 | 148.1 | 2.19 | 1.3 | 836 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 38.5 | 186.1 | 173.5 | 2.30 | 1.2 | 854 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 39.0 | 181.6 | 169.0 | 2.36 | 1.3 | 893 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 39.5 | 162.7 | 151.0 | 2.47 | 1.4 | 931 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 40.0 | 185.3 | 171.6 | 2.21 | 1.2 | 1035 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 40.5 | 186.1 | 171.9 | 2.33 | 1.3 | 1141 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 41.0 | 180.2 | 166.0 | 2.83 | 1.6 | 1251 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 41.5 | 173.3 | 159.2 | 3.31 | 1.8 | 1414 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 44 - 65 | 40 - 60 |
| 42.0 | 170.7 | 156.5 | 1.90 | 0.9 | 1194 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 65 | 40 - 60 |
| 42.5 | 241.9 | 221.3 | 3.53 | 1.5 | 1673 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 66 - 108 | 60 - 99 |
| 43.0 | 196.8 | 179.6 | 3.41 | 1.6 | 1724 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 43.5 | 167.1 | 152.1 | 3.34 | 1.9 | 1952 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 44.0 | 161.8 | 147.0 | 3.24 | 1.9 | 2085 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 44.5 | 180.4 | 163.6 | 2.97 | 1.6 | 2146 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 45.0 | 181.4 | 164.1 | 2.96 | 1.6 | 2152 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 45.5 | 178.2 | 160.8 | 3.35 | 1.9 | 2275 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 46.0 | 170.9 | 153.9 | 3.17 | 1.8 | 2370 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 44 - 67 | 40 - 60 |
| 46.5 | 169.7 | 152.5 | 2.97 | 1.8 | 2473 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 47.0 | 146.8 | 131.6 | 3.00 | 1.9 | 2532 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 47.5 | 134.1 | 120.0 | 2.53 | 1.8 | 2661 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 48.0 | 124.8 | 111.4 | 2.27 | 1.8 | 2780 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 48.5 | 117.4 | 104.5 | 2.45 | 2.0 | 3021 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 49.0 | 88.3 | 78.5 | 2.14 | 2.1 | 2637 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 49.5 | 97.4 | 86.4 | 1.59 | 1.7 | 3187 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 50.0 | 82.3 | 72.9 | 1.41 | 1.5 | 2940 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 23 - 34 | 20 - 30 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-11-1999 TIME:08:18:37.47
SOUNDING NUMBER:cp-9907

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 52.7 | 46.5 | 1.26 | 2.1 | 3520 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 51.0 | 49.9 | 44.0 | 1.31 | 2.5 | 3794 | V stiff, Sandy silt to sandy clay | | | 25 | 3.75 | 2.62 | 17 - 23 | 15 - 20 |
| 51.5 | 54.3 | 47.7 | 1.49 | 2.7 | 3771 | Hard, Sandy silt to sandy clay | | | 25 | 4.09 | 2.97 | 17 - 23 | 15 - 20 |
| 52.0 | 53.7 | 47.1 | 1.66 | 3.0 | 3756 | Hard, Sandy silt to sandy clay | | | 25 | 4.04 | 3.31 | 23 - 34 | 20 - 30 |
| 52.5 | 57.9 | 50.7 | 1.66 | 2.8 | 3776 | Hard, Sandy silt to sandy clay | | | 25 | 4.38 | 3.32 | 23 - 34 | 20 - 30 |
| 53.0 | 66.7 | 58.3 | 1.63 | 2.3 | 3840 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 53.5 | 78.3 | 68.3 | 1.40 | 1.6 | 3843 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 54.0 | 95.1 | 82.8 | 1.62 | 1.8 | 3808 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 34 | 20 - 30 |
| 54.5 | 90.6 | 78.7 | 1.68 | 1.7 | 3841 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 55.0 | 106.7 | 92.6 | 1.75 | 1.6 | 3700 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 55.5 | 104.7 | 90.6 | 1.85 | 1.7 | 4079 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 56.0 | 92.2 | 79.7 | 1.96 | 2.0 | 4033 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 56.5 | 71.8 | 61.9 | 1.83 | 2.2 | 3984 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 57.0 | 73.3 | 63.1 | 1.65 | 2.0 | 3842 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 57.5 | 90.6 | 77.8 | 1.87 | 2.0 | 3866 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 58.0 | 98.7 | 84.6 | 1.97 | 1.8 | 3878 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 58.5 | 122.7 | 105.0 | 2.13 | 1.7 | 3992 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 59.0 | 130.4 | 111.4 | 1.62 | 1.2 | 4089 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 59.5 | 142.7 | 121.7 | 2.10 | 1.5 | 3866 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 60.0 | 132.9 | 113.0 | 2.01 | 1.5 | 3933 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 60.5 | 132.1 | 112.2 | 2.09 | 1.6 | 4002 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 61.0 | 114.0 | 96.6 | 2.41 | 2.0 | 4017 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 61.5 | 89.8 | 76.0 | 2.26 | 2.2 | 3966 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 24 - 35 | 20 - 30 |
| 62.0 | 111.0 | 93.7 | 2.02 | 1.7 | 3017 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 62.5 | 106.9 | 90.1 | 2.50 | 2.1 | 4615 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 47 | 30 - 40 |
| 63.0 | 87.5 | 73.7 | 2.31 | 2.4 | 4491 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 63.5 | 76.9 | 64.6 | 1.78 | 2.3 | 4284 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 64.0 | 76.2 | 63.9 | 1.79 | 2.3 | 4100 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 64.5 | 78.7 | 65.9 | 1.90 | 2.4 | 4029 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 65.0 | 72.9 | 60.9 | 1.73 | 1.9 | 3973 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 65.5 | 115.0 | 96.0 | 1.94 | 1.6 | 4007 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 66.0 | 123.7 | 103.0 | 2.44 | 2.0 | 4214 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 66.5 | 106.6 | 88.6 | 2.24 | 1.9 | 3984 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 67.0 | 137.9 | 114.4 | 1.99 | 1.3 | 4121 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 48 | 30 - 40 |
| 67.5 | 168.3 | 139.4 | 2.88 | 1.8 | 4138 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 68.0 | 149.9 | 123.9 | 2.91 | 1.8 | 4134 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 73 | 40 - 60 |
| 68.5 | 148.4 | 122.5 | 2.75 | 1.8 | 4021 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 73 | 40 - 60 |
| 69.0 | 151.4 | 124.7 | 2.95 | 1.9 | 4042 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 69.5 | 136.0 | 111.9 | 2.72 | 1.9 | 4190 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 70.0 | 132.7 | 109.0 | 2.94 | 2.2 | 4138 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 70.5 | 102.2 | 83.8 | 2.90 | 2.5 | 4101 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 71.0 | 88.0 | 72.1 | 2.58 | 2.6 | 3433 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 24 - 37 | 20 - 30 |
| 71.5 | 122.2 | 99.9 | 1.64 | 1.1 | 3628 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 37 | 20 - 30 |
| 72.0 | 158.6 | 129.4 | 2.20 | 1.4 | 3897 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 72.5 | 118.8 | 96.8 | 1.98 | 1.4 | 3727 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 73.0 | 117.9 | 95.8 | 1.97 | 1.6 | 3653 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 37 | 20 - 30 |
| 73.5 | 117.2 | 95.2 | 3.20 | 2.5 | 3862 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 49 - 74 | 40 - 60 |
| 74.0 | 108.1 | 87.6 | 2.72 | 2.4 | 3754 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 74.5 | 124.3 | 100.6 | 2.48 | 2.1 | 3793 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 75.0 | 101.9 | 82.3 | 1.75 | 1.6 | 3504 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 25 - 37 | 20 - 30 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-11-1999 TIME:08:18:37.47
SOUNDING NUMBER:cp-9907

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 112.8 | 91.0 | 2.38 | 2.1 | 3743 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 76.0 | 101.2 | 81.5 | 2.24 | 2.1 | 3582 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 37 | 20 - 30 |
| 76.5 | 124.8 | 100.3 | 2.06 | 1.6 | 3688 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 77.0 | 119.6 | 96.0 | 2.23 | 1.7 | 3377 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 77.5 | 119.5 | 95.7 | 2.20 | 1.6 | 2449 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 37 | 20 - 30 |
| 78.0 | 140.6 | 112.5 | 2.35 | 1.7 | 3665 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 78.5 | 123.4 | 98.6 | 2.93 | 2.2 | 3499 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 79.0 | 131.9 | 105.2 | 2.87 | 2.3 | 3448 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 79.5 | 114.2 | 91.0 | 2.30 | 1.9 | 3155 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 38 | 20 - 30 |
| 80.0 | 105.3 | 83.7 | 2.13 | 1.9 | 3079 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 38 | 20 - 30 |
| 80.5 | 118.4 | 94.0 | 2.82 | 2.4 | 3088 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 81.0 | 113.5 | 90.0 | 2.62 | 2.3 | 3223 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 81.5 | 113.1 | 89.5 | 2.77 | 2.1 | 3261 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 82.0 | 158.5 | 125.3 | 2.46 | 1.5 | 3032 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 82.5 | 176.8 | 139.5 | 2.82 | 1.6 | 2805 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 83.0 | 167.6 | 132.0 | 3.10 | 1.7 | 3210 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 83.5 | 118.4 | 93.2 | 3.06 | 2.2 | 3139 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 84.0 | 101.7 | 79.9 | 2.83 | 2.6 | 3015 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 84.5 | 103.1 | 80.9 | 2.64 | 2.5 | 2999 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 85.0 | 90.5 | 70.9 | 1.94 | 1.6 | 2866 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 26 - 38 | 20 - 30 |
| 85.5 | 146.3 | 114.4 | 2.71 | 1.9 | 3150 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 86.0 | 125.9 | 98.4 | 3.08 | 2.1 | 3067 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 86.5 | 123.1 | 96.0 | 2.87 | 2.3 | 3008 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 87.0 | 114.8 | 89.4 | 3.07 | 2.6 | 3170 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 51 - 77 | 40 - 60 |
| 87.5 | 116.3 | 90.4 | 2.47 | 1.8 | 2947 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 26 - 39 | 20 - 30 |
| 88.0 | 166.3 | 129.1 | 2.78 | 1.7 | 3039 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 88.5 | 145.5 | 112.8 | 3.45 | 2.2 | 3233 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 89.0 | 147.9 | 114.5 | 2.86 | 1.9 | 3232 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 89.5 | 156.4 | 120.9 | 2.61 | 1.4 | 3254 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 90.0 | 222.4 | 171.6 | 3.15 | 1.5 | 3028 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 90.5 | 210.8 | 162.5 | 2.70 | 1.1 | 2962 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 91.0 | 245.4 | 188.9 | 2.99 | 1.1 | 3122 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 91.5 | 267.5 | 205.6 | 3.03 | 1.1 | 3112 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 92.0 | 201.4 | 154.6 | 2.97 | 1.3 | 3102 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 92.5 | 208.7 | 160.0 | 1.44 | 0.8 | 3039 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 52 - 78 | 40 - 60 |
| 93.0 | 184.0 | 140.9 | 3.01 | 1.5 | 3062 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 93.5 | 213.1 | 162.9 | 2.20 | 1.0 | 3149 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 94.0 | 238.0 | 181.7 | 1.90 | 0.8 | 3174 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 52 - 79 | 40 - 60 |
| 94.5 | 215.7 | 164.4 | 3.38 | 1.5 | 3264 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 79 | 40 - 60 |
| 95.0 | 179.8 | 136.9 | 2.62 | 1.3 | 3234 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 95.5 | 210.7 | 160.1 | 3.06 | 1.4 | 3227 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 96.0 | 258.6 | 196.3 | 3.59 | 1.5 | 3381 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 96.5 | 220.8 | 167.4 | 3.58 | 1.5 | 3487 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 97.0 | 225.7 | 170.9 | 2.72 | 1.2 | 3217 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 97.5 | 224.6 | 169.8 | 3.64 | 1.6 | 3295 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 98.0 | 196.1 | 148.0 | 3.81 | 1.9 | 3542 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 98.5 | 181.4 | 136.8 | 3.64 | 1.9 | 3583 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 99.0 | 190.7 | 143.6 | 3.48 | 1.8 | 3572 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 99.5 | 209.2 | 157.3 | 2.67 | 1.3 | 3405 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 100.0 | 207.1 | 155.6 | 3.29 | 1.5 | 3307 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
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Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-11-1999 TIME:08:18:37.47
SOUNDING NUMBER:cp-9907

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.5 | 197.4 | 148.0 | 3.72 | 1.8 | 3496 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 101.0 | 174.3 | 130.6 | 3.52 | 1.9 | 3592 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 101.5 | 168.7 | 126.2 | 3.32 | 1.8 | 3756 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 102.0 | 197.2 | 147.3 | 2.39 | 1.2 | 3344 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 102.5 | 218.9 | 163.3 | 3.25 | 1.5 | 3551 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 103.0 | 183.2 | 136.5 | 3.87 | 1.9 | 3545 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 103.5 | 154.9 | 115.3 | 3.79 | 2.3 | 3659 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 104.0 | 160.2 | 119.0 | 3.44 | 2.0 | 3819 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 104.5 | 180.9 | 134.2 | 3.61 | 1.9 | 3950 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 105.0 | 201.6 | 149.4 | 4.34 | 2.2 | 4032 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 81 - 134 | 60 - 99 |
| 105.5 | 156.6 | 115.9 | 3.69 | 2.2 | 3965 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 106.0 | 185.3 | 137.0 | 4.10 | 2.3 | 3930 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 106.5 | 166.3 | 122.8 | 3.90 | 2.3 | 3951 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 107.0 | 164.4 | 121.2 | 4.06 | 2.4 | 3939 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 54 - 81 | 40 - 60 |
| 107.5 | 159.7 | 117.6 | 3.17 | 1.8 | 4014 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 108.0 | 206.7 | 152.0 | 3.59 | 1.7 | 3852 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 108.5 | 207.8 | 152.6 | 3.58 | 1.7 | 3883 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 109.0 | 211.7 | 155.3 | 4.02 | 1.9 | 3958 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 109.5 | 205.5 | 150.6 | 4.33 | 2.0 | 3970 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 110.0 | 164.8 | 120.6 | 4.48 | 2.4 | 4089 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 110.5 | 172.1 | 125.8 | 3.03 | 1.6 | 4116 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 111.0 | 187.2 | 136.6 | 4.38 | 2.3 | 4337 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 111.5 | 172.1 | 125.5 | 3.89 | 2.2 | 4294 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 112.0 | 177.0 | 128.9 | 4.30 | 2.5 | 4255 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 112.5 | 162.8 | 118.4 | 4.22 | 2.5 | 4060 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 82 | 40 - 60 |
| 113.0 | 146.6 | 106.5 | 3.95 | 2.5 | 4113 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 55 - 83 | 40 - 60 |
| 113.5 | 163.6 | 118.7 | 4.01 | 2.4 | 4183 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 83 | 40 - 60 |
| 114.0 | 161.5 | 117.0 | 3.68 | 1.7 | 4072 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 55 | 30 - 40 |
| 114.5 | 349.5 | 253.0 | 0.44 | 0.1 | 3778 | Med dense, Sa gravel to gr sand | +46 | 40-60 | | | | 55 - 83 | 40 - 60 |
| 115.0 | 436.0 | 315.1 | 3.27 | 0.7 | 4058 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 83 - 137 | 60 - 99 |
| 115.5 | 433.4 | 312.9 | 1.97 | 0.3 | 4152 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 55 - 83 | 40 - 60 |

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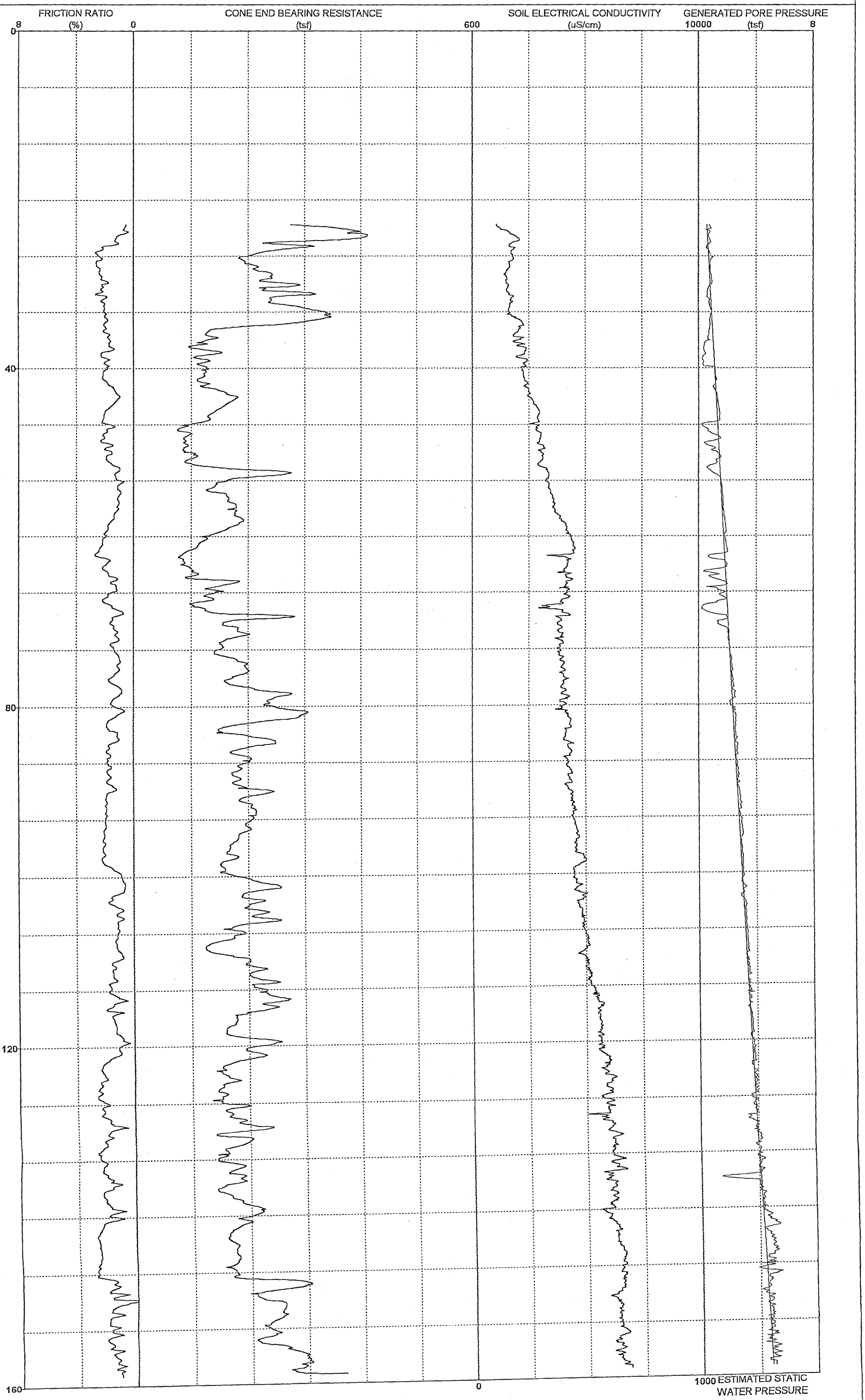
# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-50

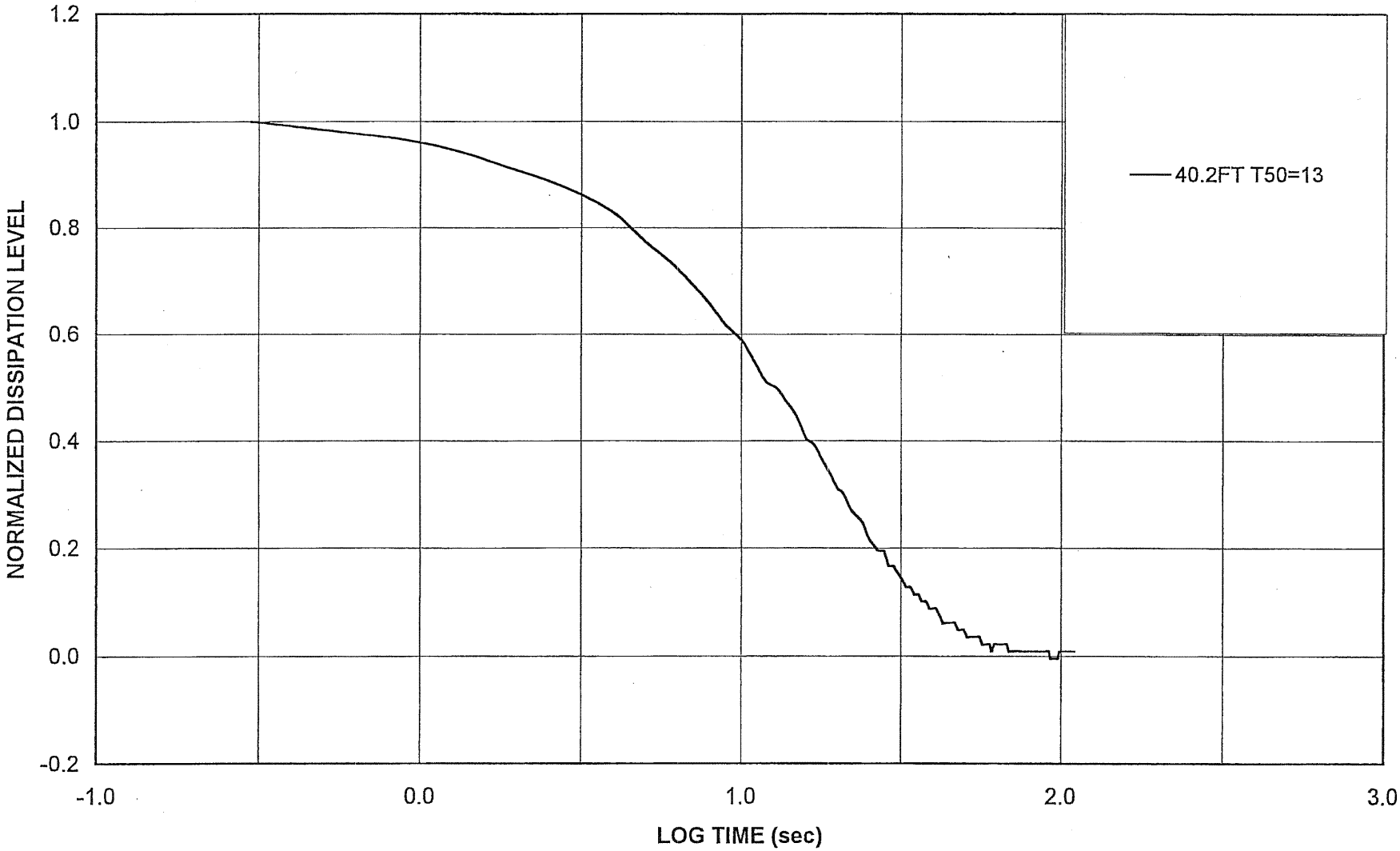
***STRATIGRAPHICS***

DATE: 05/08/99
SOUNDING NUMBER:cp-9908

*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

**Stratford Army Engine Plant cp-9908**



*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-50
DATE: 05/08/99
SOUNDING NUMBER:cp-9908

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 1.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 2.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 2.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 3.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 3.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 4.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 4.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 5.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 5.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 6.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 6.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 7.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 7.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 8.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 8.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 9.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 9.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 10.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 10.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 11.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 11.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 12.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 12.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 13.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 13.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 14.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 14.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 15.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 15.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 16.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 16.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 17.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 17.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 18.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 18.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 19.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 19.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 20.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 20.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 21.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 21.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 22.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 22.5 | Prepunched To 23.00' | | | | | | | | | | | | |
| 23.0 | Prepunched To 23.00' | | | | | | | | | | | | |
| 23.5 | 380.3 | 395.0 | 2.74 | 0.8 | 1277 | V dense, Sand to silty sand | +46 | 80-100 | | | | 58 - 95 | 60 - 99 |
| 24.0 | 404.8 | 419.0 | 3.02 | 0.7 | 1690 | V dense, Sa gravel to gr sand | +46 | 80-100 | | | | + 97 | + 100 |
| 24.5 | 398.9 | 411.4 | 4.95 | 1.2 | 2029 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 97 | + 100 |
| 25.0 | 254.1 | 261.2 | 3.91 | 1.2 | 1877 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 58 - 96 | 60 - 99 |

Notes:

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Structure rate of loading should be considered in choosing which strength parameters to use for design.
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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-50
DATE: 05/08/99
SOUNDING NUMBER:cp-9908

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 315.8 | 323.5 | 6.13 | 2.1 | 1638 | V dense, Gr si sand to cl gr sand | 40-42 | +100 | | | | + 98 | + 100 |
| 26.0 | 246.7 | 251.8 | 6.53 | 2.3 | 1748 | V dense, Gr si sand to cl gr sand | 40-42 | +100 | | | | + 98 | + 100 |
| 26.5 | 208.7 | 212.3 | 5.61 | 2.5 | 1778 | V dense, Gr si sand to cl gr sand | 37-40 | +100 | | | | + 98 | + 100 |
| 27.0 | 186.7 | 189.3 | 4.17 | 2.2 | 1819 | V dense, Gr si sand to cl gr sand | 40-42 | 80-100 | | | | 59 - 98 | 60 - 99 |
| 27.5 | 195.4 | 197.5 | 5.43 | 2.6 | 1628 | V dense, Gr si sand to cl gr sand | 37-40 | +100 | | | | + 99 | + 100 |
| 28.0 | 216.9 | 218.5 | 5.26 | 2.4 | 1651 | V dense, Gr si sand to cl gr sand | 37-40 | +100 | | | | + 99 | + 100 |
| 28.5 | 226.8 | 227.7 | 5.75 | 2.4 | 1507 | V dense, Gr si sand to cl gr sand | 37-40 | +100 | | | | + 100 | + 100 |
| 29.0 | 240.1 | 240.4 | 5.26 | 2.2 | 1503 | V dense, Gr si sand to cl gr sand | 40-42 | 80-100 | | | | + 100 | + 100 |
| 29.5 | 223.9 | 223.4 | 5.20 | 2.1 | 1522 | V dense, Gr si sand to cl gr sand | 40-42 | 80-100 | | | | + 100 | + 100 |
| 30.0 | 284.0 | 282.5 | 5.71 | 2.1 | 1554 | V dense, Gr si sand to cl gr sand | 40-42 | +100 | | | | + 101 | + 100 |
| 30.5 | 226.7 | 224.7 | 6.03 | 2.2 | 1552 | V dense, Gr si sand to cl gr sand | 40-42 | 80-100 | | | | + 101 | + 100 |
| 31.0 | 293.8 | 290.4 | 6.65 | 2.3 | 1591 | V dense, Gr si sand to cl gr sand | 40-42 | +100 | | | | + 101 | + 100 |
| 31.5 | 248.7 | 245.1 | 5.29 | 1.9 | 1837 | V dense, Sa gravel to si gr sand | 40-42 | 80-100 | | | | + 101 | + 100 |
| 32.0 | 240.5 | 236.4 | 5.62 | 2.3 | 1717 | V dense, Gr si sand to cl gr sand | 40-42 | +100 | | | | + 102 | + 100 |
| 32.5 | 269.6 | 264.2 | 6.00 | 2.1 | 1649 | V dense, Gr si sand to cl gr sand | 40-42 | 80-100 | | | | + 102 | + 100 |
| 33.0 | 310.5 | 303.3 | 6.64 | 2.0 | 1624 | V dense, Gr si sand to cl gr sand | 40-42 | +100 | | | | + 102 | + 100 |
| 33.5 | 342.6 | 333.7 | 6.49 | 1.9 | 1619 | V dense, Sa gravel to si gr sand | 40-42 | +100 | | | | + 103 | + 100 |
| 34.0 | 341.3 | 331.5 | 6.75 | 2.0 | 1887 | V dense, Sa gravel to si gr sand | 40-42 | +100 | | | | + 103 | + 100 |
| 34.5 | 298.8 | 289.5 | 6.08 | 1.9 | 2178 | V dense, Sa gravel to si gr sand | 40-42 | 80-100 | | | | + 103 | + 100 |
| 35.0 | 200.0 | 193.1 | 5.14 | 2.0 | 2156 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 62 - 102 | 60 - 99 |
| 35.5 | 132.4 | 127.5 | 3.30 | 2.1 | 2036 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 62 | 40 - 60 |
| 36.0 | 126.0 | 121.0 | 2.28 | 1.7 | 1843 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 62 | 40 - 60 |
| 36.5 | 137.5 | 131.7 | 2.34 | 1.7 | 2131 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 37.0 | 122.3 | 116.9 | 2.15 | 1.7 | 2082 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 37.5 | 96.5 | 92.0 | 1.83 | 1.5 | 2282 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 38.0 | 150.2 | 142.7 | 2.63 | 1.9 | 2332 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 38.5 | 117.0 | 110.9 | 3.17 | 2.3 | 2123 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 39.0 | 129.2 | 122.2 | 2.07 | 1.7 | 2435 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 39.5 | 111.2 | 104.8 | 2.43 | 2.0 | 2278 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 42 | 30 - 40 |
| 40.0 | 128.3 | 120.6 | 2.18 | 1.9 | 2184 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 40.5 | 125.3 | 117.6 | 2.68 | 2.1 | 2266 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 41.0 | 122.8 | 114.9 | 2.68 | 2.2 | 2249 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 41.5 | 111.1 | 103.7 | 2.35 | 2.0 | 2324 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 42.0 | 124.9 | 116.3 | 2.18 | 1.7 | 2387 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 42.5 | 144.6 | 134.3 | 2.06 | 1.3 | 2497 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 43.0 | 162.4 | 150.5 | 2.06 | 1.2 | 2549 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 43.5 | 180.3 | 166.6 | 1.80 | 1.0 | 2567 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 44.0 | 168.0 | 154.9 | 2.26 | 1.3 | 2699 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 44.5 | 156.9 | 144.4 | 2.59 | 1.6 | 2823 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 45.0 | 144.0 | 132.1 | 2.94 | 2.0 | 2951 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 44 - 65 | 40 - 60 |
| 45.5 | 131.7 | 120.6 | 2.86 | 2.1 | 2921 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 46.0 | 133.9 | 122.3 | 2.80 | 2.1 | 2904 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 46.5 | 106.2 | 96.8 | 2.61 | 2.0 | 2682 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 47.0 | 84.5 | 76.8 | 1.34 | 1.5 | 2822 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 47.5 | 86.2 | 78.2 | 1.71 | 1.8 | 2896 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 48.0 | 93.6 | 84.7 | 2.03 | 2.1 | 3021 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 48.5 | 88.7 | 80.1 | 2.01 | 2.2 | 2986 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 49.0 | 91.3 | 82.3 | 1.45 | 1.6 | 2908 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 49.5 | 86.9 | 78.1 | 1.82 | 2.0 | 3185 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 50.0 | 95.6 | 85.8 | 1.66 | 1.5 | 3057 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |

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PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-50
DATE: 05/08/99
SOUNDING NUMBER:cp-9908

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 109.7 | 98.2 | 2.01 | 1.9 | 3120 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 51.0 | 89.7 | 80.1 | 1.80 | 1.8 | 3029 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 34 | 20 - 30 |
| 51.5 | 109.4 | 97.6 | 2.03 | 1.4 | 2919 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 34 | 20 - 30 |
| 52.0 | 193.2 | 171.9 | 2.40 | 1.0 | 3305 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 52.5 | 271.0 | 240.6 | 3.24 | 1.3 | 3393 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 68 - 112 | 60 - 99 |
| 53.0 | 187.7 | 166.3 | 2.88 | 1.2 | 3380 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 45 - 68 | 40 - 60 |
| 53.5 | 152.2 | 134.5 | 1.14 | 0.7 | 3329 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 54.0 | 142.0 | 125.2 | 1.63 | 1.1 | 3405 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 54.5 | 127.2 | 112.0 | 1.43 | 1.0 | 3461 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 55.0 | 162.3 | 142.5 | 1.61 | 1.0 | 3517 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 46 | 30 - 40 |
| 55.5 | 166.3 | 145.8 | 1.86 | 1.1 | 3576 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 68 | 40 - 60 |
| 56.0 | 173.2 | 151.5 | 1.80 | 1.0 | 3606 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 56.5 | 179.1 | 156.4 | 2.19 | 1.1 | 3562 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 57.0 | 178.4 | 155.5 | 2.14 | 1.2 | 3684 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 57.5 | 177.0 | 153.9 | 2.57 | 1.4 | 3842 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 58.0 | 191.6 | 166.3 | 2.77 | 1.5 | 3946 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 58.5 | 183.8 | 159.2 | 3.24 | 1.7 | 4113 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 59.0 | 165.7 | 143.2 | 3.12 | 1.8 | 4204 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 59.5 | 149.3 | 128.8 | 3.10 | 2.0 | 4254 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 46 - 70 | 40 - 60 |
| 60.0 | 119.5 | 102.9 | 2.61 | 1.9 | 4366 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 46 | 30 - 40 |
| 60.5 | 121.7 | 104.6 | 2.73 | 2.2 | 4420 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 61.0 | 112.3 | 96.3 | 2.54 | 2.2 | 4469 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 61.5 | 102.7 | 87.9 | 2.61 | 2.4 | 4562 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 62.0 | 86.9 | 74.2 | 2.43 | 2.6 | 4515 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 62.5 | 80.5 | 68.7 | 1.83 | 2.1 | 4070 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 63.0 | 88.2 | 75.1 | 1.62 | 1.8 | 4246 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 63.5 | 94.8 | 80.6 | 2.08 | 2.1 | 4229 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 24 - 35 | 20 - 30 |
| 64.0 | 103.9 | 88.1 | 2.13 | 2.0 | 4060 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 64.5 | 112.4 | 95.2 | 1.84 | 1.7 | 4313 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 65.0 | 105.2 | 88.9 | 1.80 | 1.1 | 4252 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 65.5 | 176.9 | 149.3 | 2.72 | 1.6 | 4155 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 66.0 | 141.9 | 119.5 | 1.94 | 1.2 | 4102 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 47 | 30 - 40 |
| 66.5 | 151.5 | 127.4 | 1.81 | 1.3 | 4235 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 67.0 | 123.5 | 103.7 | 2.45 | 1.8 | 4109 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 67.5 | 139.0 | 116.4 | 2.93 | 2.2 | 4095 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 68.0 | 98.7 | 82.5 | 2.04 | 1.7 | 4030 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 68.5 | 123.1 | 102.7 | 1.77 | 1.4 | 3432 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 69.0 | 139.1 | 115.9 | 1.57 | 0.8 | 3976 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 69.5 | 280.5 | 233.3 | 3.34 | 1.4 | 4078 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 72 - 119 | 60 - 99 |
| 70.0 | 164.8 | 136.8 | 3.41 | 1.6 | 3951 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 70.5 | 162.6 | 134.7 | 2.41 | 1.4 | 3814 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 71.0 | 181.2 | 149.9 | 2.45 | 1.3 | 3887 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 73 | 40 - 60 |
| 71.5 | 202.5 | 167.3 | 2.49 | 1.3 | 4033 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 73 | 40 - 60 |
| 72.0 | 168.7 | 139.1 | 1.89 | 1.0 | 4010 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 49 | 30 - 40 |
| 72.5 | 149.9 | 123.4 | 2.40 | 1.5 | 4014 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 49 | 30 - 40 |
| 73.0 | 157.0 | 129.0 | 2.19 | 1.4 | 3897 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 73.5 | 141.2 | 115.8 | 1.97 | 1.3 | 3925 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 74.0 | 155.1 | 127.0 | 1.75 | 1.0 | 3855 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 74.5 | 180.7 | 147.8 | 1.79 | 1.0 | 3953 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 75.0 | 197.9 | 161.5 | 2.26 | 1.1 | 4075 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |

Notes:

* Indicates lightly overconsolidated soil
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-50
DATE: 05/08/99
SOUNDING NUMBER:cp-9908

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 198.0 | 161.4 | 1.90 | 1.0 | 3940 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 76.0 | 197.7 | 160.9 | 2.48 | 1.2 | 4092 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 76.5 | 172.7 | 140.3 | 2.87 | 1.6 | 4045 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 77.0 | 158.9 | 128.9 | 2.82 | 1.7 | 4142 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 77.5 | 175.8 | 142.3 | 2.26 | 1.1 | 4032 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 78.0 | 214.5 | 173.4 | 2.07 | 0.8 | 3968 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 78.5 | 277.0 | 223.6 | 2.49 | 1.0 | 3994 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 74 | 40 - 60 |
| 79.0 | 245.6 | 197.9 | 3.64 | 1.4 | 4300 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 74 | 40 - 60 |
| 79.5 | 237.1 | 190.7 | 3.95 | 1.6 | 3889 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 80.0 | 247.1 | 198.4 | 3.30 | 1.2 | 4066 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 80.5 | 293.1 | 235.1 | 1.97 | 0.7 | 3807 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 81.0 | 295.2 | 236.4 | 3.57 | 1.2 | 4219 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 75 - 124 | 60 - 99 |
| 81.5 | 261.7 | 209.2 | 4.83 | 1.7 | 4299 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 75 - 124 | 60 - 99 |
| 82.0 | 196.3 | 156.7 | 4.23 | 1.9 | 4331 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 82.5 | 154.6 | 123.2 | 3.06 | 1.8 | 4369 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 83.0 | 153.0 | 121.7 | 2.02 | 1.1 | 4157 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 38 - 50 | 30 - 40 |
| 83.5 | 203.6 | 161.7 | 2.57 | 1.1 | 4125 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 84.0 | 246.6 | 195.6 | 2.77 | 1.1 | 4038 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 84.5 | 229.2 | 181.5 | 4.31 | 1.8 | 4454 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 85.0 | 184.9 | 146.2 | 3.65 | 1.8 | 4269 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 85.5 | 172.7 | 136.3 | 3.15 | 1.7 | 4414 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 86.0 | 203.5 | 160.4 | 3.51 | 1.8 | 4321 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 86.5 | 203.0 | 159.8 | 3.72 | 1.8 | 4232 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 87.0 | 182.5 | 143.5 | 2.99 | 1.6 | 4189 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 87.5 | 185.7 | 145.8 | 3.42 | 1.8 | 4316 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 88.0 | 171.9 | 134.7 | 3.10 | 1.7 | 4405 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 88.5 | 186.6 | 146.1 | 3.12 | 1.7 | 4275 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 89.0 | 173.0 | 135.2 | 3.28 | 1.8 | 4401 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 89.5 | 195.9 | 152.9 | 2.70 | 1.3 | 4159 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 90.0 | 245.1 | 191.0 | 3.69 | 1.6 | 4267 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 90.5 | 209.2 | 162.7 | 4.36 | 1.9 | 4398 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 91.0 | 185.1 | 143.8 | 3.80 | 2.0 | 4413 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 91.5 | 205.6 | 159.5 | 3.98 | 1.9 | 4492 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 92.0 | 209.0 | 161.9 | 4.03 | 1.9 | 4474 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 77 | 40 - 60 |
| 92.5 | 213.5 | 165.2 | 4.10 | 2.0 | 4555 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 52 - 78 | 40 - 60 |
| 93.0 | 209.0 | 161.4 | 4.10 | 1.9 | 4438 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 52 - 78 | 40 - 60 |
| 93.5 | 203.2 | 156.7 | 4.13 | 2.0 | 4474 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 52 - 78 | 40 - 60 |
| 94.0 | 195.4 | 150.5 | 3.90 | 1.9 | 4526 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 94.5 | 204.1 | 157.0 | 4.14 | 2.1 | 4590 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 52 - 78 | 40 - 60 |
| 95.0 | 185.5 | 142.5 | 4.01 | 2.1 | 4666 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 95.5 | 182.6 | 140.0 | 3.85 | 2.1 | 4683 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 52 - 78 | 40 - 60 |
| 96.0 | 173.9 | 133.2 | 3.47 | 2.0 | 4570 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 96.5 | 168.4 | 128.8 | 3.62 | 2.1 | 4605 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 97.0 | 165.5 | 126.4 | 3.59 | 2.1 | 4543 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 79 | 40 - 60 |
| 97.5 | 176.2 | 134.4 | 3.59 | 2.0 | 4621 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 79 | 40 - 60 |
| 98.0 | 171.9 | 130.9 | 3.95 | 2.2 | 4937 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 53 - 79 | 40 - 60 |
| 98.5 | 151.2 | 115.0 | 3.15 | 2.0 | 5013 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 99.0 | 158.5 | 120.4 | 2.29 | 1.5 | 4690 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 53 | 30 - 40 |
| 99.5 | 153.0 | 116.1 | 1.64 | 1.0 | 4478 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 40 | 20 - 30 |
| 100.0 | 184.2 | 139.5 | 1.69 | 0.8 | 4486 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 40 - 53 | 30 - 40 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-50
DATE: 05/08/99
SOUNDING NUMBER:cp-9908

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.5 | 210.9 | 159.5 | 1.64 | 0.7 | 4482 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 40 - 53 | 30 - 40 |
| 101.0 | 249.0 | 188.1 | 1.52 | 0.6 | 4584 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 53 - 79 | 40 - 60 |
| 101.5 | 238.1 | 179.7 | 1.69 | 0.7 | 4702 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 53 - 80 | 40 - 60 |
| 102.0 | 191.5 | 144.3 | 2.54 | 1.2 | 4562 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 102.5 | 194.1 | 146.1 | 3.16 | 1.5 | 4920 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 103.0 | 219.1 | 164.6 | 3.66 | 1.7 | 4879 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 103.5 | 197.6 | 148.3 | 2.18 | 1.1 | 4658 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 104.0 | 226.8 | 169.9 | 1.98 | 0.9 | 4738 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 104.5 | 211.3 | 158.2 | 2.56 | 1.1 | 4845 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 105.0 | 251.4 | 187.9 | 2.22 | 0.9 | 4938 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 105.5 | 202.9 | 151.5 | 2.58 | 1.1 | 4912 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 106.0 | 171.1 | 127.5 | 1.93 | 1.1 | 4881 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 40 - 54 | 30 - 40 |
| 106.5 | 192.1 | 143.0 | 2.06 | 1.1 | 4912 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 54 | 30 - 40 |
| 107.0 | 174.4 | 129.7 | 2.10 | 1.1 | 4982 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 54 | 30 - 40 |
| 107.5 | 154.0 | 114.3 | 2.23 | 1.3 | 5098 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 54 | 30 - 40 |
| 108.0 | 129.8 | 96.2 | 1.68 | 1.2 | 5069 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 108.5 | 125.7 | 93.1 | 1.47 | 1.1 | 5170 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 109.0 | 145.7 | 107.8 | 1.40 | 0.9 | 4942 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 109.5 | 189.9 | 140.3 | 1.63 | 0.8 | 4678 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 41 - 54 | 30 - 40 |
| 110.0 | 202.8 | 149.6 | 3.06 | 1.5 | 5050 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 110.5 | 202.1 | 148.9 | 2.81 | 1.3 | 5083 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 111.0 | 225.6 | 166.0 | 3.33 | 1.5 | 4998 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 111.5 | 201.1 | 147.8 | 3.05 | 1.5 | 5112 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 112.0 | 215.3 | 158.1 | 2.90 | 1.2 | 5228 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 112.5 | 250.8 | 183.9 | 4.16 | 1.7 | 5145 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 82 - 135 | 60 - 99 |
| 113.0 | 209.5 | 153.4 | 3.53 | 1.6 | 5188 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 113.5 | 231.2 | 169.1 | 3.96 | 1.7 | 5349 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 114.0 | 236.7 | 172.9 | 3.01 | 1.2 | 5409 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 114.5 | 271.6 | 198.1 | 1.33 | 0.5 | 5513 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 55 - 82 | 40 - 60 |
| 115.0 | 226.3 | 164.9 | 3.69 | 1.5 | 5485 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 115.5 | 249.1 | 181.3 | 4.54 | 1.9 | 5763 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 82 - 136 | 60 - 99 |
| 116.0 | 196.8 | 143.1 | 2.42 | 1.1 | 5577 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 55 | 30 - 40 |
| 116.5 | 177.7 | 129.0 | 2.84 | 1.5 | 5560 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 83 | 40 - 60 |
| 117.0 | 179.0 | 129.8 | 2.50 | 1.4 | 5600 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 55 | 30 - 40 |
| 117.5 | 173.9 | 125.9 | 2.26 | 1.3 | 5632 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 55 | 30 - 40 |
| 118.0 | 160.6 | 116.1 | 2.07 | 1.3 | 5632 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 118.5 | 159.5 | 115.2 | 1.96 | 1.1 | 5686 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 55 | 30 - 40 |
| 119.0 | 191.0 | 137.8 | 1.76 | 0.8 | 5582 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 55 | 30 - 40 |
| 119.5 | 256.4 | 184.8 | 0.82 | 0.4 | 5630 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 120.0 | 223.0 | 160.5 | 2.57 | 1.1 | 5598 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 120.5 | 194.4 | 139.8 | 2.11 | 1.0 | 5719 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 121.0 | 226.9 | 162.9 | 2.47 | 1.1 | 5541 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 121.5 | 205.0 | 147.0 | 3.84 | 1.7 | 5814 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 122.0 | 170.5 | 122.2 | 3.95 | 2.1 | 5988 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 122.5 | 152.5 | 109.1 | 3.59 | 2.3 | 5963 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 123.0 | 151.8 | 108.5 | 3.47 | 2.2 | 5879 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 123.5 | 163.5 | 116.7 | 3.48 | 2.0 | 5926 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 124.0 | 184.5 | 131.5 | 4.11 | 2.3 | 6157 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 56 - 84 | 40 - 60 |
| 124.5 | 153.1 | 109.0 | 3.73 | 2.3 | 6085 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 125.0 | 148.0 | 105.3 | 3.86 | 2.5 | 5872 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 56 - 84 | 40 - 60 |

Notes:

* Indicates lightly overconsolidated soil
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-50
DATE: 05/08/99
SOUNDING NUMBER:cp-9908

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125.5 | 159.9 | 113.6 | 3.77 | 2.4 | 6079 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 56 - 84 | 40 - 60 |
| 126.0 | 152.5 | 108.2 | 3.99 | 2.5 | 6130 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 56 - 85 | 40 - 60 |
| 126.5 | 151.3 | 107.2 | 3.42 | 1.9 | 5694 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 42 - 56 | 30 - 40 |
| 127.0 | 197.2 | 139.6 | 4.13 | 2.3 | 6189 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 57 - 85 | 40 - 60 |
| 127.5 | 158.6 | 112.2 | 3.64 | 2.1 | 6103 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 128.0 | 169.5 | 119.7 | 3.98 | 2.3 | 5946 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 57 - 85 | 40 - 60 |
| 128.5 | 185.8 | 131.1 | 3.17 | 1.7 | 5787 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 129.0 | 181.7 | 128.0 | 3.22 | 1.6 | 5738 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 129.5 | 234.0 | 164.7 | 2.27 | 1.0 | 6064 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 130.0 | 198.5 | 139.6 | 3.99 | 1.8 | 6157 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 57 - 85 | 40 - 60 |
| 130.5 | 140.5 | 98.7 | 3.16 | 1.8 | 5967 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 57 | 30 - 40 |
| 131.0 | 203.4 | 142.7 | 3.87 | 1.9 | 6423 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 131.5 | 192.1 | 134.6 | 3.92 | 2.0 | 6162 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 132.0 | 162.7 | 113.8 | 4.15 | 2.3 | 6214 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 57 - 86 | 40 - 60 |
| 132.5 | 160.7 | 112.3 | 4.44 | 2.6 | 6195 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 57 - 86 | 40 - 60 |
| 133.0 | 154.5 | 107.9 | 3.91 | 2.5 | 6147 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 57 - 86 | 40 - 60 |
| 133.5 | 148.7 | 103.7 | 3.47 | 2.1 | 6140 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 57 | 30 - 40 |
| 134.0 | 190.3 | 132.6 | 4.10 | 2.3 | 6449 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 57 - 86 | 40 - 60 |
| 134.5 | 170.3 | 118.5 | 4.22 | 2.3 | 6366 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 57 - 86 | 40 - 60 |
| 135.0 | 186.7 | 129.8 | 3.74 | 2.0 | 6673 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 58 - 86 | 40 - 60 |
| 135.5 | 183.9 | 127.7 | 2.88 | 1.6 | 5896 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 58 - 86 | 40 - 60 |
| 136.0 | 178.6 | 123.9 | 1.83 | 1.0 | 6015 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 43 - 58 | 30 - 40 |
| 136.5 | 150.5 | 104.3 | 2.58 | 1.6 | 6143 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 58 | 30 - 40 |
| 137.0 | 145.1 | 100.5 | 3.54 | 2.3 | 6246 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 137.5 | 165.9 | 114.7 | 3.84 | 2.3 | 6079 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 138.0 | 175.8 | 121.4 | 3.73 | 2.1 | 6295 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 138.5 | 185.9 | 128.3 | 3.77 | 1.9 | 6178 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 139.0 | 214.2 | 147.6 | 3.65 | 1.7 | 6089 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 139.5 | 221.6 | 152.6 | 3.21 | 1.5 | 6090 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 140.0 | 202.7 | 139.4 | 2.38 | 1.2 | 5611 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 58 | 30 - 40 |
| 140.5 | 191.4 | 131.5 | 3.85 | 2.0 | 5989 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 58 - 87 | 40 - 60 |
| 141.0 | 186.7 | 128.1 | 4.50 | 2.3 | 5903 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 58 - 87 | 40 - 60 |
| 141.5 | 173.2 | 118.7 | 4.41 | 2.5 | 6212 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 58 - 88 | 40 - 60 |
| 142.0 | 162.9 | 111.5 | 4.35 | 2.6 | 6324 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 58 - 88 | 40 - 60 |
| 142.5 | 159.7 | 109.2 | 4.34 | 2.7 | 6201 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 58 - 88 | 40 - 60 |
| 143.0 | 167.7 | 114.5 | 4.47 | 2.6 | 6294 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 59 - 88 | 40 - 60 |
| 143.5 | 177.9 | 121.4 | 4.54 | 2.6 | 6300 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 59 - 88 | 40 - 60 |
| 144.0 | 174.4 | 118.9 | 4.35 | 2.5 | 6347 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 59 - 88 | 40 - 60 |
| 144.5 | 175.7 | 119.7 | 4.37 | 2.5 | 6513 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 59 - 88 | 40 - 60 |
| 145.0 | 179.1 | 121.8 | 4.55 | 2.5 | 6625 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 59 - 88 | 40 - 60 |
| 145.5 | 174.2 | 118.4 | 4.66 | 2.6 | 6595 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 59 - 88 | 40 - 60 |
| 146.0 | 159.8 | 108.5 | 4.57 | 2.7 | 6499 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 59 - 88 | 40 - 60 |
| 146.5 | 171.8 | 116.5 | 4.75 | 2.7 | 6633 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 59 - 88 | 40 - 60 |
| 147.0 | 174.9 | 118.4 | 4.86 | 2.7 | 6531 | V dense, Silty sand to sandy silt | 36-37 | 80-100 | | | | 59 - 89 | 40 - 60 |
| 147.5 | 219.8 | 148.7 | 3.73 | 1.4 | 6641 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 59 - 89 | 40 - 60 |
| 148.0 | 302.6 | 204.6 | 3.48 | 1.3 | 6508 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 59 - 89 | 40 - 60 |
| 148.5 | 276.5 | 186.7 | 5.58 | 1.9 | 6563 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 89 - 147 | 60 - 99 |
| 149.0 | 217.5 | 146.7 | 1.81 | 0.8 | 6532 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 44 - 59 | 30 - 40 |
| 149.5 | 211.0 | 142.2 | 3.77 | 1.7 | 6414 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 59 - 89 | 40 - 60 |
| 150.0 | 235.7 | 158.6 | 1.36 | 0.6 | 6192 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 45 - 59 | 30 - 40 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT. Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design. Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-50
DATE: 05/08/99
SOUNDING NUMBER:cp-9908

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 150.5 | 259.2 | 174.3 | 4.04 | 1.5 | 6203 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 59 - 89 | 40 - 60 |
| 151.0 | 256.6 | 172.4 | 4.72 | 1.8 | 6373 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 60 - 89 | 40 - 60 |
| 151.5 | 259.2 | 173.9 | 3.59 | 1.4 | 6415 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 60 - 89 | 40 - 60 |
| 152.0 | 253.0 | 169.6 | 4.99 | 1.9 | 6401 | V dense, Silty sand to sandy silt | 40-42 | 80-100 | | | | 90 - 148 | 60 - 99 |
| 152.5 | 235.4 | 157.6 | 4.78 | 2.0 | 6377 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 60 - 90 | 40 - 60 |
| 153.0 | 222.4 | 148.8 | 3.44 | 1.5 | 6379 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 60 - 90 | 40 - 60 |
| 153.5 | 237.3 | 158.6 | 4.33 | 1.8 | 6450 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 60 - 90 | 40 - 60 |
| 154.0 | 242.1 | 161.7 | 3.80 | 1.5 | 6477 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 60 - 90 | 40 - 60 |
| 154.5 | 215.6 | 143.8 | 4.85 | 2.1 | 6741 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 60 - 90 | 40 - 60 |
| 155.0 | 215.3 | 143.4 | 4.04 | 1.7 | 6321 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 60 - 90 | 40 - 60 |
| 155.5 | 263.8 | 175.6 | 5.52 | 1.7 | 6137 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 60 - 90 | 40 - 60 |
| 156.0 | 278.5 | 185.2 | 4.82 | 1.6 | 6376 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 60 - 90 | 40 - 60 |
| 156.5 | 298.4 | 198.2 | 4.39 | 1.5 | 6421 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 60 - 90 | 40 - 60 |
| 157.0 | 302.2 | 200.5 | 4.32 | 1.4 | 6502 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 60 - 90 | 40 - 60 |
| 157.5 | 296.0 | 196.2 | 2.81 | 0.9 | 6408 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 60 - 91 | 40 - 60 |
| 158.0 | 292.0 | 193.4 | 2.65 | 1.1 | 6549 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 60 - 91 | 40 - 60 |
| 158.5 | 276.2 | 182.8 | 3.39 | 1.1 | 6838 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 60 - 91 | 40 - 60 |

Notes:

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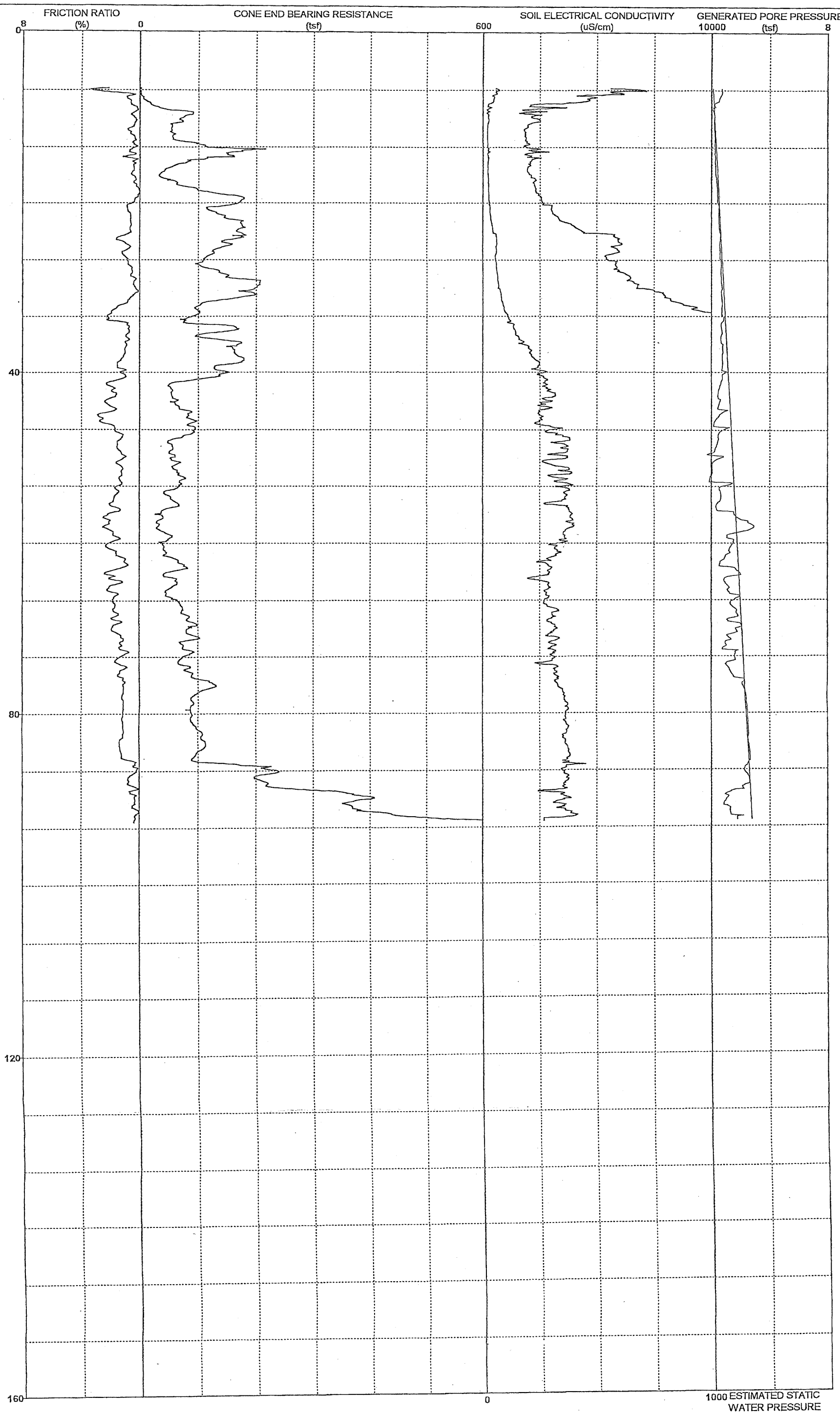
# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

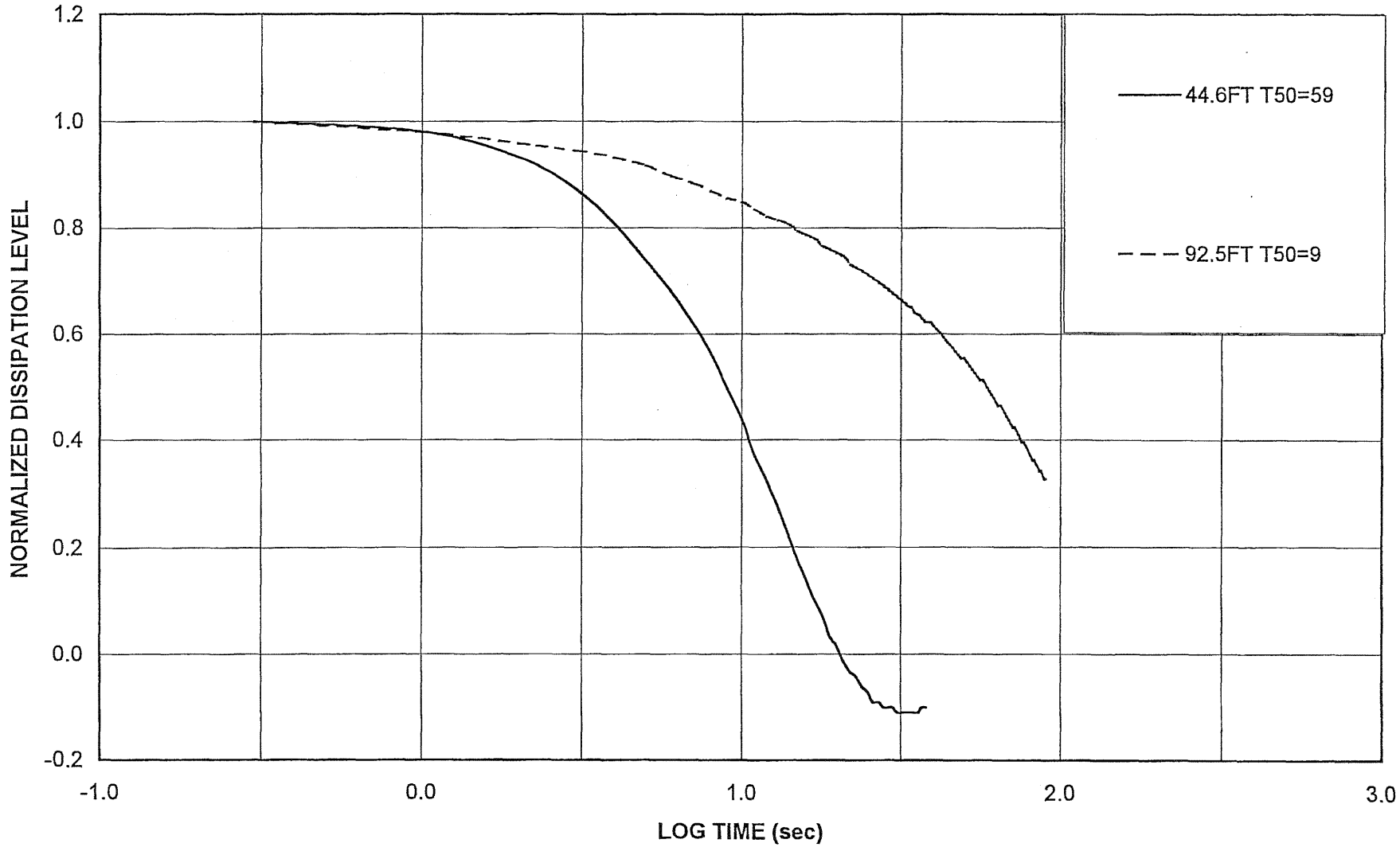
*STRATIGRAPHICS*

R2DATE: 5-09-1999 TIME:10:43:45.25
SOUNDING NUMBER:cvp-9909

*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

**Stratford Army Engine Plant cp-9909**



***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-09-1999 TIME:10:43:45.25
SOUNDING NUMBER:cvp-9909

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 6.50' | | | | | | | | | | | | |
| 1.5 | Prepunched To 6.50' | | | | | | | | | | | | |
| 2.0 | Prepunched To 6.50' | | | | | | | | | | | | |
| 2.5 | Prepunched To 6.50' | | | | | | | | | | | | |
| 3.0 | Prepunched To 6.50' | | | | | | | | | | | | |
| 3.5 | Prepunched To 6.50' | | | | | | | | | | | | |
| 4.0 | Prepunched To 6.50' | | | | | | | | | | | | |
| 4.5 | Prepunched To 6.50' | | | | | | | | | | | | |
| 5.0 | Prepunched To 6.50' | | | | | | | | | | | | |
| 5.5 | Prepunched To 6.50' | | | | | | | | | | | | |
| 6.0 | Prepunched To 6.50' | | | | | | | | | | | | |
| 6.5 | Prepunched To 6.50' | | | | | | | | | | | | |
| 7.0 | 1.1 | 1.3 | 0.02 | 1.5 | 603 | V soft, Sensitive fine grained soil | | | 25 | 0.05 | 0.05 | 00 - 02 | 00 - 02 |
| 7.5 | 5.8 | 7.1 | 0.06 | 0.9 | 496 | Stiff, Sandy silt to clayey silt | | | 10 | 1.06 | 0.12 | 00 - 02 | 00 - 02 |
| 8.0 | 11.4 | 13.9 | 0.10 | 0.6 | 453 | V loose, Silty sand to sandy silt | 31-36 | 0-20 | | | | 00 - 02 | 00 - 02 |
| 8.5 | 22.8 | 27.7 | 0.14 | 0.4 | 208 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 03 - 05 | 04 - 06 |
| 9.0 | 48.2 | 58.2 | 0.10 | 0.1 | 174 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 05 - 08 | 06 - 10 |
| 9.5 | 90.5 | 108.5 | 0.50 | 0.6 | 205 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 25 | 20 - 30 |
| 10.0 | 70.7 | 84.3 | 0.25 | 0.3 | 232 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 08 - 13 | 10 - 15 |
| 10.5 | 69.7 | 82.6 | 0.23 | 0.3 | 220 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 08 - 13 | 10 - 15 |
| 11.0 | 55.2 | 65.0 | 0.27 | 0.5 | 198 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 08 - 13 | 10 - 15 |
| 11.5 | 53.2 | 62.2 | 0.37 | 0.7 | 183 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 09 - 13 | 10 - 15 |
| 12.0 | 56.1 | 65.2 | 0.21 | 0.4 | 184 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 09 - 13 | 10 - 15 |
| 12.5 | 58.6 | 67.7 | 0.19 | 0.3 | 187 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 09 - 13 | 10 - 15 |
| 13.0 | 100.7 | 115.8 | 0.47 | 0.4 | 202 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 26 | 20 - 30 |
| 13.5 | 153.2 | 175.2 | 0.65 | 0.5 | 242 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 26 - 35 | 30 - 40 |
| 14.0 | 155.3 | 176.7 | 1.15 | 0.6 | 217 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 35 - 53 | 40 - 60 |
| 14.5 | 161.5 | 182.8 | 2.11 | 1.2 | 195 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 35 - 53 | 40 - 60 |
| 15.0 | 85.2 | 96.0 | 0.55 | 0.5 | 208 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 13 - 18 | 15 - 20 |
| 15.5 | 59.2 | 66.4 | 0.34 | 0.5 | 205 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 09 - 13 | 10 - 15 |
| 16.0 | 42.7 | 47.7 | 0.19 | 0.4 | 193 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 05 - 09 | 06 - 10 |
| 16.5 | 34.6 | 38.4 | 0.24 | 0.6 | 204 | Loose, Sand to silty sand | 36-37 | 20-40 | | | | 04 - 05 | 04 - 06 |
| 17.0 | 38.7 | 42.8 | 0.18 | 0.3 | 223 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 04 - 05 | 04 - 06 |
| 17.5 | 63.0 | 69.3 | 0.31 | 0.4 | 221 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 09 - 14 | 10 - 15 |
| 18.0 | 75.0 | 82.2 | 0.24 | 0.3 | 228 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 09 - 14 | 10 - 15 |
| 18.5 | 100.6 | 109.7 | 0.09 | 0.1 | 231 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 14 - 18 | 15 - 20 |
| 19.0 | 142.4 | 154.6 | 0.25 | 0.1 | 244 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 18 - 28 | 20 - 30 |
| 19.5 | 178.7 | 193.1 | 0.63 | 0.4 | 256 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 37 - 56 | 40 - 60 |
| 20.0 | 169.8 | 182.7 | 0.90 | 0.5 | 264 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 37 - 56 | 40 - 60 |
| 20.5 | 120.8 | 129.4 | 1.33 | 0.9 | 304 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 37 | 30 - 40 |
| 21.0 | 126.6 | 135.1 | 1.08 | 0.8 | 305 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 37 | 30 - 40 |
| 21.5 | 146.9 | 156.2 | 0.98 | 0.6 | 324 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 38 | 30 - 40 |
| 22.0 | 164.5 | 174.3 | 1.15 | 0.7 | 337 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 57 | 40 - 60 |
| 22.5 | 174.9 | 184.5 | 1.07 | 0.6 | 387 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 57 | 40 - 60 |
| 23.0 | 173.9 | 182.8 | 1.24 | 0.7 | 416 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 23.5 | 173.5 | 181.6 | 1.07 | 0.7 | 444 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 24.0 | 177.4 | 185.0 | 2.57 | 1.5 | 583 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 58 | 40 - 60 |
| 24.5 | 140.6 | 146.2 | 1.76 | 1.1 | 594 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 58 | 40 - 60 |
| 25.0 | 150.4 | 155.7 | 1.00 | 0.7 | 577 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 39 | 30 - 40 |

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Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-09-1999 TIME:10:43:45.25
SOUNDING NUMBER:cvp-9909

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 127.0 | 131.1 | 1.29 | 0.9 | 593 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 26.0 | 124.0 | 127.5 | 1.44 | 1.1 | 557 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 26.5 | 111.0 | 113.7 | 0.98 | 0.8 | 544 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 29 | 20 - 30 |
| 27.0 | 102.3 | 104.4 | 0.81 | 0.8 | 585 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 29 | 20 - 30 |
| 27.5 | 108.8 | 110.8 | 0.68 | 0.6 | 589 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 29 | 20 - 30 |
| 28.0 | 136.5 | 138.5 | 0.74 | 0.5 | 593 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 28.5 | 152.5 | 154.2 | 1.07 | 0.6 | 641 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 29.0 | 192.7 | 194.2 | 0.63 | 0.3 | 637 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 29.5 | 206.9 | 207.9 | 0.93 | 0.4 | 677 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 40 - 60 | 40 - 60 |
| 30.0 | 198.9 | 199.1 | 0.55 | 0.3 | 675 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 40 - 60 | 40 - 60 |
| 30.5 | 191.2 | 190.8 | 0.49 | 0.2 | 788 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 31.0 | 181.4 | 180.5 | 1.14 | 0.6 | 799 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 40 - 60 | 40 - 60 |
| 31.5 | 130.8 | 129.7 | 1.33 | 0.8 | 826 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 32.0 | 103.7 | 102.6 | 1.50 | 1.3 | 883 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 32.5 | 97.0 | 95.6 | 1.75 | 1.8 | 918 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 30 - 41 | 30 - 40 |
| 33.0 | 100.7 | 99.0 | 1.94 | 2.0 | 1036 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 31 - 41 | 30 - 40 |
| 33.5 | 81.8 | 80.1 | 1.88 | 2.1 | 1129 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 20 - 31 | 20 - 30 |
| 34.0 | 74.6 | 72.9 | 0.94 | 1.0 | 1101 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 15 - 20 | 15 - 20 |
| 34.5 | 162.3 | 158.1 | 1.17 | 0.7 | 1334 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 31 - 41 | 30 - 40 |
| 35.0 | 160.3 | 155.8 | 1.16 | 0.7 | 1415 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 31 - 41 | 30 - 40 |
| 35.5 | 99.0 | 95.9 | 1.18 | 0.9 | 1445 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 36.0 | 130.4 | 126.0 | 1.10 | 0.7 | 1591 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 36.5 | 174.5 | 168.2 | 1.61 | 1.0 | 1650 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 62 | 40 - 60 |
| 37.0 | 157.9 | 151.7 | 1.67 | 1.0 | 1984 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 62 | 40 - 60 |
| 37.5 | 162.6 | 155.8 | 1.61 | 1.0 | 2094 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 38.0 | 168.5 | 161.1 | 1.95 | 1.1 | 2137 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 38.5 | 179.1 | 170.7 | 2.30 | 1.3 | 2322 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 39.0 | 155.4 | 147.7 | 2.66 | 1.5 | 2500 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 39.5 | 128.1 | 121.5 | 1.81 | 1.3 | 2316 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 32 - 42 | 30 - 40 |
| 40.0 | 152.5 | 144.2 | 1.98 | 1.3 | 2781 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 40.5 | 137.7 | 129.8 | 1.32 | 0.9 | 2664 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 32 - 42 | 30 - 40 |
| 41.0 | 78.3 | 73.7 | 1.92 | 1.8 | 2735 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 41.5 | 48.8 | 45.8 | 1.26 | 2.2 | 2762 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 16 - 21 | 15 - 20 |
| 42.0 | 54.1 | 50.7 | 0.97 | 1.8 | 2906 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 16 - 21 | 15 - 20 |
| 42.5 | 53.6 | 50.1 | 0.86 | 1.6 | 3171 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 16 | 10 - 15 |
| 43.0 | 56.2 | 52.3 | 1.13 | 1.9 | 2674 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 16 - 21 | 15 - 20 |
| 43.5 | 58.0 | 53.9 | 1.48 | 2.4 | 2578 | Dense, Silty sand to sandy silt | 27-31 | 60-80 | | | | 16 - 22 | 15 - 20 |
| 44.0 | 67.4 | 62.5 | 1.43 | 1.9 | 2859 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 44.5 | 87.1 | 80.5 | 1.49 | 1.8 | 2464 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 32 | 20 - 30 |
| 45.0 | 83.8 | 77.3 | 2.45 | 2.9 | 2553 | Hard, Sandy silt to sandy clay | | | 30 | 5.40 | 4.90 | 33 - 43 | 30 - 40 |
| 45.5 | 90.9 | 83.7 | 2.38 | 2.6 | 2545 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 33 - 43 | 30 - 40 |
| 46.0 | 83.5 | 76.6 | 1.98 | 2.2 | 2425 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 46.5 | 95.0 | 87.0 | 1.60 | 1.7 | 3352 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 47.0 | 90.9 | 83.1 | 1.37 | 1.5 | 3223 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 47.5 | 73.1 | 66.7 | 1.00 | 1.2 | 3724 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 16 - 22 | 15 - 20 |
| 48.0 | 48.8 | 44.4 | 0.91 | 1.5 | 3534 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 16 | 10 - 15 |
| 48.5 | 55.1 | 50.0 | 0.85 | 1.5 | 3685 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 49.0 | 56.5 | 51.2 | 0.84 | 1.5 | 3742 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 49.5 | 50.4 | 45.5 | 0.70 | 1.2 | 3053 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 07 - 11 | 06 - 10 |
| 50.0 | 54.9 | 49.5 | 0.60 | 1.0 | 3712 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 07 - 11 | 06 - 10 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

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Structure rate of loading should be considered in choosing which strength parameters to use for design.
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*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-09-1999 TIME:10:43:45.25
SOUNDING NUMBER:cvp-9909

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 67.2 | 60.4 | 0.99 | 1.5 | 2633 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 51.0 | 57.1 | 51.2 | 0.80 | 1.3 | 3365 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 51.5 | 63.9 | 57.2 | 0.81 | 1.2 | 3355 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 52.0 | 66.0 | 59.0 | 0.88 | 1.2 | 3101 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 52.5 | 76.8 | 68.5 | 1.04 | 1.4 | 3704 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 53.0 | 70.8 | 63.0 | 0.83 | 1.2 | 3749 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 53.5 | 64.7 | 57.5 | 1.18 | 1.7 | 3618 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 54.0 | 41.0 | 36.3 | 0.74 | 1.4 | 3567 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 07 - 11 | 06 - 10 |
| 54.5 | 52.5 | 46.5 | 0.94 | 1.7 | 3617 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 11 - 17 | 10 - 15 |
| 55.0 | 58.3 | 51.4 | 1.15 | 1.8 | 3435 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 55.5 | 67.2 | 59.2 | 1.31 | 2.0 | 3473 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 17 - 23 | 15 - 20 |
| 56.0 | 42.3 | 37.1 | 0.76 | 1.4 | 3780 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 07 - 11 | 06 - 10 |
| 56.5 | 30.1 | 26.4 | 0.81 | 2.1 | 3924 | V stiff, Sandy silt to sandy clay | | | 20 | 2.67 | 1.63 | 07 - 11 | 06 - 10 |
| 57.0 | 39.6 | 34.7 | 0.92 | 2.4 | 3897 | V stiff, Sandy silt to sandy clay | | | 20 | 3.62 | 1.84 | 11 - 17 | 10 - 15 |
| 57.5 | 27.7 | 24.2 | 0.73 | 2.1 | 3710 | V stiff, Sandy silt to sandy clay | | | 20 | 2.42 | 1.46 | 05 - 07 | 04 - 06 |
| 58.0 | 31.3 | 27.3 | 0.79 | 2.5 | 3985 | V stiff, Sandy silt to sandy clay | | | 20 | 2.79 | 1.59 | 07 - 11 | 06 - 10 |
| 58.5 | 35.4 | 30.8 | 0.84 | 2.0 | 3615 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 07 - 11 | 06 - 10 |
| 59.0 | 51.3 | 44.5 | 0.97 | 1.8 | 3559 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 12 - 17 | 10 - 15 |
| 59.5 | 49.3 | 42.7 | 0.70 | 1.4 | 3628 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 07 - 12 | 06 - 10 |
| 60.0 | 39.6 | 34.3 | 0.91 | 2.1 | 3304 | V stiff, Sandy silt to sandy clay | | | 20 | 3.60 | 1.82 | 07 - 12 | 06 - 10 |
| 60.5 | 41.9 | 36.1 | 0.92 | 2.2 | 3172 | V stiff, Sandy silt to sandy clay | | | 20 | 3.82 | 1.84 | 12 - 17 | 10 - 15 |
| 61.0 | 44.3 | 38.2 | 0.69 | 1.6 | 3431 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 07 - 12 | 06 - 10 |
| 61.5 | 44.1 | 37.9 | 0.85 | 1.5 | 3177 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 07 - 12 | 06 - 10 |
| 62.0 | 66.1 | 56.7 | 0.74 | 1.0 | 2961 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 12 - 17 | 10 - 15 |
| 62.5 | 76.6 | 65.6 | 0.62 | 0.8 | 2848 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 12 - 18 | 10 - 15 |
| 63.0 | 74.3 | 63.5 | 1.22 | 1.6 | 2985 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 18 - 23 | 15 - 20 |
| 63.5 | 42.1 | 35.9 | 1.33 | 2.4 | 2892 | V stiff, Sandy silt to sandy clay | | | 20 | 3.82 | 2.66 | 12 - 18 | 10 - 15 |
| 64.0 | 58.0 | 49.4 | 1.32 | 2.1 | 2076 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 18 - 23 | 15 - 20 |
| 64.5 | 63.8 | 54.3 | 0.69 | 1.2 | 2801 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 12 - 18 | 10 - 15 |
| 65.0 | 56.4 | 47.9 | 1.30 | 2.1 | 2897 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 65.5 | 44.7 | 37.9 | 1.10 | 2.1 | 2757 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 12 - 18 | 10 - 15 |
| 66.0 | 44.7 | 37.8 | 0.81 | 1.5 | 2785 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 07 - 12 | 06 - 10 |
| 66.5 | 61.6 | 52.0 | 1.21 | 1.8 | 2763 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 67.0 | 69.1 | 58.2 | 1.21 | 1.7 | 2689 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 67.5 | 74.3 | 62.4 | 1.24 | 1.7 | 3014 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 68.0 | 71.4 | 60.0 | 1.25 | 1.6 | 3221 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 68.5 | 85.8 | 71.9 | 1.38 | 1.7 | 3122 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 69.0 | 82.1 | 68.7 | 1.30 | 1.5 | 2835 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 69.5 | 99.1 | 82.7 | 1.61 | 1.7 | 3119 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 70.0 | 81.3 | 67.7 | 1.72 | 1.9 | 3241 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 70.5 | 82.0 | 68.3 | 1.39 | 1.5 | 3034 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 71.0 | 102.0 | 84.7 | 1.20 | 1.2 | 3222 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 71.5 | 70.7 | 58.6 | 1.10 | 1.2 | 3028 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 12 - 18 | 10 - 15 |
| 72.0 | 75.3 | 62.3 | 0.92 | 1.2 | 3219 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 72.5 | 84.3 | 69.6 | 1.00 | 1.1 | 3054 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 73.0 | 85.8 | 70.7 | 0.88 | 1.0 | 3090 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 73.5 | 71.6 | 59.0 | 1.15 | 1.5 | 3150 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 74.0 | 66.3 | 54.5 | 1.14 | 1.5 | 2713 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 12 - 18 | 10 - 15 |
| 74.5 | 87.8 | 72.0 | 0.70 | 0.9 | 3303 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 75.0 | 84.4 | 69.1 | 1.21 | 1.4 | 3195 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 18 - 24 | 15 - 20 |

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-09-1999 TIME:10:43:45.25
SOUNDING NUMBER:cvp-9909

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 89.0 | 72.8 | 1.44 | 1.5 | 3226 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 24 - 37 | 20 - 30 |
| 76.0 | 111.2 | 90.8 | 1.48 | 1.2 | 3276 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 24 - 37 | 20 - 30 |
| 76.5 | 127.7 | 104.1 | 1.44 | 1.1 | 3296 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 77.0 | 119.8 | 97.5 | 1.42 | 1.1 | 3433 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 77.5 | 99.3 | 80.7 | 1.19 | 1.1 | 3529 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 78.0 | 89.0 | 72.2 | 1.15 | 1.2 | 3625 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 18 - 25 | 15 - 20 |
| 78.5 | 90.6 | 73.4 | 1.01 | 1.1 | 3620 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 79.0 | 88.8 | 71.8 | 1.02 | 1.1 | 3737 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 79.5 | 82.2 | 66.3 | 0.97 | 1.1 | 3782 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 80.0 | 89.4 | 72.1 | 1.02 | 1.1 | 3650 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 80.5 | 87.3 | 70.3 | 1.06 | 1.2 | 3652 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 81.0 | 89.4 | 71.8 | 1.07 | 1.1 | 3625 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 81.5 | 96.9 | 77.7 | 1.12 | 1.1 | 3744 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 82.0 | 103.3 | 82.7 | 1.15 | 1.1 | 3677 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 82.5 | 108.6 | 86.8 | 1.24 | 1.2 | 3586 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 83.0 | 106.9 | 85.4 | 1.46 | 1.3 | 3580 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 83.5 | 113.4 | 90.4 | 1.52 | 1.4 | 3614 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 84.0 | 110.6 | 88.0 | 1.49 | 1.3 | 3728 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 84.5 | 99.0 | 78.7 | 1.32 | 1.3 | 3759 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 85.0 | 93.7 | 74.3 | 1.19 | 1.2 | 3830 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 85.5 | 93.1 | 73.7 | 0.52 | 0.5 | 3612 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 13 - 19 | 10 - 15 |
| 86.0 | 171.9 | 136.0 | 0.62 | 0.4 | 4310 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 86.5 | 223.1 | 176.2 | 0.51 | 0.2 | 3491 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 87.0 | 225.8 | 178.1 | 1.09 | 0.5 | 3578 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 87.5 | 197.6 | 155.6 | 1.69 | 0.8 | 3708 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 88.0 | 219.2 | 172.4 | 1.80 | 0.8 | 3646 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 88.5 | 223.8 | 175.7 | 0.66 | 0.3 | 3534 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 89.0 | 322.5 | 252.8 | 2.42 | 0.7 | 2899 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 89.5 | 373.0 | 292.0 | 1.14 | 0.3 | 3448 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 90.0 | 395.2 | 308.9 | 1.05 | 0.3 | 3644 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 90.5 | 352.2 | 274.9 | 0.98 | 0.4 | 3110 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 91.0 | 369.2 | 287.7 | 1.30 | 0.3 | 3399 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 91.5 | 410.7 | 319.6 | 0.44 | 0.1 | 3780 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 92.0 | 457.2 | 355.3 | 1.73 | 0.3 | 4111 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 92.5 | 591.1 | 458.6 | 2.37 | 0.4 | 2703 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 77 - 128 | 60 - 99 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
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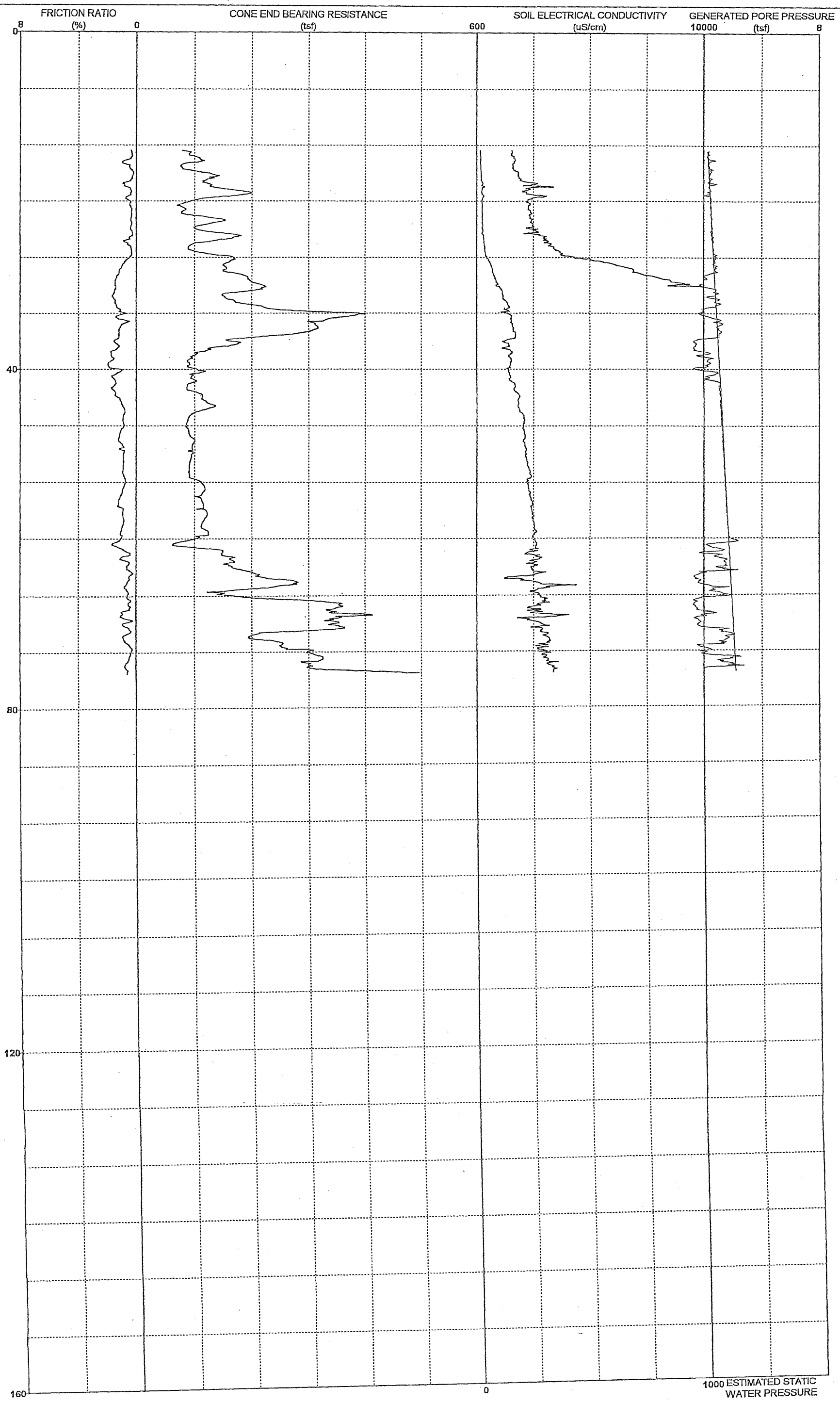
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

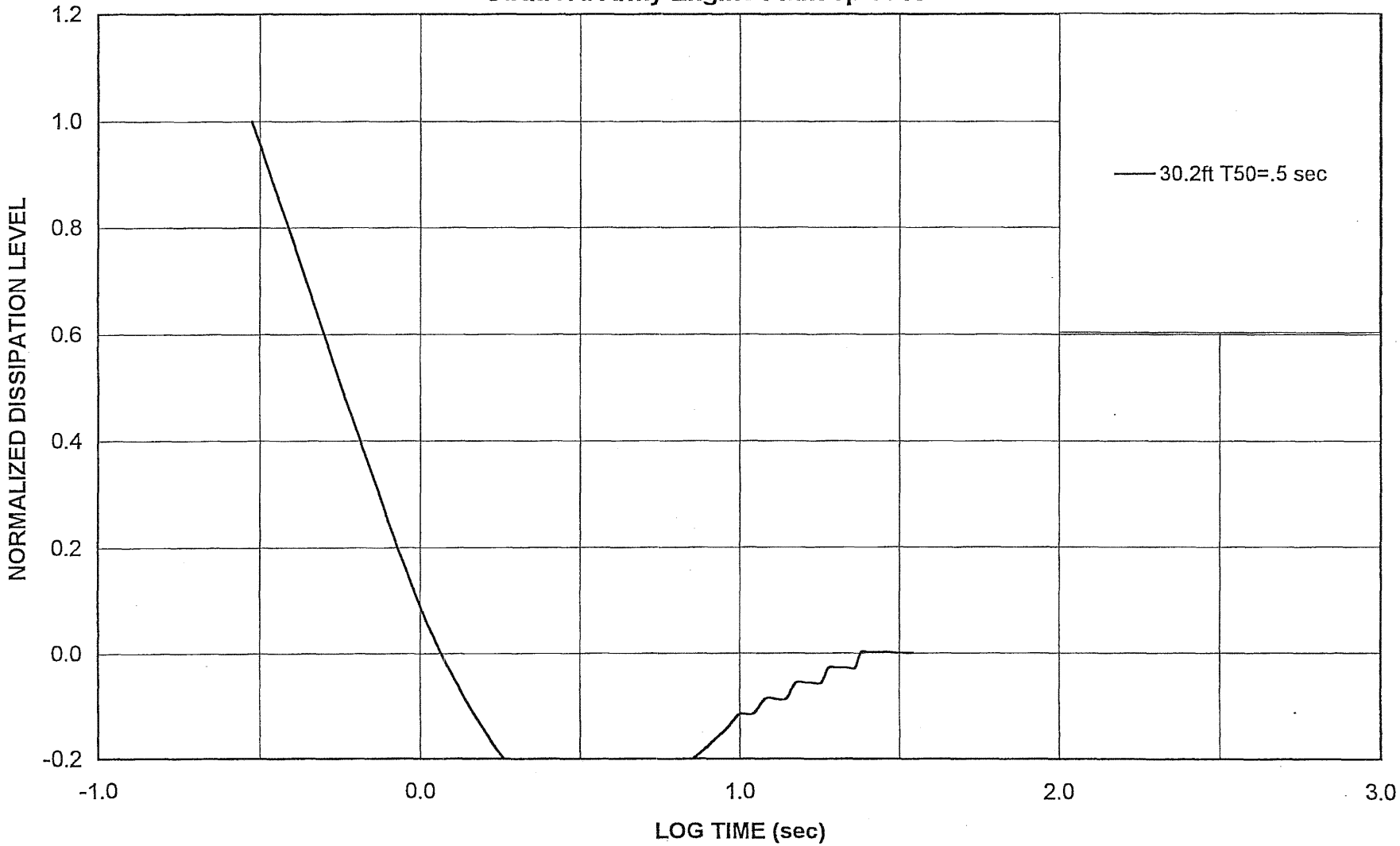
STRATIGRAPHICS

R2DATE: 5-18-1999 TIME:10:49:11.45
SOUNDING NUMBER:cp-9910

*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

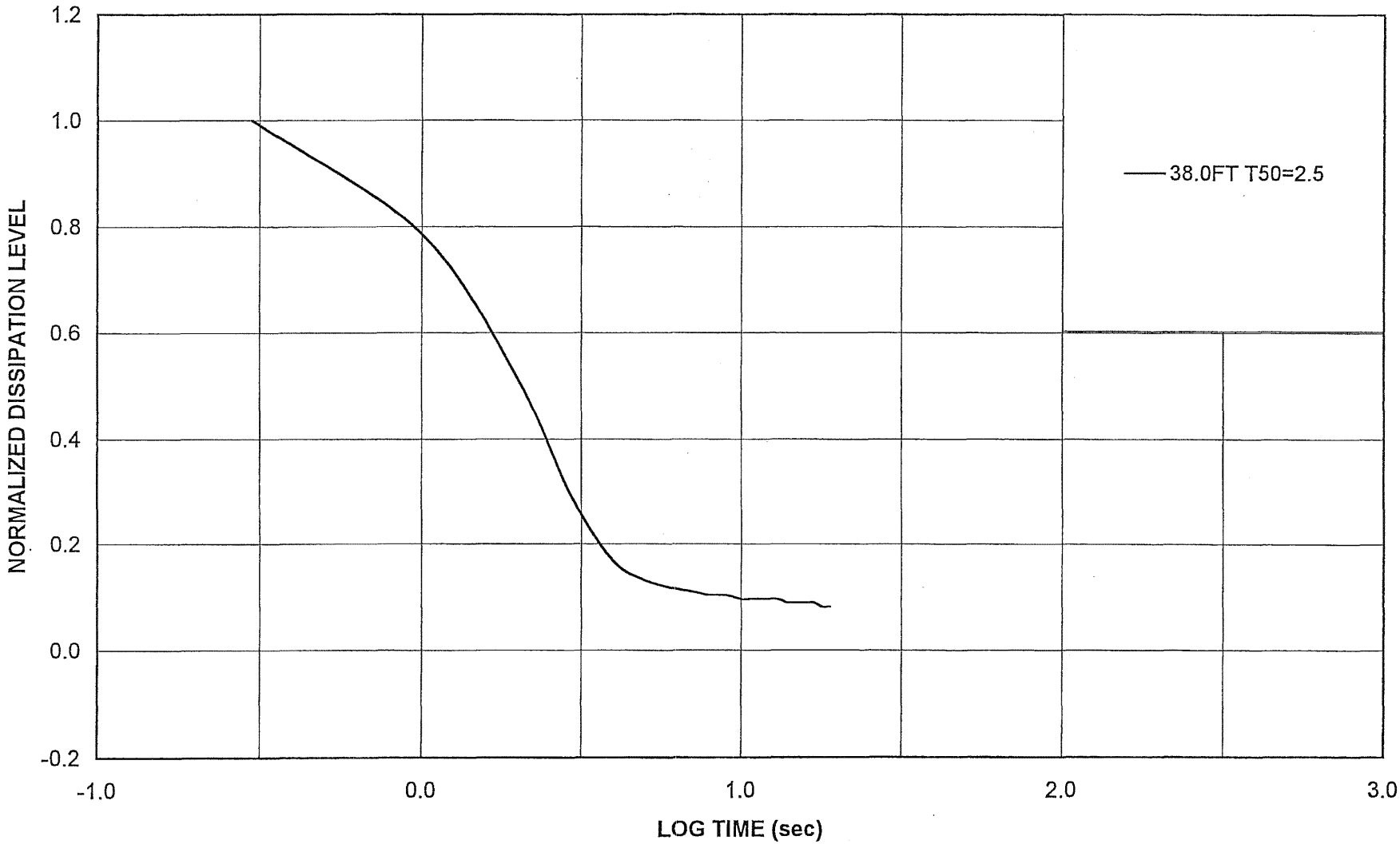
**Stratford Army Engine Plant cp-9910**



***STRATIGRAPHICS***

PORE WATER PRESSURE DISSIPATION TEST

Stratford Army Engine Plant cp-9910



***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-18-1999 TIME:10:49:11.45
SOUNDING NUMBER:cp-9910

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 1.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 2.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 2.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 3.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 3.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 4.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 4.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 5.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 5.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 6.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 6.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 7.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 7.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 8.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 8.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 9.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 9.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 10.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 10.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 11.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 11.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 12.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 12.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 13.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 13.5 | Prepunched To 14.00' | | | | | | | | | | | | |
| 14.0 | Prepunched To 14.00' | | | | | | | | | | | | |
| 14.5 | 91.1 | 101.0 | 0.33 | 0.3 | 154 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 18 | 15 - 20 |
| 15.0 | 110.0 | 121.4 | 0.40 | 0.4 | 168 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 27 | 20 - 30 |
| 15.5 | 85.7 | 94.1 | 1.10 | 0.9 | 163 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 27 | 20 - 30 |
| 16.0 | 78.7 | 86.1 | 0.43 | 0.5 | 159 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 18 | 15 - 20 |
| 16.5 | 106.9 | 116.4 | 0.29 | 0.2 | 183 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 28 | 20 - 30 |
| 17.0 | 141.6 | 153.5 | 0.34 | 0.3 | 183 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 18 - 28 | 20 - 30 |
| 17.5 | 121.8 | 131.5 | 0.53 | 0.4 | 192 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 18.0 | 127.6 | 137.1 | 0.96 | 0.8 | 262 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 37 | 30 - 40 |
| 18.5 | 147.6 | 158.0 | 0.74 | 0.4 | 223 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 37 | 30 - 40 |
| 19.0 | 196.8 | 209.8 | 0.65 | 0.4 | 220 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 56 | 40 - 60 |
| 19.5 | 146.4 | 155.4 | 1.29 | 0.7 | 298 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 38 | 30 - 40 |
| 20.0 | 93.6 | 99.0 | 0.52 | 0.5 | 224 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 19 | 15 - 20 |
| 20.5 | 71.9 | 75.7 | 0.37 | 0.5 | 232 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 09 - 14 | 10 - 15 |
| 21.0 | 85.2 | 89.4 | 0.26 | 0.3 | 229 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 19 | 15 - 20 |
| 21.5 | 81.0 | 84.8 | 0.37 | 0.4 | 244 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 14 - 19 | 15 - 20 |
| 22.0 | 133.6 | 139.2 | 0.53 | 0.4 | 236 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 22.5 | 141.4 | 146.8 | 0.49 | 0.3 | 240 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 23.0 | 103.7 | 107.3 | 0.46 | 0.4 | 249 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 23.5 | 114.1 | 117.6 | 0.49 | 0.3 | 259 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 24.0 | 176.0 | 180.8 | 0.51 | 0.3 | 280 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 24.5 | 151.9 | 155.5 | 0.75 | 0.5 | 305 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 25.0 | 100.7 | 102.7 | 0.77 | 0.6 | 323 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 29 | 20 - 30 |

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***STRATIGRAPHICS***

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-18-1999 TIME:10:49:11.45
SOUNDING NUMBER:cp-9910

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 89.1 | 90.6 | 0.36 | 0.4 | 341 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 15 - 20 | 15 - 20 |
| 26.0 | 105.7 | 107.1 | 0.41 | 0.3 | 369 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 26.5 | 158.3 | 159.9 | 0.67 | 0.4 | 403 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 27.0 | 165.1 | 166.3 | 1.22 | 0.7 | 514 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 40 - 60 | 40 - 60 |
| 27.5 | 150.4 | 150.9 | 1.49 | 0.9 | 614 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 30 - 40 | 30 - 40 |
| 28.0 | 156.5 | 156.6 | 1.72 | 1.1 | 688 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 28.5 | 168.0 | 167.6 | 2.20 | 1.2 | 710 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 29.0 | 193.5 | 192.3 | 2.71 | 1.4 | 794 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 60 | 40 - 60 |
| 29.5 | 199.6 | 197.8 | 3.10 | 1.5 | 856 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 40 - 61 | 40 - 60 |
| 30.0 | 222.2 | 219.6 | 3.10 | 1.4 | 874 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 61 - 100 | 60 - 99 |
| 30.5 | 209.7 | 206.6 | 3.28 | 1.5 | 1083 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 61 - 100 | 60 - 99 |
| 31.0 | 150.0 | 147.3 | 2.85 | 1.6 | 1112 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 31.5 | 155.1 | 151.9 | 2.59 | 1.6 | 1147 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 32.0 | 173.0 | 169.0 | 2.95 | 1.5 | 1332 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 32.5 | 217.6 | 211.9 | 3.24 | 1.4 | 1414 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 33.0 | 267.4 | 259.7 | 3.81 | 1.1 | 1379 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 62 - 102 | 60 - 99 |
| 33.5 | 385.4 | 373.1 | 4.22 | 1.1 | 1474 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 103 | + 100 |
| 34.0 | 339.4 | 327.7 | 4.47 | 1.2 | 1519 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 104 | + 100 |
| 34.5 | 308.2 | 296.8 | 2.35 | 0.7 | 1530 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 62 - 103 | 60 - 99 |
| 35.0 | 316.8 | 304.2 | 3.45 | 1.1 | 1598 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 62 - 103 | 60 - 99 |
| 35.5 | 301.2 | 288.4 | 3.79 | 1.2 | 1622 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 63 - 103 | 60 - 99 |
| 36.0 | 236.8 | 226.1 | 3.31 | 1.2 | 1717 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 36.5 | 158.5 | 150.9 | 2.83 | 1.5 | 1343 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 37.0 | 175.1 | 166.4 | 2.27 | 1.3 | 1407 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 37.5 | 124.5 | 118.0 | 2.04 | 1.3 | 1143 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 32 - 42 | 30 - 40 |
| 38.0 | 105.8 | 100.0 | 2.09 | 1.8 | 1567 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 42 | 30 - 40 |
| 38.5 | 94.8 | 89.4 | 1.74 | 1.7 | 1408 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 21 - 32 | 20 - 30 |
| 39.0 | 87.8 | 82.6 | 1.61 | 1.7 | 1527 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 21 - 32 | 20 - 30 |
| 39.5 | 91.6 | 85.9 | 1.84 | 1.9 | 1471 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 21 - 32 | 20 - 30 |
| 40.0 | 104.7 | 97.9 | 1.02 | 1.1 | 1375 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 40.5 | 100.9 | 94.2 | 1.49 | 1.4 | 1446 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 41.0 | 93.9 | 87.4 | 1.60 | 1.6 | 1490 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 21 - 32 | 20 - 30 |
| 41.5 | 102.0 | 94.7 | 1.43 | 1.4 | 1546 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 42.0 | 87.0 | 80.6 | 1.44 | 1.6 | 1694 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 42.5 | 89.2 | 82.4 | 1.57 | 1.6 | 1644 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 43.0 | 112.0 | 103.3 | 1.66 | 1.5 | 1829 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 33 - 43 | 30 - 40 |
| 43.5 | 113.0 | 104.0 | 1.38 | 1.2 | 1850 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 44.0 | 122.8 | 112.7 | 1.36 | 1.0 | 1838 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 44.5 | 133.9 | 122.6 | 1.19 | 0.9 | 1830 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 45.0 | 106.3 | 97.1 | 0.95 | 0.8 | 1899 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 45.5 | 92.6 | 84.4 | 0.89 | 0.9 | 2082 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 16 - 22 | 15 - 20 |
| 46.0 | 88.3 | 80.3 | 0.86 | 0.9 | 2108 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 46.5 | 86.2 | 78.2 | 0.74 | 0.9 | 2037 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 47.0 | 88.8 | 80.3 | 0.90 | 1.0 | 2039 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 47.5 | 90.2 | 81.4 | 1.05 | 1.1 | 2088 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 48.0 | 94.4 | 85.0 | 1.17 | 1.2 | 2127 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 48.5 | 100.1 | 90.0 | 1.19 | 1.2 | 2056 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 49.0 | 96.3 | 86.4 | 0.95 | 1.0 | 2115 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 49.5 | 96.4 | 86.3 | 1.06 | 1.1 | 2196 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 22 - 34 | 20 - 30 |
| 50.0 | 96.1 | 85.9 | 0.87 | 0.9 | 2172 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 22 | 15 - 20 |

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PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-18-1999 TIME:10:49:11.45
SOUNDING NUMBER:cp-9910

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 94.4 | 84.1 | 0.86 | 0.9 | 2197 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 51.0 | 92.0 | 81.8 | 0.84 | 0.9 | 2256 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 22 | 15 - 20 |
| 51.5 | 91.6 | 81.3 | 0.84 | 0.9 | 2274 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 52.0 | 90.7 | 80.3 | 0.86 | 0.9 | 2352 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 52.5 | 91.7 | 81.1 | 0.85 | 0.9 | 2388 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 53.0 | 101.1 | 89.2 | 0.83 | 0.8 | 2224 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 53.5 | 114.2 | 100.5 | 0.94 | 0.8 | 2249 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 54.0 | 118.7 | 104.2 | 1.07 | 0.9 | 2281 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 54.5 | 115.0 | 100.8 | 1.15 | 1.0 | 2366 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 55.0 | 102.4 | 89.6 | 1.25 | 1.1 | 2360 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 55.5 | 113.1 | 98.7 | 1.41 | 1.2 | 2433 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 56.0 | 116.1 | 101.2 | 1.46 | 1.3 | 2483 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 56.5 | 116.1 | 101.0 | 1.07 | 0.9 | 2427 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 57.0 | 122.7 | 106.5 | 1.18 | 1.0 | 2455 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 57.5 | 119.4 | 103.4 | 1.13 | 0.9 | 2462 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 58.0 | 114.4 | 98.9 | 1.05 | 0.9 | 2501 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 58.5 | 112.1 | 96.7 | 1.13 | 1.0 | 2552 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 59.0 | 121.7 | 104.8 | 1.27 | 1.0 | 2588 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 59.5 | 124.3 | 106.8 | 1.39 | 1.1 | 2530 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 60.0 | 102.3 | 87.7 | 1.20 | 1.1 | 2554 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 60.5 | 66.5 | 57.0 | 1.31 | 1.6 | 2610 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 18 - 23 | 15 - 20 |
| 61.0 | 96.5 | 82.5 | 1.60 | 1.2 | 2593 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 61.5 | 149.5 | 127.5 | 1.06 | 0.7 | 2592 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 62.0 | 151.7 | 129.2 | 1.13 | 0.7 | 2718 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 62.5 | 164.2 | 139.5 | 1.63 | 0.9 | 2746 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 63.0 | 153.9 | 130.5 | 0.89 | 0.5 | 2293 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 63.5 | 171.6 | 145.3 | 1.24 | 0.6 | 2415 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 64.0 | 202.9 | 171.5 | 0.49 | 0.3 | 2958 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 36 - 47 | 30 - 40 |
| 64.5 | 218.2 | 184.1 | 1.36 | 0.5 | 1617 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 47 - 71 | 40 - 60 |
| 65.0 | 278.7 | 234.7 | 1.80 | 0.6 | 2434 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 71 | 40 - 60 |
| 65.5 | 248.2 | 208.6 | 2.21 | 0.8 | 4159 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 71 | 40 - 60 |
| 66.0 | 167.9 | 140.8 | 1.37 | 0.7 | 2702 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 48 | 30 - 40 |
| 66.5 | 143.5 | 120.2 | 1.10 | 0.6 | 2754 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 67.0 | 232.8 | 194.6 | 1.46 | 0.5 | 3053 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 48 - 72 | 40 - 60 |
| 67.5 | 346.0 | 288.7 | 2.08 | 0.5 | 3130 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 68.0 | 358.0 | 298.2 | 1.43 | 0.4 | 2561 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 68.5 | 340.6 | 283.2 | 3.75 | 1.0 | 2306 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 72 - 119 | 60 - 99 |
| 69.0 | 401.0 | 332.9 | 4.18 | 1.1 | 3663 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 72 - 119 | 60 - 99 |
| 69.5 | 340.4 | 282.1 | 0.89 | 0.3 | 2227 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 70.0 | 339.6 | 281.0 | 3.38 | 1.0 | 2814 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 73 - 120 | 60 - 99 |
| 70.5 | 362.5 | 299.4 | 1.70 | 0.5 | 2460 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 48 - 73 | 40 - 60 |
| 71.0 | 229.9 | 189.5 | 1.42 | 0.5 | 2828 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 49 - 73 | 40 - 60 |
| 71.5 | 195.3 | 160.7 | 1.99 | 0.9 | 2969 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 72.0 | 238.9 | 196.3 | 2.02 | 0.8 | 3223 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 72.5 | 251.9 | 206.6 | 1.22 | 0.5 | 2826 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 49 - 73 | 40 - 60 |
| 73.0 | 279.4 | 228.8 | 0.88 | 0.3 | 2764 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 49 - 73 | 40 - 60 |
| 73.5 | 303.0 | 247.7 | 1.30 | 0.4 | 3208 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 74.0 | 325.3 | 265.4 | 1.60 | 0.5 | 3025 | Dense, Sa gravel to gr sand | 42-46 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 74.5 | 288.3 | 234.9 | 2.06 | 0.7 | 3105 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 75.0 | 303.2 | 246.6 | 2.47 | 0.8 | 3284 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 74 | 40 - 60 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-18-1999 TIME:10:49:11.45
SOUNDING NUMBER:cp-9910

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 372.1 | 302.2 | 2.73 | 0.6 | 3411 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 74 | 40 - 60 |

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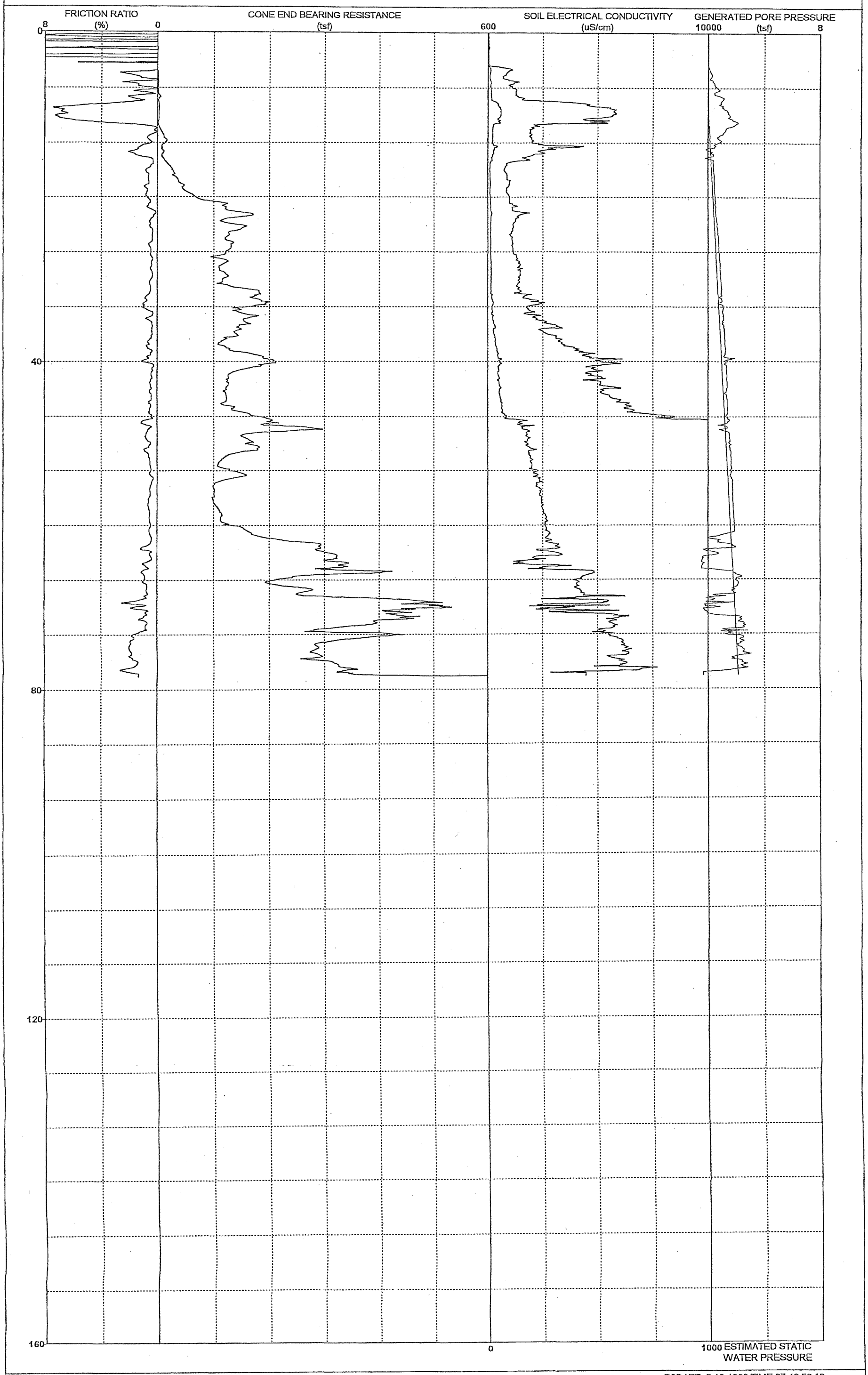
# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-12-1999 TIME:07:46:56.12
SOUNDING NUMBER:cp-9911

***STRATIGRAPHICS***

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-12-1999 TIME:07:46:56.12
SOUNDING NUMBER:cp-9911

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 1.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 2.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 2.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 3.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 3.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 4.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 4.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 5.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 5.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 6.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 6.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 7.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 7.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 8.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 8.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 9.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 9.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 10.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 10.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 11.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 11.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 12.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 12.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 13.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 13.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 14.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 14.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 15.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 15.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 16.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 16.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 17.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 17.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 18.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 18.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 19.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 19.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 20.0 | Prepunched To 20.70' | | | | | | | | | | | | |
| 20.5 | Prepunched To 20.70' | | | | | | | | | | | | |
| 21.0 | 117.1 | 123.9 | 0.77 | 0.6 | 118 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 21.5 | 122.3 | 129.0 | 0.54 | 0.4 | 111 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 28 | 20 - 30 |
| 22.0 | 168.9 | 177.4 | 0.24 | 0.2 | 165 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 29 - 38 | 30 - 40 |
| 22.5 | 132.5 | 138.6 | 0.68 | 0.4 | 136 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 23.0 | 116.5 | 121.5 | 0.77 | 0.6 | 123 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 23.5 | 158.1 | 164.2 | 0.86 | 0.6 | 115 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 24.0 | 142.7 | 147.7 | 0.52 | 0.3 | 113 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 24.5 | 127.6 | 131.6 | 0.47 | 0.4 | 100 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 25.0 | 120.6 | 123.9 | 0.48 | 0.4 | 110 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 29 | 20 - 30 |

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Structure rate of loading should be considered in choosing which strength parameters to use for design.
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*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-12-1999 TIME:07:46:56.12
SOUNDING NUMBER:cp-9911

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 135.2 | 138.5 | 0.62 | 0.5 | 112 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 29 | 20 - 30 |
| 26.0 | 130.6 | 133.3 | 0.72 | 0.5 | 110 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 29 | 20 - 30 |
| 26.5 | 124.7 | 126.9 | 0.62 | 0.5 | 113 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 29 | 20 - 30 |
| 27.0 | 117.2 | 118.9 | 0.63 | 0.5 | 128 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 27.5 | 112.0 | 113.2 | 0.38 | 0.3 | 136 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 28.0 | 121.3 | 122.2 | 0.52 | 0.4 | 142 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 28.5 | 109.3 | 109.7 | 0.54 | 0.5 | 141 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 29.0 | 114.6 | 114.7 | 0.49 | 0.4 | 149 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 29.5 | 124.6 | 124.3 | 0.43 | 0.3 | 148 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 30.0 | 115.7 | 115.1 | 0.58 | 0.5 | 145 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 30.5 | 109.1 | 108.2 | 0.69 | 0.5 | 138 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 31.0 | 140.1 | 138.5 | 0.80 | 0.5 | 142 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 31.5 | 181.1 | 178.5 | 0.93 | 0.5 | 150 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 30 - 41 | 30 - 40 |
| 32.0 | 176.2 | 173.1 | 1.38 | 0.8 | 171 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 32.5 | 183.7 | 180.0 | 1.40 | 0.8 | 203 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 33.0 | 192.8 | 188.3 | 2.04 | 1.0 | 237 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 33.5 | 139.8 | 136.2 | 1.45 | 0.9 | 182 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 31 - 41 | 30 - 40 |
| 34.0 | 145.6 | 141.4 | 0.49 | 0.3 | 213 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 34.5 | 175.5 | 170.0 | 0.82 | 0.5 | 212 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 31 - 41 | 30 - 40 |
| 35.0 | 154.9 | 149.6 | 0.87 | 0.5 | 245 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 31 - 41 | 30 - 40 |
| 35.5 | 149.4 | 143.9 | 0.57 | 0.4 | 303 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 36.0 | 149.0 | 143.1 | 0.59 | 0.4 | 246 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 36.5 | 138.5 | 132.7 | 0.51 | 0.4 | 261 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 37.0 | 130.3 | 124.5 | 0.59 | 0.4 | 311 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 37.5 | 114.1 | 108.8 | 0.82 | 0.7 | 323 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 38.0 | 113.4 | 107.8 | 1.01 | 0.8 | 350 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 38.5 | 128.7 | 122.0 | 0.77 | 0.5 | 414 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 39.0 | 164.0 | 155.1 | 1.00 | 0.5 | 454 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 32 - 42 | 30 - 40 |
| 39.5 | 188.3 | 177.5 | 1.22 | 0.7 | 468 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 64 | 40 - 60 |
| 40.0 | 210.2 | 197.7 | 2.26 | 1.1 | 512 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 40.5 | 186.6 | 175.1 | 0.53 | 0.3 | 515 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 32 - 43 | 30 - 40 |
| 41.0 | 149.6 | 140.0 | 0.60 | 0.4 | 486 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 41.5 | 128.1 | 119.6 | 0.62 | 0.5 | 459 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 42.0 | 126.5 | 117.8 | 0.48 | 0.4 | 523 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 42.5 | 124.1 | 115.3 | 0.68 | 0.5 | 514 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 43.0 | 124.4 | 115.3 | 0.66 | 0.5 | 530 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 43.5 | 119.8 | 110.7 | 0.73 | 0.6 | 527 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 44.0 | 122.6 | 113.1 | 0.52 | 0.4 | 548 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 44.5 | 123.7 | 113.8 | 0.52 | 0.4 | 587 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 45.0 | 115.6 | 106.1 | 0.74 | 0.6 | 644 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 45.5 | 137.3 | 125.7 | 0.67 | 0.5 | 636 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 46.0 | 142.9 | 130.5 | 0.92 | 0.6 | 653 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 46.5 | 167.1 | 152.3 | 0.70 | 0.4 | 795 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 47.0 | 199.8 | 181.7 | 0.88 | 0.5 | 969 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 47.5 | 211.3 | 191.7 | 2.56 | 1.1 | 1512 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 48.0 | 261.9 | 237.0 | 1.16 | 0.4 | 1553 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 48.5 | 232.3 | 209.8 | 1.94 | 0.7 | 1877 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 49.0 | 149.5 | 134.7 | 1.42 | 0.8 | 1744 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 49.5 | 162.2 | 145.9 | 1.31 | 0.8 | 1797 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 50.0 | 158.7 | 142.4 | 0.79 | 0.5 | 1791 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 22 - 33 | 20 - 30 |

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-12-1999 TIME:07:46:56.12
SOUNDING NUMBER:cp-9911

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 182.1 | 163.0 | 1.12 | 0.6 | 1909 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 51.0 | 153.7 | 137.3 | 1.57 | 0.9 | 1845 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 51.5 | 124.1 | 110.7 | 0.87 | 0.6 | 1920 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 34 | 20 - 30 |
| 52.0 | 114.4 | 101.8 | 0.64 | 0.5 | 2027 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 34 | 20 - 30 |
| 52.5 | 108.3 | 96.2 | 0.59 | 0.5 | 2001 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 53.0 | 116.5 | 103.2 | 0.65 | 0.5 | 1971 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 53.5 | 144.7 | 127.9 | 0.83 | 0.5 | 2111 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 54.0 | 152.5 | 134.5 | 0.67 | 0.4 | 2129 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 54.5 | 117.1 | 103.1 | 0.49 | 0.4 | 2359 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 55.0 | 100.5 | 88.3 | 0.49 | 0.5 | 2249 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 55.5 | 100.6 | 88.2 | 0.54 | 0.5 | 2376 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 56.0 | 101.1 | 88.4 | 0.51 | 0.5 | 2416 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 56.5 | 101.3 | 88.5 | 0.56 | 0.6 | 2432 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 57.0 | 99.5 | 86.7 | 0.66 | 0.7 | 2433 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 57.5 | 102.8 | 89.4 | 0.70 | 0.7 | 2509 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 58.0 | 108.9 | 94.5 | 0.67 | 0.6 | 2503 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 58.5 | 113.5 | 98.3 | 0.62 | 0.5 | 2548 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 59.0 | 112.6 | 97.3 | 0.66 | 0.6 | 2673 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 59.5 | 114.0 | 98.3 | 0.67 | 0.5 | 2734 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 17 - 23 | 15 - 20 |
| 60.0 | 138.0 | 118.8 | 0.72 | 0.5 | 2622 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 60.5 | 156.6 | 134.6 | 0.95 | 0.6 | 2672 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 61.0 | 168.3 | 144.4 | 0.96 | 0.5 | 2840 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 61.5 | 195.9 | 167.7 | 0.89 | 0.4 | 2633 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 62.0 | 256.4 | 219.1 | 1.38 | 0.5 | 2656 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 62.5 | 290.0 | 247.4 | 2.52 | 0.9 | 3123 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 63.0 | 286.4 | 243.9 | 1.85 | 0.7 | 2243 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 63.5 | 319.3 | 271.4 | 1.82 | 0.6 | 3354 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 64.0 | 321.8 | 272.9 | 1.26 | 0.4 | 2056 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 64.5 | 341.5 | 289.2 | 2.98 | 0.9 | 1555 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 71 - 117 | 60 - 99 |
| 65.0 | 340.1 | 287.5 | 2.73 | 0.8 | 3426 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 71 - 117 | 60 - 99 |
| 65.5 | 365.2 | 308.1 | 3.86 | 1.0 | 4250 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 71 - 117 | 60 - 99 |
| 66.0 | 297.9 | 250.9 | 3.60 | 1.0 | 4625 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 66.5 | 224.0 | 188.3 | 2.22 | 0.9 | 4258 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 71 | 40 - 60 |
| 67.0 | 194.4 | 163.1 | 1.96 | 0.9 | 4129 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 67.5 | 240.8 | 201.7 | 1.96 | 0.8 | 4066 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 68.0 | 271.1 | 226.7 | 2.12 | 0.8 | 4246 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 68.5 | 254.8 | 212.7 | 3.03 | 0.9 | 4384 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 69.0 | 433.3 | 361.0 | 5.66 | 1.2 | 2726 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 120 | + 100 |
| 69.5 | 476.0 | 395.9 | 11.25 | 2.0 | 5274 | V dense, Sa gravel to si gr sand | 40-42 | +100 | | | | + 120 | + 100 |
| 70.0 | 532.5 | 442.1 | 9.01 | 1.9 | 3948 | V dense, Sa gravel to si gr sand | 42-46 | +100 | | | | + 120 | + 100 |
| 70.5 | 419.7 | 347.9 | 3.88 | 0.8 | 5185 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 72 - 119 | 60 - 99 |
| 71.0 | 440.1 | 364.1 | 4.17 | 0.9 | 5843 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 73 - 120 | 60 - 99 |
| 71.5 | 435.5 | 359.8 | 5.61 | 1.2 | 5539 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 121 | + 100 |
| 72.0 | 394.2 | 325.1 | 2.80 | 0.7 | 5623 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 73 - 120 | 60 - 99 |
| 72.5 | 323.1 | 266.0 | 3.06 | 0.8 | 5775 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 73.0 | 283.8 | 233.2 | 4.96 | 1.3 | 5329 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 73 - 120 | 60 - 99 |
| 73.5 | 418.7 | 343.5 | 7.21 | 1.8 | 5570 | V dense, Sa gravel to si gr sand | 42-46 | +100 | | | | + 122 | + 100 |
| 74.0 | 328.6 | 269.1 | 6.81 | 1.8 | 6073 | V dense, Sa gravel to si gr sand | 40-42 | 80-100 | | | | + 122 | + 100 |
| 74.5 | 284.6 | 232.7 | 5.87 | 1.9 | 6171 | V dense, Gr si sand to cl gr sand | 40-42 | 80-100 | | | | + 122 | + 100 |
| 75.0 | 289.3 | 236.1 | 5.71 | 2.0 | 6329 | V dense, Gr si sand to cl gr sand | 40-42 | 80-100 | | | | + 123 | + 100 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT. Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-12-1999 TIME:07:46:56.12
SOUNDING NUMBER:cp-9911

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 276.3 | 225.2 | 5.28 | 1.8 | 6227 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 74 - 121 | 60 - 99 |
| 76.0 | 296.6 | 241.3 | 5.97 | 2.0 | 5572 | V dense, Gr si sand to cl gr sand | 40-42 | 80-100 | | | | + 123 | + 100 |
| 76.5 | 294.7 | 239.4 | 4.61 | 1.5 | 6217 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 74 - 122 | 60 - 99 |
| 77.0 | 325.1 | 263.6 | 5.02 | 1.5 | 6232 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | 74 - 122 | 60 - 99 |
| 77.5 | 356.4 | 288.5 | 8.76 | 2.5 | 7472 | V dense, Gr si sand to cl gr sand | 37-40 | +100 | | | | + 124 | + 100 |
| 78.0 | 349.3 | 282.3 | 5.71 | 1.4 | 3148 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 124 | + 100 |

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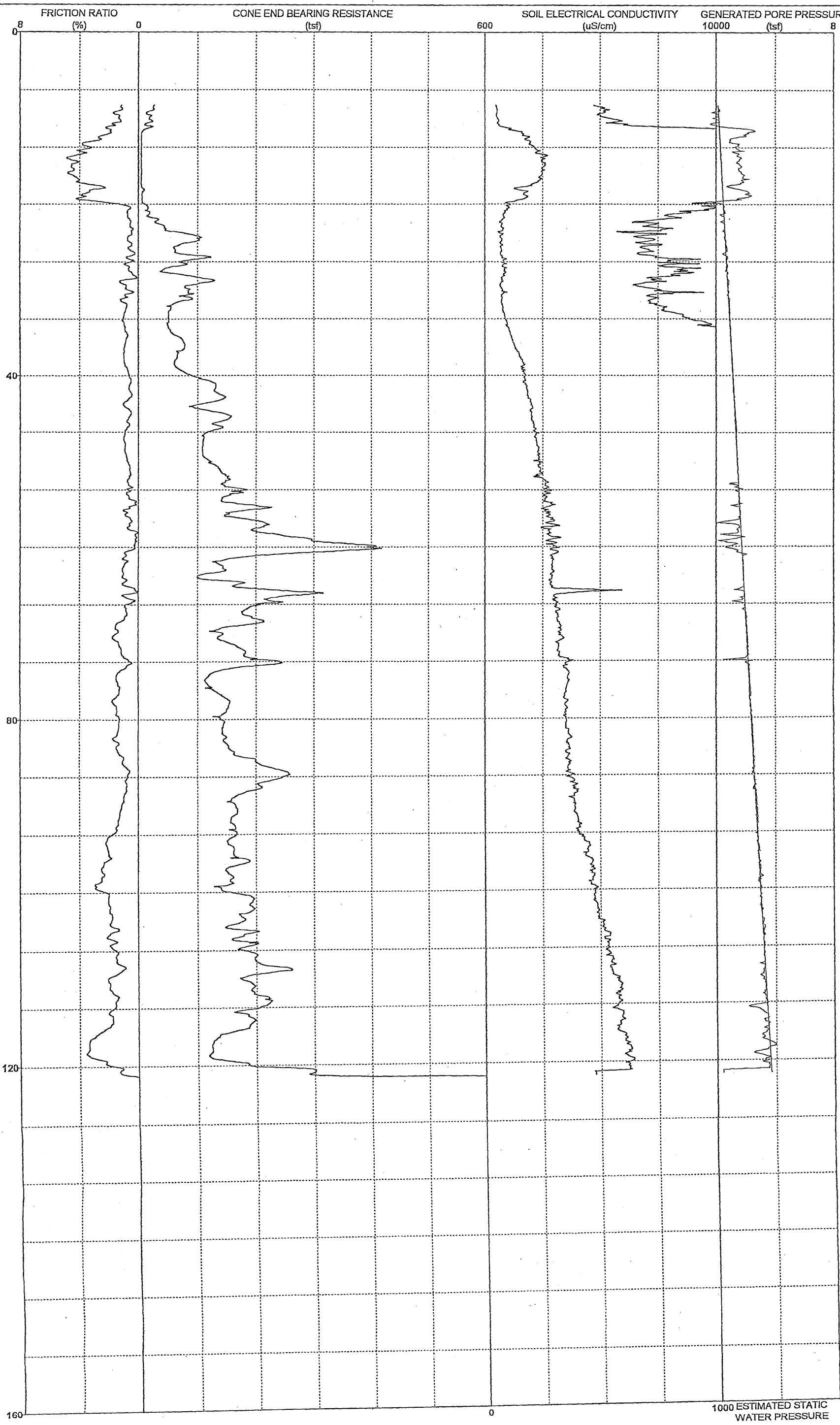
# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-10-1999 TIME:13:53:20.59
SOUNDING NUMBER:CP-9912

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-10-1999 TIME:13:53:20.59
SOUNDING NUMBER:CP-9912

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.5 | 192.0 | 145.2 | 3.92 | 2.0 | 4753 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 101.0 | 194.3 | 146.8 | 3.91 | 2.0 | 4752 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 79 | 40 - 60 |
| 101.5 | 189.7 | 143.1 | 3.78 | 1.9 | 4823 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 102.0 | 196.3 | 147.9 | 3.80 | 1.9 | 4863 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 102.5 | 176.4 | 132.7 | 3.40 | 1.8 | 4930 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 103.0 | 179.4 | 134.8 | 3.15 | 1.8 | 4935 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 103.5 | 173.0 | 129.8 | 3.46 | 1.9 | 5032 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 104.0 | 147.8 | 110.8 | 2.74 | 1.6 | 5112 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 40 - 53 | 30 - 40 |
| 104.5 | 202.2 | 151.3 | 3.13 | 1.6 | 5193 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 53 - 80 | 40 - 60 |
| 105.0 | 178.8 | 133.6 | 4.00 | 2.1 | 5373 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 105.5 | 161.6 | 120.6 | 2.61 | 1.5 | 5173 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 40 - 54 | 30 - 40 |
| 106.0 | 199.3 | 148.5 | 3.72 | 1.9 | 5337 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 80 | 40 - 60 |
| 106.5 | 169.4 | 126.1 | 2.99 | 1.6 | 5316 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 107.0 | 197.1 | 146.5 | 2.83 | 1.4 | 5273 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 107.5 | 197.8 | 146.9 | 2.98 | 1.5 | 5331 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 108.0 | 203.1 | 150.6 | 3.06 | 1.4 | 5537 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 108.5 | 230.9 | 171.1 | 2.21 | 0.9 | 5524 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 109.0 | 252.4 | 186.7 | 3.03 | 1.2 | 5434 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 109.5 | 191.3 | 141.3 | 3.83 | 1.8 | 5507 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 110.0 | 176.7 | 130.4 | 3.85 | 2.1 | 5706 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 110.5 | 194.3 | 143.2 | 3.73 | 1.9 | 5748 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 81 | 40 - 60 |
| 111.0 | 192.7 | 141.8 | 3.75 | 1.9 | 5929 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 111.5 | 196.2 | 144.2 | 3.50 | 1.7 | 5913 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 112.0 | 218.1 | 160.1 | 2.95 | 1.4 | 5831 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 54 - 82 | 40 - 60 |
| 112.5 | 226.3 | 165.9 | 3.52 | 1.6 | 5770 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 113.0 | 218.2 | 159.8 | 3.44 | 1.5 | 5899 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 113.5 | 196.0 | 143.3 | 3.83 | 1.8 | 5713 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 114.0 | 172.7 | 126.1 | 3.69 | 2.0 | 5714 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 114.5 | 190.5 | 138.9 | 3.50 | 1.8 | 5956 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 115.0 | 195.5 | 142.5 | 3.41 | 1.7 | 5953 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 115.5 | 188.5 | 137.2 | 3.73 | 2.0 | 5844 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 55 - 82 | 40 - 60 |
| 116.0 | 169.8 | 123.4 | 4.39 | 2.4 | 5740 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 55 - 83 | 40 - 60 |
| 116.5 | 138.0 | 100.2 | 4.47 | 2.9 | 5771 | Hard, Sandy silt to sandy clay | | | 30 | 8.73 | 8.94 | 55 - 83 | 40 - 60 |
| 117.0 | 131.2 | 95.1 | 4.48 | 3.3 | 6074 | Hard, Gr cl sand to gr sa silt | | | 30 | 8.28 | 8.96 | 55 - 83 | 40 - 60 |
| 117.5 | 125.9 | 91.1 | 4.26 | 3.3 | 6051 | Hard, Gr cl sand to gr sa silt | | | 30 | 7.92 | 8.53 | 55 - 83 | 40 - 60 |
| 118.0 | 124.5 | 90.1 | 4.17 | 3.3 | 6114 | Hard, Gr cl sand to gr sa silt | | | 30 | 7.83 | 8.33 | 55 - 83 | 40 - 60 |
| 118.5 | 124.0 | 89.6 | 4.42 | 3.5 | 6320 | Hard, Gr cl sand to gr sa silt | | | 30 | 7.80 | 8.84 | 55 - 83 | 40 - 60 |
| 119.0 | 121.1 | 87.4 | 4.24 | 3.1 | 6144 | Hard, Sandy silt to sandy clay | | | 30 | 7.60 | 8.47 | 55 - 83 | 40 - 60 |
| 119.5 | 156.8 | 113.0 | 3.83 | 2.2 | 6271 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 120.0 | 189.5 | 136.4 | 3.71 | 1.6 | 6276 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 120.5 | 297.1 | 213.6 | 3.72 | 1.2 | 6205 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 121.0 | 294.5 | 211.4 | 3.99 | 0.9 | 6193 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 121.5 | 564.1 | 404.6 | 0.13 | 0.5 | 4773 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 84 - 138 | 60 - 99 |

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***STRATIGRAPHICS***

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-10-1999 TIME:13:53:20.59
SOUNDING NUMBER:CP-9912

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 1.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 2.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 2.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 3.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 3.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 4.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 4.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 5.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 5.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 6.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 6.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 7.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 7.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 8.0 | Prepunched To 8.50' | | | | | | | | | | | | |
| 8.5 | Prepunched To 8.50' | | | | | | | | | | | | |
| 9.0 | 23.9 | 28.4 | 0.31 | 1.2 | 524 | Loose, Silty sand to sandy silt | 27-31 | 20-40 | | | | 03 - 05 | 04 - 06 |
| 9.5 | 15.0 | 17.7 | 0.29 | 1.5 | 491 | Loose, Silty sand to sandy silt | 27-31 | 20-40 | | | | 02 - 03 | 02 - 04 |
| 10.0 | 17.9 | 21.0 | 0.26 | 1.3 | 557 | Loose, Silty sand to sandy silt | 27-31 | 20-40 | | | | 03 - 05 | 04 - 06 |
| 10.5 | 15.7 | 18.4 | 0.33 | 1.7 | 550 | V stiff, Sandy silt to clayey silt | | | 15 | 2.01 | 0.66 | 03 - 05 | 04 - 06 |
| 11.0 | 21.2 | 24.7 | 0.36 | 2.2 | 875 | V stiff, Sandy silt to sandy clay | | | 20 | 2.06 | 0.72 | 05 - 09 | 06 - 10 |
| 11.5 | 5.8 | 6.7 | 0.22 | 1.9 | 1609 | Stiff, Clayey silt to silty clay | | | 10 | 1.02 | 0.44 | 00 - 02 | 00 - 02 |
| 12.0 | 4.4 | 5.1 | 0.12 | 2.6 | 1850 | Soft, Silty clay to clay | | | 18 | 0.41 | 0.24 | 00 - 02 | 00 - 02 |
| 12.5 | 4.3 | 4.9 | 0.13 | 2.6 | 1865 | Soft, Silty clay to clay | | | 18 | 0.39 | 0.25 | 00 - 02 | 00 - 02 |
| 13.0 | 4.5 | 5.1 | 0.18 | 3.8 | 1951 | Soft, Silty clay to clay | | | 18 | 0.41 | 0.35 | 00 - 02 | 00 - 02 |
| 13.5 | 4.3 | 4.8 | 0.15 | 3.4 | 2210 | Soft, Silty clay to clay | | | 18 | 0.38 | 0.30 | 00 - 02 | 00 - 02 |
| 14.0 | 4.0 | 4.5 | 0.15 | 3.6 | 2208 | Soft, Silty clay to clay | | | 18 | 0.35 | 0.30 | 00 - 02 | 00 - 02 |
| 14.5 | 4.3 | 4.8 | 0.19 | 4.7 | 2498 | Soft, Clay | | | 18 | 0.38 | 0.39 | 00 - 02 | 00 - 02 |
| 15.0 | 3.8 | 4.2 | 0.17 | 4.2 | 2483 | Soft, Clay | | | 18 | 0.32 | 0.35 | 00 - 02 | 00 - 02 |
| 15.5 | 4.3 | 4.8 | 0.19 | 4.5 | 2607 | Soft, Clay | | | 18 | 0.38 | 0.38 | 00 - 02 | 00 - 02 |
| 16.0 | 4.2 | 4.6 | 0.19 | 4.4 | 2577 | Soft, Clay | | | 18 | 0.36 | 0.38 | 00 - 02 | 00 - 02 |
| 16.5 | 4.5 | 4.9 | 0.21 | 4.7 | 2472 | Soft, Clay | | | 18 | 0.39 | 0.41 | 00 - 02 | 00 - 02 |
| 17.0 | 4.1 | 4.5 | 0.17 | 4.1 | 2459 | Soft, Clay | | | 18 | 0.34 | 0.34 | 00 - 02 | 00 - 02 |
| 17.5 | 4.0 | 4.3 | 0.17 | 4.1 | 2245 | Soft, Clay | | | 18 | 0.32 | 0.35 | 00 - 02 | 00 - 02 |
| 18.0 | 4.7 | 5.0 | 0.17 | 2.3 | 1578 | Soft, Clayey silt to silty clay | | | 18 | 0.40 | 0.34 | 00 - 02 | 00 - 02 |
| 18.5 | 7.5 | 8.1 | 0.24 | 3.3 | 1856 | Stiff, Silty clay to clay | | | 10 | 1.27 | 0.48 | 00 - 02 | 00 - 02 |
| 19.0 | 5.3 | 5.7 | 0.23 | 3.8 | 1811 | Firm, Silty clay to clay | | | 10 | 0.84 | 0.47 | 00 - 02 | 00 - 02 |
| 19.5 | 5.6 | 6.0 | 0.25 | 3.8 | 1473 | Firm, Silty clay to clay | | | 10 | 0.89 | 0.50 | 00 - 02 | 00 - 02 |
| 20.0 | 10.3 | 11.0 | 0.19 | 1.4 | 1089 | Stiff, Sandy silt to clayey silt | | | 15 | 1.22 | 0.37 | 00 - 02 | 00 - 02 |
| 20.5 | 15.1 | 16.0 | 0.08 | 0.6 | 984 | V loose, Silty sand to sandy silt | 31-36 | 0-20 | | | | 00 - 02 | 00 - 02 |
| 21.0 | 18.9 | 20.0 | 0.14 | 0.8 | 872 | Loose, Silty sand to sandy silt | 31-36 | 20-40 | | | | 02 - 04 | 02 - 04 |
| 21.5 | 21.0 | 22.2 | 0.22 | 0.7 | 839 | Loose, Silty sand to sandy silt | 31-36 | 20-40 | | | | 02 - 04 | 02 - 04 |
| 22.0 | 28.2 | 29.6 | 0.17 | 0.5 | 664 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 04 - 06 | 04 - 06 |
| 22.5 | 42.5 | 44.4 | 0.27 | 0.6 | 704 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 23.0 | 44.8 | 46.7 | 0.29 | 0.4 | 764 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 23.5 | 88.0 | 91.4 | 0.44 | 0.5 | 766 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 14 - 19 | 15 - 20 |
| 24.0 | 100.6 | 104.1 | 0.75 | 0.8 | 722 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 29 | 20 - 30 |
| 24.5 | 80.3 | 82.8 | 0.46 | 0.5 | 658 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 15 - 19 | 15 - 20 |
| 25.0 | 59.8 | 61.5 | 0.48 | 0.7 | 675 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 10 - 15 | 10 - 15 |

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-10-1999 TIME:13:53:20.59
SOUNDING NUMBER:CP-9912

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 61.7 | 63.2 | 0.29 | 0.4 | 717 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 26.0 | 108.4 | 110.7 | 0.56 | 0.5 | 736 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 29 | 20 - 30 |
| 26.5 | 82.3 | 83.7 | 0.35 | 0.3 | 806 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 15 - 20 | 15 - 20 |
| 27.0 | 80.8 | 81.9 | 0.74 | 0.9 | 793 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 15 - 20 | 15 - 20 |
| 27.5 | 43.5 | 44.0 | 0.43 | 0.7 | 849 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 28.0 | 57.5 | 57.9 | 0.35 | 0.4 | 859 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 28.5 | 104.0 | 104.4 | 0.15 | 0.1 | 716 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 15 - 20 | 15 - 20 |
| 29.0 | 119.9 | 120.0 | 1.58 | 1.3 | 731 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 30 - 40 | 30 - 40 |
| 29.5 | 79.2 | 79.1 | 0.84 | 0.8 | 665 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 15 - 20 | 15 - 20 |
| 30.0 | 84.7 | 84.2 | 0.54 | 0.6 | 750 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 15 - 20 | 15 - 20 |
| 30.5 | 84.6 | 83.9 | 0.80 | 0.9 | 727 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 15 - 20 | 15 - 20 |
| 31.0 | 91.4 | 90.3 | 1.02 | 1.2 | 732 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 31.5 | 61.3 | 60.4 | 0.61 | 0.8 | 717 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 10 - 15 | 10 - 15 |
| 32.0 | 55.2 | 54.2 | 0.48 | 0.8 | 781 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 10 - 15 | 10 - 15 |
| 32.5 | 51.1 | 50.1 | 0.49 | 0.9 | 798 | Loose, Silty sand to sandy silt | 37-40 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 33.0 | 50.5 | 49.4 | 0.51 | 1.0 | 857 | Loose, Silty sand to sandy silt | 37-40 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 33.5 | 51.1 | 49.8 | 0.54 | 1.1 | 912 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 10 - 15 | 10 - 15 |
| 34.0 | 49.2 | 47.8 | 0.50 | 1.0 | 965 | Loose, Silty sand to sandy silt | 36-37 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 34.5 | 52.0 | 50.4 | 0.50 | 0.9 | 1040 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 35.0 | 56.7 | 54.8 | 0.51 | 0.8 | 1098 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 35.5 | 71.0 | 68.4 | 0.59 | 0.8 | 1162 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 10 - 16 | 10 - 15 |
| 36.0 | 75.9 | 72.9 | 0.67 | 0.9 | 1220 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 16 - 21 | 15 - 20 |
| 36.5 | 78.1 | 74.8 | 0.72 | 0.9 | 1289 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 16 - 21 | 15 - 20 |
| 37.0 | 74.2 | 70.9 | 0.74 | 1.0 | 1387 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 16 - 21 | 15 - 20 |
| 37.5 | 65.3 | 62.2 | 0.69 | 1.0 | 1482 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 10 - 16 | 10 - 15 |
| 38.0 | 64.1 | 60.9 | 0.64 | 1.0 | 1563 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 11 - 16 | 10 - 15 |
| 38.5 | 60.2 | 57.1 | 0.60 | 1.0 | 1665 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 11 - 16 | 10 - 15 |
| 39.0 | 64.0 | 60.5 | 0.56 | 0.8 | 1588 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 11 - 16 | 10 - 15 |
| 39.5 | 75.3 | 71.0 | 0.60 | 0.7 | 1646 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 11 - 16 | 10 - 15 |
| 40.0 | 90.5 | 85.1 | 0.63 | 0.6 | 1760 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 16 - 21 | 15 - 20 |
| 40.5 | 112.1 | 105.1 | 0.63 | 0.5 | 1743 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 41.0 | 131.2 | 122.8 | 0.75 | 0.6 | 1762 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 41.5 | 130.8 | 122.1 | 0.88 | 0.7 | 1802 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 42.0 | 131.3 | 122.3 | 0.72 | 0.5 | 1845 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 42.5 | 146.1 | 135.7 | 0.71 | 0.5 | 1891 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 43.0 | 133.7 | 123.9 | 1.12 | 0.8 | 1961 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 43.5 | 99.3 | 91.8 | 1.18 | 1.0 | 2025 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 44.0 | 104.7 | 96.6 | 0.82 | 0.6 | 2008 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 44.5 | 146.0 | 134.3 | 0.79 | 0.5 | 2019 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 45.0 | 155.8 | 143.0 | 1.01 | 0.7 | 2012 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 45.5 | 135.1 | 123.7 | 1.18 | 0.8 | 2116 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 46.0 | 140.9 | 128.7 | 0.94 | 0.7 | 2115 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 46.5 | 125.4 | 114.3 | 1.24 | 0.9 | 2103 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 47.0 | 109.4 | 99.5 | 1.09 | 0.9 | 2206 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 47.5 | 110.2 | 100.0 | 1.11 | 1.0 | 2224 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 48.0 | 108.9 | 98.6 | 1.00 | 0.9 | 2260 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 48.5 | 108.1 | 97.7 | 1.01 | 0.9 | 2334 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 49.0 | 108.9 | 98.2 | 1.01 | 0.9 | 2295 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 49.5 | 110.5 | 99.4 | 0.95 | 0.8 | 2351 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 50.0 | 121.5 | 109.0 | 0.99 | 0.8 | 2260 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |

Notes:

* Indicates lightly overconsolidated soil
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-10-1999 TIME:13:53:20.59
SOUNDING NUMBER:CP-9912

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 130.8 | 117.1 | 0.81 | 0.6 | 2296 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 34 | 20 - 30 |
| 51.0 | 138.1 | 123.4 | 0.84 | 0.6 | 2430 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 34 | 20 - 30 |
| 51.5 | 145.8 | 130.0 | 0.76 | 0.5 | 2425 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 34 | 20 - 30 |
| 52.0 | 152.4 | 135.5 | 0.94 | 0.6 | 2508 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 34 | 20 - 30 |
| 52.5 | 145.8 | 129.4 | 1.05 | 0.7 | 2735 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 53.0 | 155.0 | 137.3 | 0.56 | 0.4 | 2774 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 53.5 | 160.4 | 141.8 | 0.89 | 0.6 | 2587 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 54.0 | 152.7 | 134.7 | 1.06 | 0.7 | 2571 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 54.5 | 140.8 | 124.0 | 0.59 | 0.4 | 2595 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 55.0 | 181.3 | 159.2 | 0.45 | 0.2 | 3020 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 55.5 | 208.8 | 183.1 | 1.31 | 0.7 | 2481 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 68 | 40 - 60 |
| 56.0 | 151.1 | 132.2 | 1.29 | 0.8 | 2739 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 46 | 30 - 40 |
| 56.5 | 161.2 | 140.8 | 1.14 | 0.6 | 2722 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 46 | 30 - 40 |
| 57.0 | 209.4 | 182.5 | 0.96 | 0.5 | 2993 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 34 - 46 | 30 - 40 |
| 57.5 | 214.1 | 186.2 | 1.26 | 0.6 | 3230 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 46 - 69 | 40 - 60 |
| 58.0 | 192.6 | 167.2 | 1.04 | 0.5 | 2778 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 35 - 46 | 30 - 40 |
| 58.5 | 235.5 | 204.0 | 0.61 | 0.2 | 2747 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 46 - 69 | 40 - 60 |
| 59.0 | 289.8 | 250.6 | 0.63 | 0.2 | 3127 | Med dense, Sa gravel to gr sand | +46 | 40-60 | | | | 46 - 69 | 40 - 60 |
| 59.5 | 332.2 | 286.6 | 1.00 | 0.3 | 3097 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 46 - 70 | 40 - 60 |
| 60.0 | 394.1 | 339.4 | 1.18 | 0.3 | 3094 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 46 - 70 | 40 - 60 |
| 60.5 | 327.8 | 281.8 | 3.33 | 0.9 | 3148 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 70 - 115 | 60 - 99 |
| 61.0 | 201.2 | 172.6 | 2.10 | 0.8 | 2858 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 61.5 | 146.3 | 125.3 | 1.39 | 0.9 | 2977 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 62.0 | 138.6 | 118.4 | 1.37 | 1.0 | 2927 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 62.5 | 144.7 | 123.5 | 1.56 | 1.1 | 2903 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 63.0 | 125.7 | 107.0 | 1.46 | 1.0 | 2953 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 63.5 | 99.9 | 84.9 | 1.31 | 1.1 | 2905 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 64.0 | 159.5 | 135.3 | 1.51 | 0.9 | 2840 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 64.5 | 162.4 | 137.5 | 1.69 | 0.9 | 2880 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 65.0 | 232.2 | 196.2 | 0.78 | 0.2 | 4457 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 65.5 | 295.0 | 248.9 | 2.80 | 0.9 | 3293 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 66.0 | 221.8 | 186.8 | 1.84 | 0.7 | 3129 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 66.5 | 235.9 | 198.3 | 1.14 | 0.5 | 3163 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 48 - 71 | 40 - 60 |
| 67.0 | 188.6 | 158.3 | 1.81 | 0.9 | 3048 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 67.5 | 176.9 | 148.2 | 1.50 | 0.8 | 3132 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 48 | 30 - 40 |
| 68.0 | 187.0 | 156.3 | 1.74 | 0.9 | 3174 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 36 - 48 | 30 - 40 |
| 68.5 | 208.6 | 174.1 | 2.11 | 1.0 | 3136 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 69.0 | 187.6 | 156.3 | 3.13 | 1.5 | 3235 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 69.5 | 137.6 | 114.4 | 2.49 | 1.5 | 3236 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 70.0 | 142.6 | 118.4 | 2.04 | 1.5 | 3194 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 70.5 | 134.4 | 111.4 | 2.53 | 1.8 | 3345 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 71.0 | 148.6 | 123.0 | 2.19 | 1.4 | 3212 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 71.5 | 167.1 | 138.0 | 2.25 | 1.3 | 3189 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 73 | 40 - 60 |
| 72.0 | 180.1 | 148.5 | 2.09 | 1.2 | 3152 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 72.5 | 179.3 | 147.6 | 2.08 | 1.1 | 3215 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 73.0 | 200.4 | 164.7 | 1.66 | 0.7 | 3466 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 73.5 | 243.9 | 200.1 | 1.06 | 0.5 | 3581 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 49 - 73 | 40 - 60 |
| 74.0 | 167.0 | 136.7 | 1.70 | 0.9 | 3410 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 74.5 | 130.7 | 106.9 | 1.94 | 1.3 | 3604 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 37 | 20 - 30 |
| 75.0 | 118.6 | 96.8 | 1.85 | 1.5 | 3612 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 37 | 20 - 30 |

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Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-10-1999 TIME:13:53:20.59
SOUNDING NUMBER:CP-9912

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 112.8 | 91.9 | 1.70 | 1.5 | 3632 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 76.0 | 117.7 | 95.7 | 1.66 | 1.4 | 3579 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 76.5 | 126.2 | 102.5 | 1.73 | 1.3 | 3531 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 77.0 | 136.0 | 110.3 | 1.87 | 1.3 | 3485 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 77.5 | 147.3 | 119.3 | 2.40 | 1.6 | 3424 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 78.0 | 154.9 | 125.2 | 2.70 | 1.8 | 3585 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 49 - 74 | 40 - 60 |
| 78.5 | 152.2 | 122.9 | 2.28 | 1.5 | 3487 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 79.0 | 149.3 | 120.3 | 2.21 | 1.5 | 3485 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 79.5 | 140.8 | 113.3 | 1.98 | 1.4 | 3500 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 80.0 | 140.6 | 113.0 | 1.86 | 1.3 | 3515 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 50 | 30 - 40 |
| 80.5 | 144.3 | 115.7 | 1.91 | 1.3 | 3512 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 81.0 | 142.5 | 114.1 | 1.94 | 1.3 | 3511 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 81.5 | 142.5 | 113.9 | 2.06 | 1.4 | 3617 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 82.0 | 149.4 | 119.3 | 2.40 | 1.6 | 3692 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 82.5 | 144.1 | 114.8 | 2.23 | 1.5 | 3608 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 83.0 | 152.1 | 121.0 | 2.19 | 1.4 | 3613 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 83.5 | 156.1 | 124.0 | 2.31 | 1.4 | 3677 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 84.0 | 161.9 | 128.4 | 2.19 | 1.3 | 3530 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 84.5 | 188.4 | 149.2 | 1.93 | 1.0 | 3591 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 85.0 | 201.2 | 159.1 | 2.29 | 1.1 | 3706 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 85.5 | 218.8 | 172.8 | 1.92 | 0.8 | 3630 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 86.0 | 246.4 | 194.3 | 1.39 | 0.6 | 3609 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 51 - 76 | 40 - 60 |
| 86.5 | 254.7 | 200.5 | 1.87 | 0.7 | 3803 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 87.0 | 233.3 | 183.4 | 2.09 | 0.9 | 3796 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 87.5 | 203.2 | 159.5 | 1.68 | 0.8 | 3795 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 88.0 | 208.7 | 163.5 | 1.68 | 0.8 | 3869 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 51 - 77 | 40 - 60 |
| 88.5 | 180.1 | 141.0 | 1.72 | 0.9 | 3993 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 89.0 | 162.6 | 127.0 | 1.67 | 1.0 | 3860 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 89.5 | 153.1 | 119.4 | 1.64 | 1.0 | 3876 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 38 | 20 - 30 |
| 90.0 | 165.3 | 128.8 | 1.90 | 1.1 | 3932 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 51 | 30 - 40 |
| 90.5 | 168.7 | 131.2 | 2.06 | 1.2 | 3929 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 51 | 30 - 40 |
| 91.0 | 165.0 | 128.2 | 2.15 | 1.3 | 3922 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 51 | 30 - 40 |
| 91.5 | 157.3 | 122.0 | 2.14 | 1.3 | 4019 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 92.0 | 158.1 | 122.5 | 2.23 | 1.4 | 4059 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 52 | 30 - 40 |
| 92.5 | 165.0 | 127.7 | 2.65 | 1.5 | 4098 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 93.0 | 166.9 | 128.9 | 2.58 | 1.6 | 4038 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 93.5 | 164.0 | 126.5 | 3.30 | 2.0 | 4093 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 94.0 | 152.0 | 117.1 | 3.36 | 2.1 | 4291 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 94.5 | 153.7 | 118.2 | 3.44 | 2.2 | 4512 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 95.0 | 162.7 | 125.0 | 3.33 | 2.1 | 4476 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 95.5 | 161.8 | 124.1 | 3.27 | 2.0 | 4485 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 96.0 | 161.5 | 123.7 | 3.34 | 1.8 | 4358 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 52 - 78 | 40 - 60 |
| 96.5 | 188.8 | 144.4 | 4.20 | 2.3 | 4641 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 52 - 78 | 40 - 60 |
| 97.0 | 160.3 | 122.4 | 4.22 | 2.4 | 4579 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 52 - 79 | 40 - 60 |
| 97.5 | 148.6 | 113.3 | 3.84 | 2.5 | 4686 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 52 - 79 | 40 - 60 |
| 98.0 | 157.1 | 119.7 | 3.66 | 2.3 | 4646 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 53 - 79 | 40 - 60 |
| 98.5 | 157.8 | 120.0 | 3.99 | 2.5 | 4686 | V dense, Silty sand to sandy silt | 37-40 | 80-100 | | | | 53 - 79 | 40 - 60 |
| 99.0 | 161.5 | 122.7 | 4.41 | 2.9 | 4520 | V dense, Gr si sand to cl gr sand | 36-37 | 80-100 | | | | 79 - 130 | 60 - 99 |
| 99.5 | 140.0 | 106.2 | 4.30 | 2.9 | 4753 | Hard, Sandy silt to sandy clay | | | 30 | 8.94 | 8.61 | 53 - 79 | 40 - 60 |
| 100.0 | 155.8 | 118.0 | 3.69 | 2.1 | 4759 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 53 - 79 | 40 - 60 |

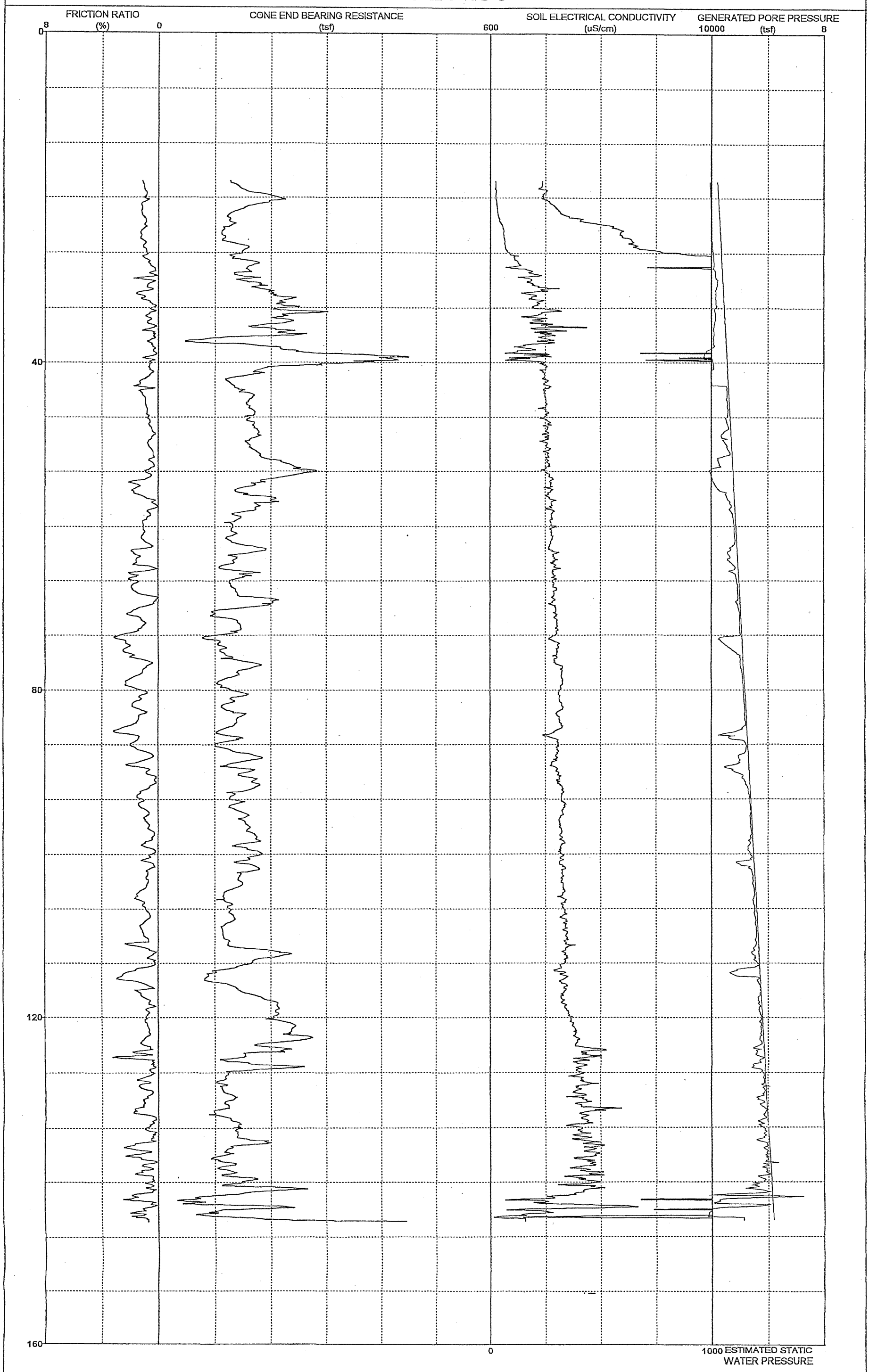
Notes:

* Indicates lightly overconsolidated soil
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

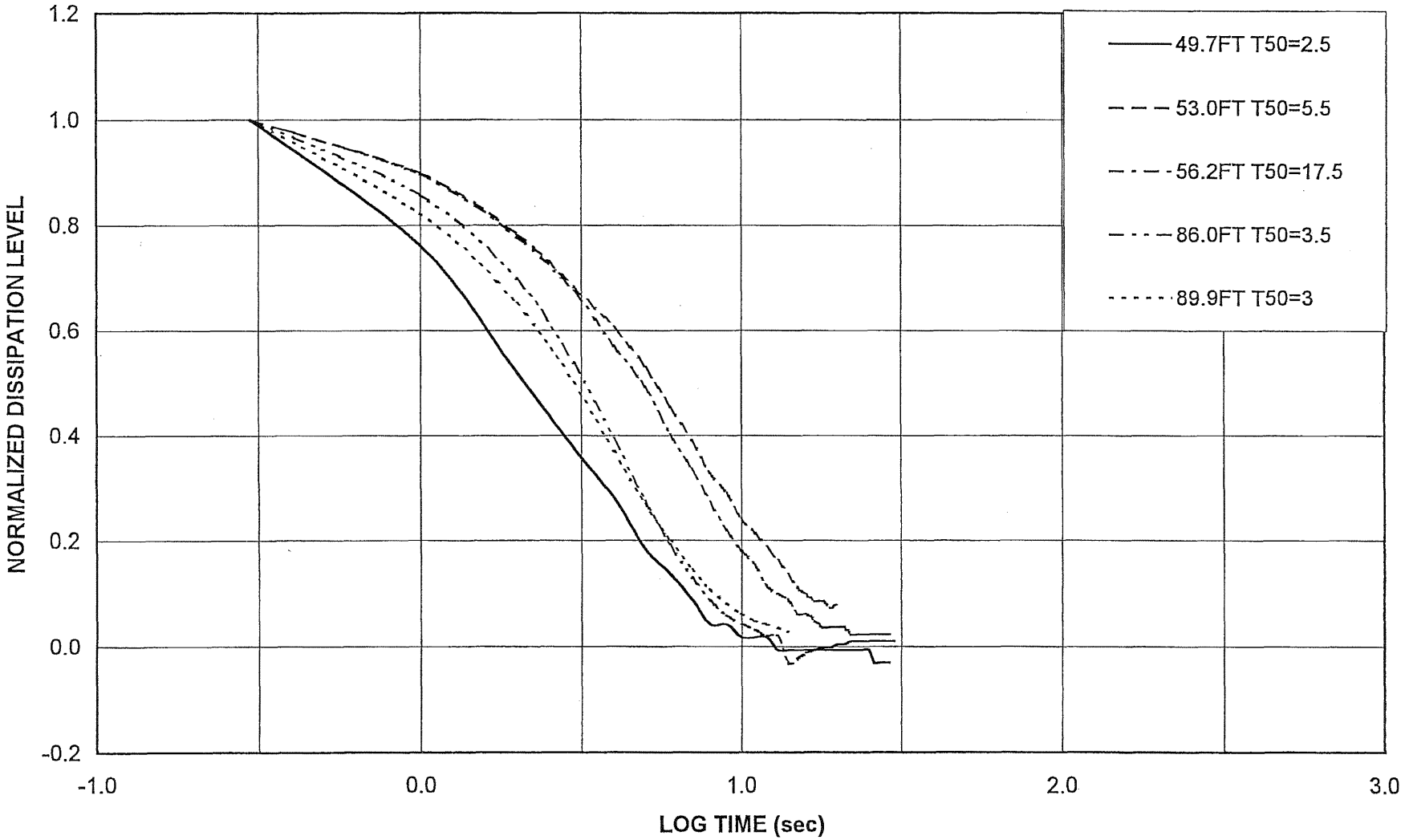
***STRATIGRAPHICS***

R2DATE: 5-12-1999 TIME:14:46:19.41
SOUNDING NUMBER:CP-9913

*STRATIGRAPHICS*

**PORE WATER PRESSURE DISSIPATION TEST**

**Stratford Army Engine Plant CP-9913A**



***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-12-1999 TIME:14:46:19.41
SOUNDING NUMBER:CP-9913

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 1.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 2.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 2.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 3.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 3.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 4.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 4.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 5.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 5.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 6.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 6.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 7.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 7.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 8.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 8.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 9.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 9.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 10.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 10.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 11.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 11.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 12.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 12.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 13.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 13.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 14.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 14.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 15.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 15.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 16.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 16.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 17.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 17.5 | Prepunched To 18.00' | | | | | | | | | | | | |
| 18.0 | Prepunched To 18.00' | | | | | | | | | | | | |
| 18.5 | 141.1 | 152.4 | 1.47 | 1.0 | 235 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 37 - 56 | 40 - 60 |
| 19.0 | 151.5 | 162.9 | 1.59 | 1.0 | 247 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 37 - 56 | 40 - 60 |
| 19.5 | 181.7 | 194.7 | 1.68 | 0.8 | 244 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 37 - 56 | 40 - 60 |
| 20.0 | 213.7 | 228.0 | 2.12 | 1.0 | 241 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 37 - 56 | 40 - 60 |
| 20.5 | 197.3 | 209.7 | 2.04 | 1.0 | 270 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 38 - 56 | 40 - 60 |
| 21.0 | 163.3 | 172.9 | 2.17 | 1.2 | 291 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 21.5 | 143.6 | 151.4 | 1.82 | 1.2 | 309 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 57 | 40 - 60 |
| 22.0 | 126.3 | 132.7 | 1.58 | 1.2 | 328 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 29 - 38 | 30 - 40 |
| 22.5 | 126.7 | 132.5 | 1.20 | 0.9 | 400 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 38 | 30 - 40 |
| 23.0 | 132.5 | 138.1 | 1.16 | 0.9 | 458 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 38 | 30 - 40 |
| 23.5 | 125.5 | 130.4 | 1.10 | 0.9 | 558 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 24.0 | 113.2 | 117.1 | 1.42 | 1.2 | 603 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 24.5 | 112.5 | 116.1 | 1.40 | 1.2 | 596 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 25.0 | 115.5 | 118.7 | 1.51 | 1.3 | 637 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 29 - 39 | 30 - 40 |

Notes:

* Indicates lightly overconsolidated soil
** Indicates heavily overconsolidated or cemented soil

Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-12-1999 TIME:14:46:19.41
SOUNDING NUMBER:CP-9913

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 133.3 | 136.6 | 1.35 | 0.9 | 633 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 26.0 | 160.6 | 163.9 | 1.70 | 1.1 | 663 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 39 - 59 | 40 - 60 |
| 26.5 | 148.6 | 151.2 | 1.26 | 0.9 | 773 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 39 | 30 - 40 |
| 27.0 | 126.9 | 128.6 | 1.29 | 0.9 | 1206 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 30 - 39 | 30 - 40 |
| 27.5 | 145.4 | 146.9 | 1.35 | 0.8 | 1108 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 28.0 | 177.0 | 178.3 | 0.99 | 0.6 | 1307 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 40 - 60 | 40 - 60 |
| 28.5 | 157.4 | 158.1 | 0.46 | 0.3 | 1040 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 29.0 | 157.9 | 158.0 | 0.72 | 0.5 | 1813 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 29.5 | 149.2 | 148.8 | 0.23 | 0.3 | 1924 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 20 - 30 | 20 - 30 |
| 30.0 | 146.6 | 145.8 | 0.51 | 0.5 | 1870 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 30.5 | 180.7 | 179.2 | 1.40 | 0.8 | 1942 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 61 | 40 - 60 |
| 31.0 | 179.9 | 177.9 | 0.69 | 0.4 | 2775 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 30 - 40 | 30 - 40 |
| 31.5 | 203.7 | 200.8 | 3.17 | 1.5 | 1481 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 32.0 | 223.1 | 219.3 | 1.92 | 0.9 | 1883 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 32.5 | 217.0 | 212.6 | 1.31 | 0.6 | 2307 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 33.0 | 219.2 | 214.2 | 0.62 | 0.3 | 2151 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 41 - 61 | 40 - 60 |
| 33.5 | 205.0 | 199.7 | 1.57 | 0.5 | 2657 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 41 - 62 | 40 - 60 |
| 34.0 | 262.2 | 254.7 | 1.93 | 0.7 | 2348 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 34.5 | 206.9 | 200.4 | 1.59 | 0.7 | 1873 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 35.0 | 236.7 | 228.6 | 1.73 | 0.8 | 2368 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 35.5 | 176.6 | 170.1 | 0.45 | 0.2 | 2578 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 31 - 42 | 30 - 40 |
| 36.0 | 212.4 | 204.0 | 2.41 | 1.0 | 2772 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 62 | 40 - 60 |
| 36.5 | 243.5 | 233.3 | 0.58 | 0.3 | 2303 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 42 - 63 | 40 - 60 |
| 37.0 | 115.9 | 110.7 | 0.41 | 0.3 | 2261 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 31 | 20 - 30 |
| 37.5 | 47.9 | 45.6 | 1.24 | 0.7 | 2563 | Loose, Sand to silty sand | 37-40 | 20-40 | | | | 06 - 10 | 06 - 10 |
| 38.0 | 180.9 | 171.9 | 0.88 | 0.4 | 1533 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 32 - 42 | 30 - 40 |
| 38.5 | 231.1 | 219.0 | 1.11 | 0.4 | 1960 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 63 | 40 - 60 |
| 39.0 | 324.3 | 306.6 | 0.53 | 0.1 | 2525 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 42 - 63 | 40 - 60 |
| 39.5 | 411.1 | 387.7 | 3.81 | 0.9 | 1667 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 106 | + 100 |
| 40.0 | 362.5 | 341.0 | 1.79 | 0.5 | 2484 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 64 - 105 | 60 - 99 |
| 40.5 | 201.3 | 188.9 | 1.90 | 0.7 | 2582 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 41.0 | 175.0 | 163.7 | 0.94 | 0.5 | 2314 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 32 - 43 | 30 - 40 |
| 41.5 | 168.3 | 157.1 | 1.03 | 0.6 | 2465 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 32 - 43 | 30 - 40 |
| 42.0 | 122.3 | 113.9 | 1.40 | 1.0 | 2394 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 42.5 | 127.4 | 118.4 | 1.68 | 1.3 | 2501 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 43.0 | 135.3 | 125.4 | 1.09 | 0.9 | 2699 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 32 - 43 | 30 - 40 |
| 43.5 | 146.0 | 135.0 | 2.01 | 1.3 | 2469 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 44.0 | 170.4 | 157.2 | 1.81 | 1.1 | 2482 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |
| 44.5 | 161.6 | 148.7 | 1.49 | 0.9 | 2525 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 43 | 30 - 40 |
| 45.0 | 156.3 | 143.5 | 1.47 | 0.9 | 2565 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 45.5 | 160.9 | 147.3 | 1.43 | 0.8 | 2382 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 46.0 | 171.7 | 156.8 | 1.41 | 0.8 | 2580 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 46.5 | 162.1 | 147.7 | 1.10 | 0.7 | 2518 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 47.0 | 157.1 | 142.8 | 1.03 | 0.6 | 2565 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 47.5 | 170.1 | 154.3 | 1.16 | 0.7 | 2640 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 48.0 | 170.5 | 154.3 | 0.83 | 0.5 | 2595 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 48.5 | 179.1 | 161.7 | 0.69 | 0.4 | 2591 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 49.0 | 178.9 | 161.2 | 0.77 | 0.4 | 2646 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 49.5 | 161.7 | 145.4 | 1.27 | 0.7 | 2515 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 50.0 | 159.6 | 143.2 | 1.22 | 0.8 | 2590 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 45 | 30 - 40 |

Notes:

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** Indicates heavily overconsolidated or cemented soil

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-12-1999 TIME:14:46:19.41
SOUNDING NUMBER:CP-9913

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 164.7 | 147.5 | 0.98 | 0.6 | 2683 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 51.0 | 176.0 | 157.2 | 0.66 | 0.4 | 2532 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 51.5 | 182.0 | 162.2 | 0.59 | 0.3 | 2648 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 52.0 | 214.5 | 190.8 | 1.49 | 0.7 | 2625 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 67 | 40 - 60 |
| 52.5 | 234.5 | 208.1 | 0.81 | 0.3 | 2689 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 45 - 68 | 40 - 60 |
| 53.0 | 244.3 | 216.4 | 1.47 | 0.6 | 2541 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 68 | 40 - 60 |
| 53.5 | 260.4 | 230.1 | 2.17 | 0.8 | 2552 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 68 | 40 - 60 |
| 54.0 | 219.6 | 193.7 | 1.52 | 0.6 | 2722 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 45 - 68 | 40 - 60 |
| 54.5 | 182.0 | 160.2 | 3.91 | 1.8 | 2707 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 45 - 68 | 40 - 60 |
| 55.0 | 170.8 | 150.1 | 2.24 | 1.3 | 2717 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 46 - 68 | 40 - 60 |
| 55.5 | 138.9 | 121.8 | 2.77 | 1.8 | 2852 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 46 - 68 | 40 - 60 |
| 56.0 | 153.3 | 134.1 | 2.94 | 1.7 | 2642 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 56.5 | 205.6 | 179.5 | 1.89 | 0.9 | 2690 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 57.0 | 212.2 | 184.9 | 0.97 | 0.4 | 2800 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 34 - 46 | 30 - 40 |
| 57.5 | 180.6 | 157.0 | 0.15 | 0.1 | 2788 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 58.0 | 171.5 | 148.8 | 1.30 | 0.7 | 2806 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 35 - 46 | 30 - 40 |
| 58.5 | 131.9 | 114.3 | 0.85 | 0.6 | 2780 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 59.0 | 144.1 | 124.6 | 1.18 | 0.8 | 2832 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 59.5 | 119.3 | 103.0 | 1.52 | 1.1 | 2746 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 60.0 | 131.5 | 113.3 | 1.41 | 1.1 | 2983 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 60.5 | 129.1 | 111.0 | 1.33 | 1.0 | 2786 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 61.0 | 133.9 | 114.9 | 1.53 | 1.1 | 2761 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 61.5 | 122.1 | 104.5 | 1.45 | 1.1 | 2823 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 62.0 | 135.3 | 115.6 | 1.17 | 0.8 | 2745 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 62.5 | 174.9 | 149.2 | 0.83 | 0.5 | 2662 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 63.0 | 181.9 | 154.9 | 3.49 | 1.9 | 2823 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 63.5 | 125.2 | 106.4 | 2.31 | 1.4 | 2888 | Dense, Sand to silty sand | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 64.0 | 135.5 | 115.0 | 2.15 | 1.6 | 2995 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 64.5 | 132.2 | 111.9 | 2.23 | 1.7 | 2820 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 65.0 | 108.2 | 91.5 | 0.35 | 0.3 | 2963 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 18 - 24 | 15 - 20 |
| 65.5 | 161.5 | 136.2 | 2.28 | 1.4 | 2867 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 66.0 | 161.0 | 135.6 | 2.48 | 1.5 | 2921 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 66.5 | 131.8 | 110.8 | 3.07 | 2.0 | 2943 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 71 | 40 - 60 |
| 67.0 | 127.6 | 107.1 | 2.23 | 1.7 | 2905 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 67.5 | 132.9 | 111.3 | 2.58 | 1.9 | 2930 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 68.0 | 138.5 | 115.8 | 2.20 | 1.6 | 2883 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 68.5 | 143.3 | 119.6 | 0.69 | 0.4 | 2876 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 69.0 | 213.1 | 177.5 | 0.44 | 0.2 | 2927 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 36 - 48 | 30 - 40 |
| 69.5 | 189.2 | 157.3 | 0.82 | 0.4 | 2690 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 36 - 48 | 30 - 40 |
| 70.0 | 145.0 | 120.4 | 2.53 | 1.4 | 2972 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 70.5 | 95.3 | 79.0 | 2.25 | 2.0 | 2963 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 71.0 | 95.4 | 78.9 | 1.85 | 1.6 | 3023 | Med dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 71.5 | 138.5 | 114.4 | 1.67 | 1.2 | 3055 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 36 - 48 | 30 - 40 |
| 72.0 | 145.1 | 119.7 | 1.41 | 1.0 | 3032 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 72.5 | 147.0 | 121.0 | 1.87 | 1.3 | 2980 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 49 | 30 - 40 |
| 73.0 | 136.9 | 112.5 | 2.77 | 2.0 | 3007 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 49 - 73 | 40 - 60 |
| 73.5 | 83.4 | 68.4 | 3.35 | 3.0 | 2817 | Hard, Sandy silt to sandy clay | | | 25 | 6.32 | 6.70 | 37 - 49 | 30 - 40 |
| 74.0 | 107.2 | 87.8 | 2.47 | 2.3 | 2854 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 74.5 | 105.8 | 86.5 | 2.31 | 2.0 | 3059 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 75.0 | 115.1 | 93.9 | 2.78 | 2.4 | 2998 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 49 - 74 | 40 - 60 |

Notes:

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
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Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-12-1999 TIME:14:46:19.41
SOUNDING NUMBER:CP-9913

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 116.3 | 94.8 | 2.64 | 2.1 | 3022 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 76.0 | 131.7 | 107.1 | 2.49 | 1.9 | 3032 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 76.5 | 153.1 | 124.4 | 1.07 | 0.6 | 2929 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 77.0 | 180.7 | 146.6 | 1.43 | 0.8 | 3202 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 77.5 | 153.0 | 123.9 | 1.91 | 1.1 | 3222 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 78.0 | 142.3 | 115.1 | 1.81 | 1.3 | 3241 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 49 | 30 - 40 |
| 78.5 | 124.7 | 100.6 | 2.57 | 1.9 | 3248 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 79.0 | 105.6 | 85.1 | 2.66 | 2.3 | 3279 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 79.5 | 112.2 | 90.2 | 2.44 | 2.1 | 3197 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 80.0 | 129.3 | 103.9 | 1.73 | 1.2 | 3155 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 80.5 | 158.9 | 127.4 | 1.48 | 1.0 | 3100 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 37 - 50 | 30 - 40 |
| 81.0 | 128.2 | 102.7 | 1.78 | 1.2 | 3129 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 37 | 20 - 30 |
| 81.5 | 130.7 | 104.5 | 2.33 | 1.8 | 3187 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 82.0 | 111.5 | 89.0 | 2.13 | 1.8 | 3283 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 38 | 20 - 30 |
| 82.5 | 122.1 | 97.3 | 1.70 | 1.1 | 3170 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 83.0 | 152.7 | 121.5 | 1.90 | 1.3 | 3004 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 83.5 | 139.7 | 111.0 | 2.04 | 1.4 | 3121 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 84.0 | 139.2 | 110.5 | 2.21 | 1.6 | 3168 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 84.5 | 128.1 | 101.5 | 3.16 | 2.3 | 3277 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 51 - 76 | 40 - 60 |
| 85.0 | 107.5 | 85.0 | 3.66 | 3.1 | 2984 | Hard, Sandy silt to sandy clay | | | 30 | 6.82 | 7.33 | 51 - 76 | 40 - 60 |
| 85.5 | 117.0 | 92.4 | 2.17 | 1.6 | 2559 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 38 | 20 - 30 |
| 86.0 | 141.3 | 111.4 | 1.96 | 1.4 | 3026 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 86.5 | 106.5 | 83.8 | 2.40 | 1.9 | 3109 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 38 | 20 - 30 |
| 87.0 | 112.1 | 88.1 | 2.01 | 1.6 | 3003 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 38 | 20 - 30 |
| 87.5 | 134.7 | 105.7 | 1.40 | 0.9 | 3114 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 88.0 | 173.0 | 135.6 | 0.62 | 0.4 | 2973 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 26 - 38 | 20 - 30 |
| 88.5 | 171.2 | 134.0 | 1.65 | 0.9 | 2894 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 89.0 | 127.5 | 99.6 | 3.15 | 2.1 | 2768 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 51 | 30 - 40 |
| 89.5 | 145.4 | 113.4 | 1.29 | 0.8 | 3015 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 38 | 20 - 30 |
| 90.0 | 157.0 | 122.4 | 1.43 | 0.9 | 3096 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 90.5 | 148.9 | 115.8 | 0.33 | 0.2 | 3194 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 91.0 | 170.5 | 132.4 | 0.50 | 0.3 | 3037 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 91.5 | 179.9 | 139.6 | 0.67 | 0.4 | 3157 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 92.0 | 168.8 | 130.8 | 1.29 | 0.7 | 3278 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 92.5 | 122.8 | 95.0 | 1.87 | 1.2 | 3330 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 93.0 | 128.1 | 98.9 | 2.02 | 1.5 | 3224 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 26 - 39 | 20 - 30 |
| 93.5 | 143.6 | 110.8 | 1.46 | 1.0 | 3232 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 94.0 | 131.6 | 101.4 | 2.02 | 1.4 | 3380 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 94.5 | 134.6 | 103.5 | 1.35 | 1.0 | 3315 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 95.0 | 153.3 | 117.8 | 0.99 | 0.6 | 3290 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 95.5 | 154.7 | 118.7 | 1.63 | 1.0 | 3191 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 96.0 | 153.8 | 117.8 | 1.33 | 0.8 | 3142 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 96.5 | 159.5 | 122.0 | 1.02 | 0.6 | 3170 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 97.0 | 158.1 | 120.8 | 0.98 | 0.6 | 3235 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 97.5 | 171.3 | 130.6 | 0.47 | 0.3 | 3215 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 98.0 | 174.8 | 133.1 | 0.83 | 0.4 | 3288 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 98.5 | 177.6 | 135.1 | 1.65 | 0.9 | 3357 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 39 - 53 | 30 - 40 |
| 99.0 | 133.4 | 101.3 | 1.56 | 1.0 | 3213 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 99.5 | 165.6 | 125.6 | 0.34 | 0.2 | 3181 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 26 - 40 | 20 - 30 |
| 100.0 | 184.2 | 139.5 | 0.96 | 0.5 | 3244 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 40 | 20 - 30 |

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-12-1999 TIME:14:46:19.41
SOUNDING NUMBER:CP-9913

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.5 | 160.2 | 121.2 | 1.12 | 0.7 | 3159 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 40 | 20 - 30 |
| 101.0 | 136.2 | 102.9 | 0.94 | 0.6 | 3145 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 40 | 20 - 30 |
| 101.5 | 172.4 | 130.1 | 0.48 | 0.3 | 3301 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 102.0 | 173.6 | 130.8 | 1.63 | 0.8 | 3262 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 40 - 53 | 30 - 40 |
| 102.5 | 146.0 | 109.9 | 1.16 | 0.8 | 3276 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 103.0 | 141.6 | 106.4 | 1.22 | 0.8 | 3241 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 103.5 | 149.9 | 112.5 | 1.15 | 0.8 | 3251 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 104.0 | 141.5 | 106.0 | 1.27 | 0.9 | 3310 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 104.5 | 121.8 | 91.2 | 1.72 | 1.3 | 3399 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 105.0 | 116.0 | 86.7 | 1.79 | 1.5 | 3259 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 105.5 | 108.7 | 81.1 | 1.76 | 1.5 | 3395 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 106.0 | 130.0 | 96.9 | 1.26 | 1.0 | 3239 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 106.5 | 123.1 | 91.7 | 1.13 | 0.9 | 3288 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 107.0 | 125.9 | 93.6 | 0.94 | 0.7 | 3388 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 107.5 | 133.8 | 99.3 | 0.77 | 0.6 | 3278 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 108.0 | 134.9 | 100.0 | 1.11 | 0.8 | 3430 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 40 | 20 - 30 |
| 108.5 | 118.6 | 87.9 | 1.39 | 1.2 | 3449 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 109.0 | 112.8 | 83.5 | 1.39 | 1.2 | 3466 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 109.5 | 114.4 | 84.5 | 1.23 | 1.1 | 3514 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 110.0 | 115.5 | 85.2 | 1.09 | 0.9 | 3454 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 27 | 15 - 20 |
| 110.5 | 126.0 | 92.8 | 0.86 | 0.7 | 3357 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 20 - 27 | 15 - 20 |
| 111.0 | 123.5 | 90.9 | 2.95 | 2.1 | 3457 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 41 - 54 | 30 - 40 |
| 111.5 | 165.3 | 121.5 | 1.40 | 0.7 | 3407 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 112.0 | 216.1 | 158.6 | 0.37 | 0.2 | 3371 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 112.5 | 214.5 | 157.3 | 1.34 | 0.6 | 3503 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 113.0 | 168.8 | 123.6 | 0.46 | 0.2 | 3430 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 113.5 | 154.0 | 112.6 | 0.32 | 0.2 | 3211 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 114.0 | 127.3 | 93.0 | 2.21 | 1.5 | 3151 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 27 - 41 | 20 - 30 |
| 114.5 | 100.3 | 73.2 | 2.45 | 2.3 | 3412 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 27 - 41 | 20 - 30 |
| 115.0 | 86.7 | 63.1 | 2.43 | 2.7 | 3506 | Hard, Sandy silt to sandy clay | | | 25 | 6.38 | 4.86 | 27 - 41 | 20 - 30 |
| 115.5 | 87.2 | 63.4 | 1.88 | 1.7 | 3163 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 21 - 27 | 15 - 20 |
| 116.0 | 127.3 | 92.5 | 1.05 | 0.8 | 3457 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 41 | 20 - 30 |
| 116.5 | 141.4 | 102.7 | 0.86 | 0.8 | 3436 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 41 | 20 - 30 |
| 117.0 | 156.9 | 113.7 | 2.11 | 1.2 | 3301 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 117.5 | 183.4 | 132.8 | 1.96 | 1.0 | 3208 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 118.0 | 205.9 | 149.0 | 1.24 | 0.6 | 3281 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 41 - 55 | 30 - 40 |
| 118.5 | 211.4 | 152.7 | 0.33 | 0.3 | 3411 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 119.0 | 211.6 | 152.7 | 1.90 | 0.9 | 3474 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 55 | 30 - 40 |
| 119.5 | 214.2 | 154.3 | 1.37 | 0.7 | 3538 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 120.0 | 205.3 | 147.8 | 1.70 | 0.9 | 3702 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 120.5 | 224.5 | 161.4 | 2.19 | 0.9 | 3656 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 83 | 40 - 60 |
| 121.0 | 244.2 | 175.3 | 1.88 | 0.8 | 3726 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 121.5 | 237.0 | 170.0 | 1.55 | 0.6 | 3880 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 122.0 | 222.8 | 159.6 | 1.47 | 0.6 | 3869 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 122.5 | 270.0 | 193.1 | 2.55 | 1.0 | 4020 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 123.0 | 203.0 | 145.0 | 3.01 | 1.2 | 3935 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 123.5 | 193.6 | 138.2 | 1.13 | 0.6 | 4066 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 124.0 | 217.9 | 155.4 | 4.00 | 1.5 | 4485 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 56 - 84 | 40 - 60 |
| 124.5 | 154.2 | 109.8 | 1.60 | 1.2 | 4463 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 125.0 | 111.8 | 79.5 | 0.48 | 0.6 | 4233 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 28 | 15 - 20 |

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-12-1999 TIME:14:46:19.41
SOUNDING NUMBER:CP-9913

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125.5 | 162.5 | 115.5 | 1.14 | 0.5 | 3972 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 126.0 | 246.0 | 174.5 | 0.64 | 0.3 | 3903 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 42 - 56 | 30 - 40 |
| 126.5 | 122.5 | 86.8 | 1.06 | 0.6 | 4016 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 28 | 15 - 20 |
| 127.0 | 121.4 | 86.0 | 0.63 | 0.6 | 3879 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 28 | 15 - 20 |
| 127.5 | 119.2 | 84.3 | 1.58 | 1.3 | 4114 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 28 - 42 | 20 - 30 |
| 128.0 | 103.3 | 72.9 | 0.55 | 0.6 | 4463 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 14 - 21 | 10 - 15 |
| 128.5 | 110.9 | 78.2 | 1.57 | 1.4 | 3945 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 28 - 43 | 20 - 30 |
| 129.0 | 114.3 | 80.5 | 0.55 | 0.5 | 3934 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 28 | 15 - 20 |
| 129.5 | 132.0 | 92.9 | 0.81 | 0.7 | 4340 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 28 | 15 - 20 |
| 130.0 | 133.6 | 93.9 | 1.51 | 1.0 | 4250 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 28 - 43 | 20 - 30 |
| 130.5 | 116.9 | 82.1 | 1.20 | 1.0 | 3930 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 21 - 28 | 15 - 20 |
| 131.0 | 124.5 | 87.3 | 1.69 | 1.4 | 4583 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 29 - 43 | 20 - 30 |
| 131.5 | 99.5 | 69.7 | 2.20 | 1.8 | 4420 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 29 - 43 | 20 - 30 |
| 132.0 | 116.7 | 81.7 | 0.29 | 0.3 | 4376 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 14 - 21 | 10 - 15 |
| 132.5 | 132.3 | 92.5 | 0.72 | 0.4 | 4459 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 21 - 29 | 15 - 20 |
| 133.0 | 141.6 | 98.9 | 0.88 | 0.6 | 3685 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 43 | 20 - 30 |
| 133.5 | 137.9 | 96.2 | 1.20 | 0.9 | 4142 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 43 | 20 - 30 |
| 134.0 | 140.2 | 97.7 | 0.77 | 0.3 | 4516 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 29 | 15 - 20 |
| 134.5 | 140.9 | 98.1 | 0.61 | 0.4 | 4483 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 29 | 15 - 20 |
| 135.0 | 191.1 | 132.8 | 0.31 | 0.3 | 4474 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 43 | 20 - 30 |
| 135.5 | 143.3 | 99.5 | 3.11 | 1.8 | 5105 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 43 - 58 | 30 - 40 |
| 136.0 | 121.2 | 84.0 | 2.04 | 1.6 | 4684 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 29 - 43 | 20 - 30 |
| 136.5 | 130.5 | 90.5 | 1.58 | 1.2 | 4932 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 29 - 43 | 20 - 30 |
| 137.0 | 96.1 | 66.5 | 1.25 | 1.3 | 3969 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 29 | 15 - 20 |
| 137.5 | 112.7 | 77.9 | 0.16 | 0.1 | 4495 | Loose, Sand to silty sand | 40-42 | 20-40 | | | | 14 - 22 | 10 - 15 |
| 138.0 | 124.1 | 85.7 | 1.51 | 1.1 | 4616 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 29 - 43 | 20 - 30 |
| 138.5 | 120.9 | 83.4 | 0.89 | 0.7 | 4465 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 29 | 15 - 20 |
| 139.0 | 128.6 | 88.6 | 2.22 | 1.6 | 4563 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 29 - 44 | 20 - 30 |
| 139.5 | 170.6 | 117.5 | 0.49 | 0.4 | 4132 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 44 | 20 - 30 |
| 140.0 | 150.1 | 103.2 | 1.26 | 0.8 | 4953 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 44 | 20 - 30 |
| 140.5 | 152.4 | 104.7 | 0.50 | 0.4 | 4651 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 29 - 44 | 20 - 30 |
| 141.0 | 210.6 | 144.5 | 0.82 | 0.4 | 4230 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 29 - 44 | 20 - 30 |
| 141.5 | 116.4 | 79.8 | 3.09 | 1.9 | 3860 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 29 - 44 | 20 - 30 |
| 142.0 | 61.1 | 41.8 | 1.55 | 2.4 | 2248 | Hard, Sandy silt to sandy clay | | | 25 | 4.20 | 3.09 | 15 - 22 | 10 - 15 |
| 142.5 | 51.0 | 34.9 | 1.08 | 0.5 | 2059 | Loose, Sand to silty sand | 36-37 | 20-40 | | | | 06 - 09 | 04 - 06 |
| 143.0 | 239.3 | 163.5 | 0.79 | 0.8 | 6588 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 59 - 88 | 40 - 60 |
| 143.5 | 89.4 | 61.0 | 2.69 | 1.7 | 2475 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 22 - 29 | 15 - 20 |
| 144.0 | 97.5 | 66.5 | 1.76 | 1.8 | 1392 | Med dense, Silty sand to sandy silt | 36-37 | 40-60 | | | | 29 - 44 | 20 - 30 |
| 144.5 | 221.6 | 150.9 | 4.45 | 0.7 | 1570 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 44 - 59 | 30 - 40 |

Notes:

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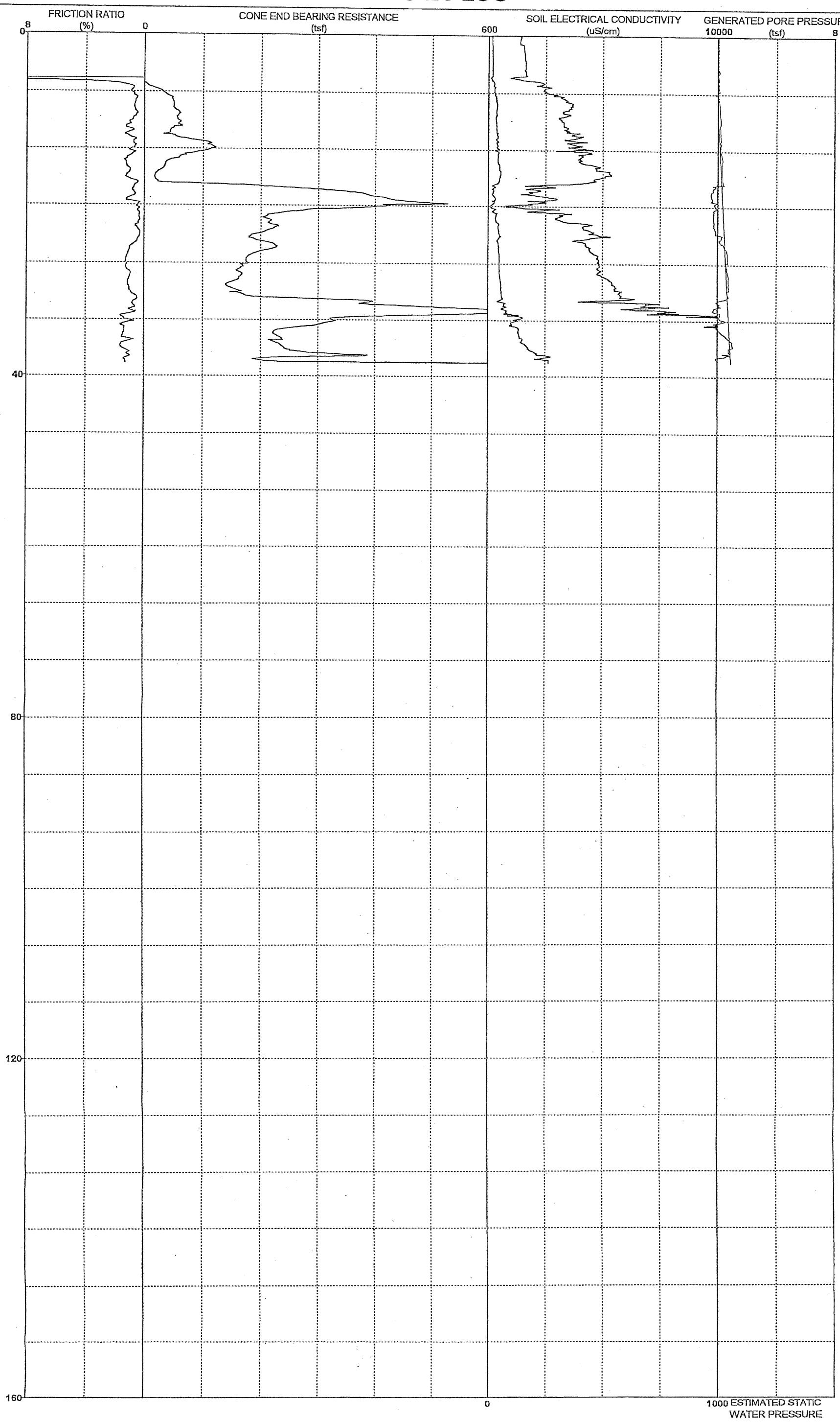
Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

# CPTU-EC LOG




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

*STRATIGRAPHICS*

R2DATE: 5-18-1999 TIME:16:50:05.11
SOUNDING NUMBER:CP-9914A

***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-18-1999 TIME:16:50:05.11
SOUNDING NUMBER:CP-9914A

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 25.00' | | | | | | | | | | | | |
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Notes:

* Indicates lightly overconsolidated soil
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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
Both undrained and drained parameters can be estimated for these soils.

Structure rate of loading should be considered in choosing which strength parameters to use for design.
Drained and undrained parameters must not be combined as such combination will result in significant overprediction of in situ shear strength.

*STRATIGRAPHICS*
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-18-1999 TIME:16:50:05.11
SOUNDING NUMBER:CP-9914A

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | 190.4 | 188.4 | 2.25 | 1.1 | 464 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 40 - 61 | 40 - 60 |
| 26.0 | 177.0 | 174.6 | 2.20 | 1.2 | 477 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 26.5 | 175.4 | 172.5 | 2.20 | 1.3 | 480 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 27.0 | 169.6 | 166.4 | 2.16 | 1.2 | 486 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 27.5 | 159.6 | 156.1 | 1.88 | 1.1 | 492 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 61 | 40 - 60 |
| 28.0 | 168.1 | 163.9 | 1.56 | 0.9 | 493 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 28.5 | 162.5 | 158.0 | 1.71 | 1.0 | 526 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 29.0 | 146.4 | 141.9 | 1.74 | 1.1 | 542 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 31 - 41 | 30 - 40 |
| 29.5 | 145.0 | 140.1 | 1.57 | 1.0 | 559 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 31 - 41 | 30 - 40 |
| 30.0 | 164.9 | 158.9 | 1.52 | 1.0 | 580 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 41 - 62 | 40 - 60 |
| 30.5 | 174.2 | 167.5 | 1.44 | 0.6 | 581 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 31 - 42 | 30 - 40 |
| 31.0 | 366.8 | 351.7 | 2.14 | 0.6 | 458 | Dense, Sa gravel to gr sand | +46 | 60-80 | | | | 63 - 103 | 60 - 99 |
| 31.5 | 394.3 | 377.1 | 4.05 | 0.8 | 687 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 63 - 104 | 60 - 99 |
| 32.0 | 615.2 | 586.7 | 5.36 | 0.8 | 605 | V dense, Sa gravel to gr sand | +46 | 80-100 | | | | + 105 | + 100 |
| 32.5 | 600.4 | 571.1 | 4.65 | 0.7 | 748 | V dense, Sa gravel to gr sand | +46 | 80-100 | | | | + 105 | + 100 |
| 33.0 | 351.3 | 333.2 | 6.88 | 1.5 | 1502 | V dense, Sa gravel to si gr sand | 42-46 | 80-100 | | | | + 105 | + 100 |
| 33.5 | 326.0 | 308.5 | 2.34 | 0.7 | 1111 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 63 - 105 | 60 - 99 |
| 34.0 | 289.0 | 272.8 | 4.81 | 1.5 | 1103 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 106 | + 100 |
| 34.5 | 228.2 | 214.8 | 3.39 | 1.3 | 1325 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 42 - 64 | 40 - 60 |
| 35.0 | 224.5 | 210.8 | 3.32 | 1.4 | 1348 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 64 - 105 | 60 - 99 |
| 35.5 | 237.5 | 222.4 | 1.53 | 1.0 | 1498 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 36.0 | 228.6 | 213.6 | 3.56 | 1.5 | 1537 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 64 - 106 | 60 - 99 |
| 36.5 | 239.2 | 222.9 | 3.92 | 1.6 | 1747 | V dense, Sand to silty sand | 40-42 | 80-100 | | | | 64 - 106 | 60 - 99 |
| 37.0 | 260.5 | 242.2 | 3.41 | 1.1 | 1983 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 65 - 106 | 60 - 99 |
| 37.5 | 386.5 | 358.4 | 3.22 | 1.0 | 2590 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 108 | + 100 |
| 38.0 | 187.5 | 173.4 | 4.55 | 1.4 | 2497 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 43 - 65 | 40 - 60 |

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-20-1999 TIME:10:55:48.01
SOUNDING NUMBER:cp-9915

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | Prepunched To 37.00' | | | | | | | | | | | | |
| 1.5 | Prepunched To 37.00' | | | | | | | | | | | | |
| 2.0 | Prepunched To 37.00' | | | | | | | | | | | | |
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| 25.0 | Prepunched To 37.00' | | | | | | | | | | | | |

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***STRATIGRAPHICS***
PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-20-1999 TIME:10:55:48.01
SOUNDING NUMBER:cp-9915

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.5 | Prepunched To 37.00' | | | | | | | | | | | | |
| 26.0 | Prepunched To 37.00' | | | | | | | | | | | | |
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| 36.0 | Prepunched To 37.00' | | | | | | | | | | | | |
| 36.5 | Prepunched To 37.00' | | | | | | | | | | | | |
| 37.0 | Prepunched To 37.00' | | | | | | | | | | | | |
| 37.5 | 89.3 | 84.6 | 1.24 | 1.2 | 369 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 38.0 | 87.0 | 82.3 | 1.27 | 1.3 | 372 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 21 - 32 | 20 - 30 |
| 38.5 | 91.1 | 85.9 | 1.70 | 1.7 | 395 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 21 - 32 | 20 - 30 |
| 39.0 | 116.3 | 109.3 | 1.59 | 1.3 | 399 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 39.5 | 120.1 | 112.6 | 2.02 | 1.6 | 407 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 40.0 | 138.1 | 129.1 | 2.12 | 1.6 | 417 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 43 - 64 | 40 - 60 |
| 40.5 | 115.7 | 108.0 | 2.01 | 1.6 | 444 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 41.0 | 91.9 | 85.6 | 1.65 | 1.6 | 450 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 21 - 32 | 20 - 30 |
| 41.5 | 85.6 | 79.5 | 1.64 | 1.5 | 435 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 42.0 | 137.7 | 127.6 | 1.87 | 1.4 | 477 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 32 - 43 | 30 - 40 |
| 42.5 | 117.3 | 108.4 | 1.52 | 1.2 | 487 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 32 | 20 - 30 |
| 43.0 | 103.0 | 94.9 | 1.32 | 1.2 | 473 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 43.5 | 124.3 | 114.3 | 1.73 | 1.4 | 529 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 33 - 43 | 30 - 40 |
| 44.0 | 102.4 | 93.9 | 1.54 | 1.4 | 551 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 44.5 | 107.6 | 98.5 | 1.61 | 1.2 | 595 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 22 - 33 | 20 - 30 |
| 45.0 | 175.8 | 160.5 | 2.15 | 1.3 | 591 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 45.5 | 158.8 | 144.7 | 2.02 | 1.2 | 642 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 44 - 66 | 40 - 60 |
| 46.0 | 126.8 | 115.2 | 1.83 | 1.3 | 670 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 46.5 | 119.2 | 108.1 | 1.85 | 1.4 | 710 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 47.0 | 145.8 | 131.9 | 1.28 | 1.1 | 779 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 33 - 44 | 30 - 40 |
| 47.5 | 138.4 | 124.9 | 1.94 | 1.4 | 837 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 48.0 | 131.7 | 118.7 | 1.84 | 1.4 | 915 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 48.5 | 122.0 | 109.7 | 1.80 | 1.4 | 1030 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 33 - 44 | 30 - 40 |
| 49.0 | 109.5 | 98.2 | 1.86 | 1.6 | 1072 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 22 - 33 | 20 - 30 |
| 49.5 | 122.1 | 109.3 | 1.96 | 1.4 | 1157 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 50.0 | 160.2 | 143.1 | 2.24 | 1.4 | 1094 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 45 - 67 | 40 - 60 |

Notes:

* Indicates lightly overconsolidated soil
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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
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***STRATIGRAPHICS***

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-20-1999 TIME:10:55:48.01
SOUNDING NUMBER:cp-9915

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 152.8 | 136.2 | 1.72 | 1.1 | 1121 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 51.0 | 155.6 | 138.4 | 1.58 | 1.0 | 1190 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 51.5 | 151.4 | 134.3 | 1.30 | 0.9 | 1263 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 52.0 | 162.6 | 144.0 | 1.62 | 1.0 | 1345 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 52.5 | 153.1 | 135.3 | 1.91 | 1.2 | 1553 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 53.0 | 135.4 | 119.4 | 1.82 | 1.3 | 1661 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 34 - 45 | 30 - 40 |
| 53.5 | 129.8 | 114.3 | 1.56 | 1.2 | 1699 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 34 - 45 | 30 - 40 |
| 54.0 | 130.2 | 114.3 | 1.50 | 1.1 | 1761 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 54.5 | 123.7 | 108.4 | 1.41 | 1.1 | 1868 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 55.0 | 123.0 | 107.6 | 1.35 | 1.1 | 1982 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 55.5 | 126.8 | 110.7 | 1.35 | 1.0 | 2071 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 56.0 | 139.9 | 121.8 | 1.27 | 0.8 | 2175 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 34 | 20 - 30 |
| 56.5 | 172.1 | 149.6 | 1.52 | 0.9 | 2216 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 35 - 46 | 30 - 40 |
| 57.0 | 167.4 | 145.3 | 1.08 | 0.6 | 2323 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 35 - 46 | 30 - 40 |
| 57.5 | 181.7 | 157.4 | 1.44 | 0.8 | 2455 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 35 - 46 | 30 - 40 |
| 58.0 | 127.0 | 109.8 | 1.47 | 1.0 | 2895 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 58.5 | 97.7 | 84.3 | 1.97 | 1.8 | 2637 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 59.0 | 105.3 | 90.6 | 4.56 | 1.0 | 3725 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |

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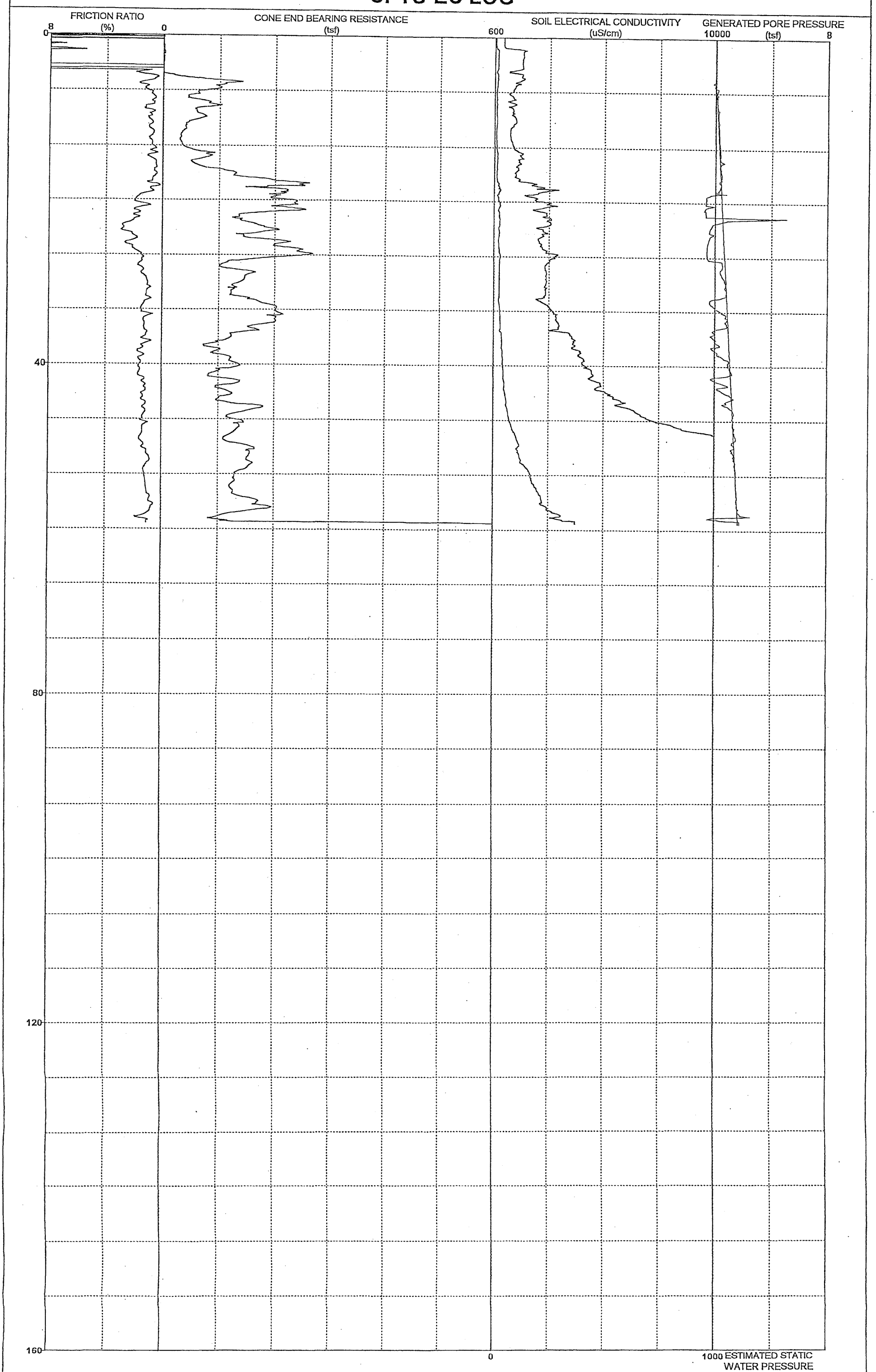
# CPTU-EC LOG

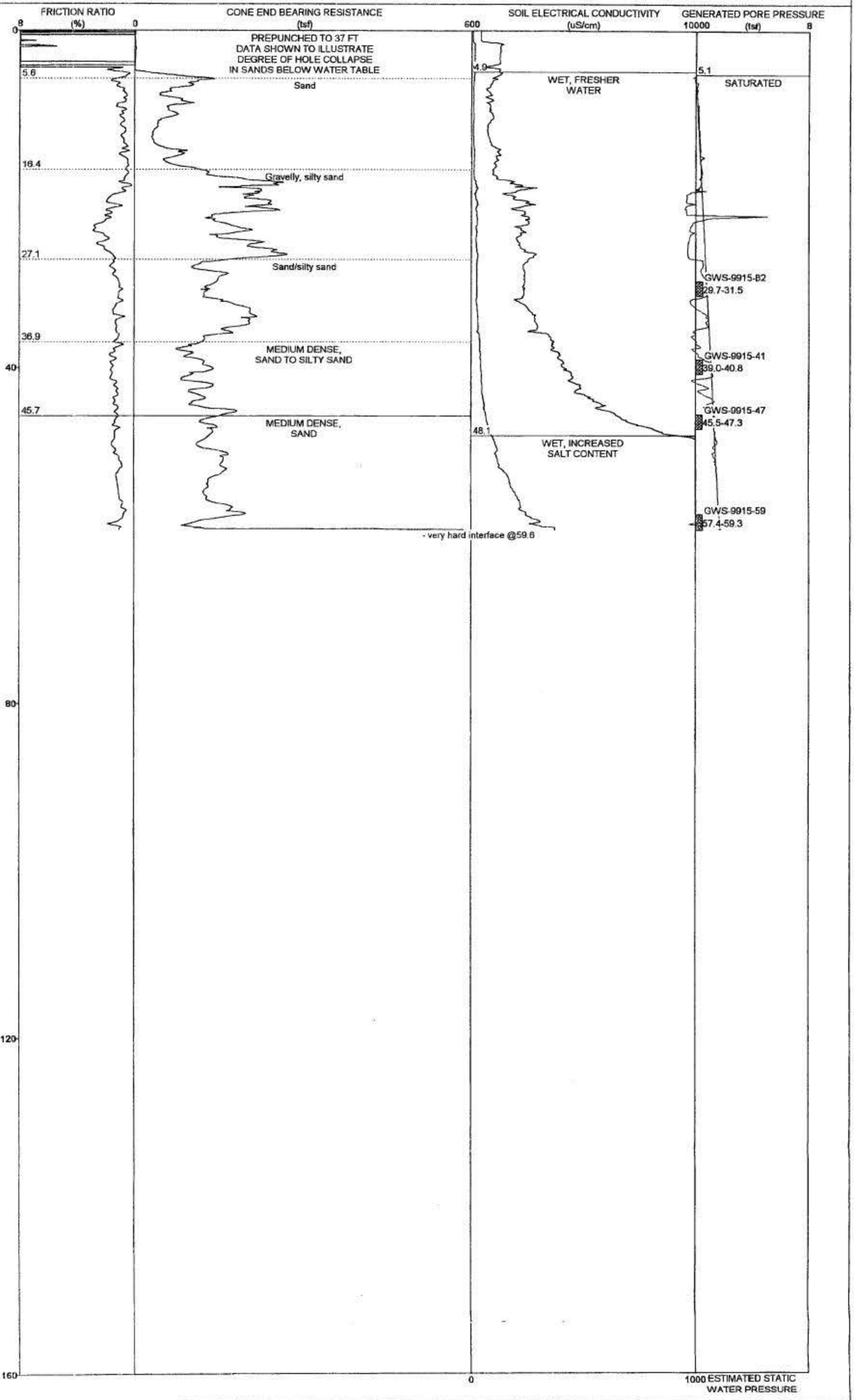



PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

**STRATIGRAPHICS**

R2DATE: 5-20-1999 TIME:10:55:48.01
SOUNDING NUMBER:cp-9915

# CPTU-EC LOG WITH LITHOLOGIC EVALUATION

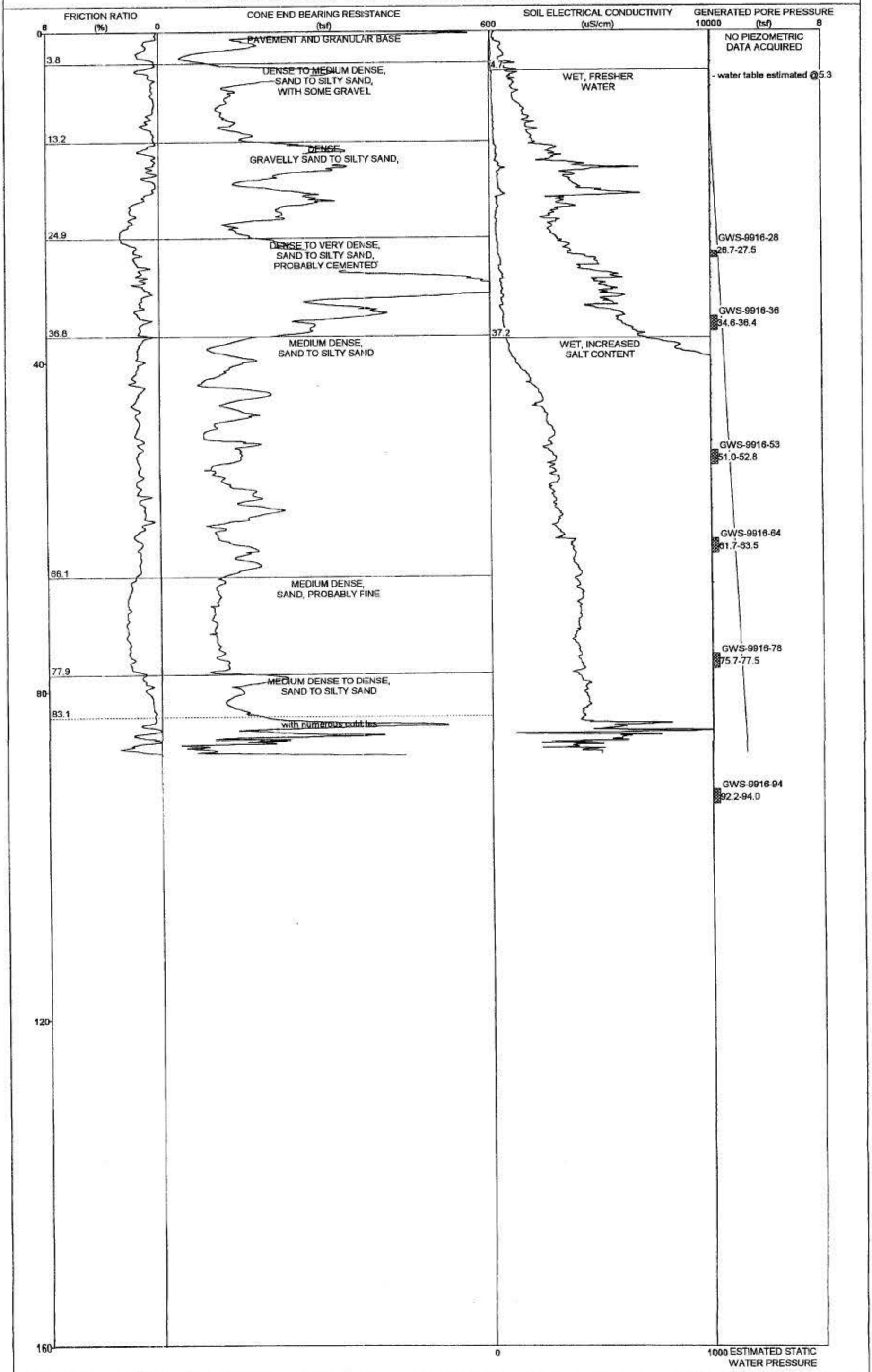



PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

***STRATIGRAPHICS***

R2DATE: 5-20-1999 TIME:10:55:48.01
SOUNDING NUMBER:cp-9915

# CPTU-EC LOG WITH LITHOLOGIC EVALUATION




PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050

***STRATIGRAPHICS***

R2DATE: 5-20-1999 TIME:15:45:04.69
SOUNDING NUMBER:CP-9916

***STRATIGRAPHICS***

PROJECT NAME:Stratford Army Engine Plant
PROJECT NUMBER:99-120-050
R2DATE: 5-20-1999 TIME:15:45:04.69
SOUNDING NUMBER:CP-9916

| Depth (ft) | Cone (tsf) | Norm Cone (tsf) | Friction (tsf) | Averaged Friction Ratio (%) | Soil Conductivity (uS/cm) | Evaluated Soil Type | Drained Friction Angle (deg) | Relative Density (%) | Nc | Undrained Shear Strength (ksf) | Undrained Large Strain Shear Strength (ksf) | SPT (N) | NORM SPT (N1') |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.5 | 134.9 | 118.1 | 2.03 | 1.3 | 2376 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 34 - 46 | 30 - 40 |
| 51.0 | 142.7 | 124.7 | 2.22 | 1.5 | 2686 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 34 - 46 | 30 - 40 |
| 51.5 | 143.9 | 125.5 | 2.44 | 1.7 | 2865 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 46 - 69 | 40 - 60 |
| 52.0 | 139.0 | 120.9 | 2.30 | 1.6 | 2978 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 34 - 46 | 30 - 40 |
| 52.5 | 95.6 | 83.0 | 1.75 | 1.5 | 2713 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 53.0 | 91.5 | 79.3 | 1.41 | 1.5 | 2706 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 53.5 | 95.3 | 82.4 | 1.55 | 1.5 | 2960 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 54.0 | 114.7 | 99.0 | 1.32 | 1.2 | 3088 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 23 - 35 | 20 - 30 |
| 54.5 | 111.3 | 95.9 | 1.99 | 1.7 | 3097 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 23 - 35 | 20 - 30 |
| 55.0 | 124.4 | 107.0 | 2.27 | 1.6 | 2718 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 55.5 | 168.9 | 145.0 | 2.55 | 1.5 | 2712 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 56.0 | 164.6 | 141.2 | 2.85 | 1.6 | 2911 | Dense, Silty sand to sandy silt | 40-42 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 56.5 | 182.2 | 155.8 | 2.12 | 1.2 | 2861 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 57.0 | 140.1 | 119.6 | 2.43 | 1.5 | 2965 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 35 - 47 | 30 - 40 |
| 57.5 | 179.7 | 153.1 | 2.23 | 1.1 | 2963 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 70 | 40 - 60 |
| 58.0 | 218.0 | 185.4 | 2.39 | 1.1 | 3056 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 58.5 | 178.9 | 151.9 | 2.14 | 1.1 | 3161 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 47 - 71 | 40 - 60 |
| 59.0 | 158.0 | 133.8 | 1.89 | 1.1 | 3080 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 35 - 47 | 30 - 40 |
| 59.5 | 109.6 | 92.7 | 1.35 | 1.0 | 3046 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 35 | 20 - 30 |
| 60.0 | 95.0 | 80.2 | 1.29 | 1.2 | 2916 | Med dense, Sand to silty sand | 37-40 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 60.5 | 100.7 | 84.8 | 1.64 | 1.5 | 3038 | Med dense, Silty sand to sandy silt | 37-40 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 61.0 | 101.6 | 85.4 | 1.92 | 1.9 | 3290 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 61.5 | 106.1 | 89.1 | 1.99 | 1.7 | 2986 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 62.0 | 127.4 | 106.8 | 1.80 | 1.3 | 3652 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 24 - 36 | 20 - 30 |
| 62.5 | 165.1 | 138.1 | 2.55 | 1.5 | 3681 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 63.0 | 170.7 | 142.5 | 2.48 | 1.5 | 3758 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 63.5 | 141.5 | 118.0 | 2.31 | 1.5 | 3814 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 64.0 | 143.0 | 119.0 | 2.29 | 1.4 | 3733 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 64.5 | 175.8 | 146.0 | 2.70 | 1.5 | 3740 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 65.0 | 170.2 | 141.2 | 2.66 | 1.5 | 3950 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 48 - 72 | 40 - 60 |
| 65.5 | 137.1 | 113.5 | 2.21 | 1.5 | 4023 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 66.0 | 111.6 | 92.3 | 2.19 | 1.8 | 4048 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 66.5 | 111.5 | 92.0 | 2.07 | 1.9 | 3797 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 48 | 30 - 40 |
| 67.0 | 106.4 | 87.6 | 2.38 | 2.1 | 3978 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 36 - 49 | 30 - 40 |
| 67.5 | 98.2 | 80.8 | 2.10 | 2.1 | 3861 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 24 - 36 | 20 - 30 |
| 68.0 | 102.2 | 83.9 | 2.29 | 2.2 | 4146 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 68.5 | 106.6 | 87.3 | 2.39 | 2.3 | 4132 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 69.0 | 101.8 | 83.2 | 2.48 | 2.4 | 4068 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 69.5 | 101.4 | 82.8 | 2.33 | 2.3 | 4033 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 70.0 | 95.0 | 77.4 | 2.05 | 2.2 | 4030 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 25 - 37 | 20 - 30 |
| 70.5 | 96.6 | 78.6 | 2.31 | 2.4 | 4032 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 71.0 | 92.7 | 75.4 | 2.26 | 2.4 | 4087 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 25 - 37 | 20 - 30 |
| 71.5 | 97.9 | 79.4 | 2.33 | 2.4 | 3962 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 72.0 | 97.9 | 79.3 | 2.43 | 2.5 | 3952 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 49 | 30 - 40 |
| 72.5 | 95.4 | 77.2 | 2.29 | 2.4 | 3999 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 25 - 37 | 20 - 30 |
| 73.0 | 97.3 | 78.5 | 2.36 | 2.4 | 3828 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 73.5 | 99.2 | 80.0 | 2.43 | 2.4 | 3767 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 74.0 | 99.8 | 80.3 | 2.28 | 2.2 | 3771 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 25 - 37 | 20 - 30 |
| 74.5 | 104.9 | 84.3 | 2.36 | 2.3 | 3915 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 75.0 | 106.2 | 85.2 | 2.43 | 2.2 | 3957 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 50 | 30 - 40 |

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Mixed soils containing both granular and fine grained particles (e.g. clayey sands) may undergo partial drained failure during CPT.
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75.5 | 106.5 | 85.3 | 2.48 | 2.3 | 4071 | Dense, Silty sand to sandy silt | 36-37 | 60-80 | | | | 37 - 50 | 30 - 40 |
| 76.0 | 104.2 | 83.3 | 2.15 | 1.9 | 3920 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 38 | 20 - 30 |
| 76.5 | 119.7 | 95.6 | 2.69 | 2.2 | 4034 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 77.0 | 120.5 | 96.1 | 2.54 | 2.1 | 4118 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 77.5 | 95.3 | 75.9 | 2.28 | 1.8 | 4153 | Dense, Silty sand to sandy silt | 37-40 | 60-80 | | | | 25 - 38 | 20 - 30 |
| 78.0 | 190.0 | 151.0 | 2.56 | 1.2 | 3887 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 75 | 40 - 60 |
| 78.5 | 221.7 | 176.0 | 2.80 | 1.3 | 4065 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 50 - 76 | 40 - 60 |
| 79.0 | 178.1 | 141.2 | 2.24 | 1.1 | 4291 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 38 - 50 | 30 - 40 |
| 79.5 | 128.7 | 101.9 | 1.13 | 0.8 | 4289 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 80.0 | 145.8 | 115.2 | 1.58 | 1.1 | 4315 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 80.5 | 133.9 | 105.6 | 1.08 | 0.8 | 4259 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 81.0 | 120.0 | 94.5 | 0.81 | 0.6 | 4367 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 81.5 | 114.8 | 90.3 | 0.73 | 0.6 | 4377 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 19 - 25 | 15 - 20 |
| 82.0 | 129.3 | 101.5 | 0.85 | 0.6 | 4357 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 25 - 38 | 20 - 30 |
| 82.5 | 155.0 | 121.5 | 0.62 | 0.4 | 4090 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 38 | 20 - 30 |
| 83.0 | 176.6 | 138.3 | 1.04 | 0.5 | 4128 | Med dense, Sand to silty sand | 40-42 | 40-60 | | | | 26 - 38 | 20 - 30 |
| 83.5 | 219.8 | 171.9 | 1.32 | 0.4 | 4119 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 38 - 51 | 30 - 40 |
| 84.0 | 454.3 | 354.6 | 5.60 | 1.3 | 4845 | V dense, Sand to silty sand | 42-46 | 80-100 | | | | + 128 | + 100 |
| 84.5 | 260.3 | 202.9 | 0.80 | 0.2 | 5934 | Med dense, Sa gravel to gr sand | 42-46 | 40-60 | | | | 51 - 77 | 40 - 60 |
| 85.0 | 208.9 | 162.6 | 2.12 | 0.9 | 9126 | Dense, Sand to silty sand | 42-46 | 60-80 | | | | 51 - 77 | 40 - 60 |
| 85.5 | 262.6 | 204.1 | 4.35 | 1.6 | 7633 | Dense, Sand to silty sand | 40-42 | 60-80 | | | | 77 - 127 | 60 - 99 |
| 86.0 | 157.7 | 122.4 | 0.10 | 0.2 | 5478 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 26 - 39 | 20 - 30 |
| 86.5 | 59.0 | 45.7 | 2.95 | 2.1 | 4580 | Med dense, Silty sand to sandy silt | 27-31 | 40-60 | | | | 19 - 26 | 15 - 20 |
| 87.0 | 80.0 | 61.9 | 2.82 | 2.8 | 4045 | Hard, Sandy silt to sandy clay | | | 25 | 5.98 | 5.64 | 26 - 39 | 20 - 30 |
| 87.5 | 140.4 | 108.5 | 0.59 | 0.0 | 4946 | Med dense, Sand to silty sand | 42-46 | 40-60 | | | | 19 - 26 | 15 - 20 |

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APPENDIX A
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A1.0 EVALUATION OF GEOTECHNICAL PARAMETERS

CPT data have been correlated with soil type, drained friction angle, undrained shear strength, relative density, and equivalent SPT blowcounts, among others. Correlations have been developed by comparing CPT results to laboratory tests on drilled samples and to other in situ tests, such as vane and pressuremeter. Laboratory CPT testing on large scale samples of known composition and classical bearing capacity and cavity expansion theory have also been used. Site specific information, where available, can be used to fine tune correlations.

A two parameter correlation scheme has proved useful for CPT data interpretation. Geotechnical properties often exhibit well defined trends when plotted against the logarithm of the CPT cone end bearing resistance and friction ratio. For instance, increased grain size increases cone end bearing resistance, while increased plasticity and compressibility increases friction ratio. A generalized chart illustrating these and other trends is presented in Figure A2. An extensive discussion of CPT data evaluation is presented in Douglas and Olsen, 1981.

A1.1 CPT Soil Behavior Types CPT soil behavior type correlations have been developed from geotechnical theory and comparisons of borehole data with CPT data (Douglas and Olsen, 1981). The CPT soil behavior type tabulations are indicative of the response of the soil to the large shear deformations imposed on the soil during penetrometer advance. Soil shear response is not entirely controlled by grain size distribution. However, it has been found that soil types correlated with CPT generally agree with classifications based on soil grain size distribution methods such as the Unified Soil Classification System (USCS). A generalized soil classification chart is presented in Figure A3.

A1.2 CPT Relative Density Relative densities of granular soils are correlated with CPT data on the basis of laboratory CPT on large scale samples of known composition (Schmertmann, 1978, and Villet and Mitchell, 1981). The effect of soil fines content has been empirically accounted for by extrapolating trends in the two parameter correlation model (Douglas and Strutynsky, 1984). A generalized relative density chart is presented in Figure A4.

A1.3 CPT Drained Static Strength Drained friction angles have been correlated with CPT results on the basis of CPT soundings and laboratory tests on drilled samples, and on theoretical analyses of the cone end bearing capacity problem (Schmertmann, 1978, Durgunoglu and Mitchell, 1974, and Villet and Mitchell, 1981). The effect of soil fines content on friction angles has been accounted for by extrapolating trends in the two parameter correlation model, as was done for the relative density correlation. A generalized drained friction angle chart is also presented in Figure A4.

A1.4 CPT Undrained Static Strength The correlation between CPT data and undrained shear strength has been extensively studied (Douglas and others, 1984, Lunne and others, 1976, Sanglerat, 1972, and Schmertmann, 1978). The following bearing capacity equation is used for computing undrained shear strength from CPT data: $qu = (Su * Nc) + Sv$ (Eq. A1); where: qu = ultimate bearing capacity; Su = undrained shear strength; Nc = a dimensionless bearing capacity factor; and Sv = the estimated total vertical stress. By setting qu equal to the cone end bearing resistance, qc, and rearranging the equation, a value of the undrained shear strength can be as: $Su = (qc - Sv)/Nc$ (Eq. A2).

The primary difficulty in using this equation has been the selection of Nc applicable to cone penetration in a particular soil. Bearing capacity and cavity expansion theory and other in situ and laboratory test results performed adjacent to CPT soundings have been used to calculate Nc values. These Nc values have ranged from 5 to over 25, but are most often between about 12 and 20. Higher Nc values are typically associated with overconsolidated clays and lower plasticity clays and clayey silts.

A compilation of Nc values as a function of cone end bearing resistance and friction ratio is presented in Figure A5. This figure was developed from comparisons of CPT to results of laboratory consolidated-undrained (CU) strength tests. This is important to note as undrained shear strength is not a unique property of a soil - it is test type and stress path dependent.

Many design methodologies are based on a particular strength test on a particular type of sample. These semi-empirical design methods are successfully used by experienced designers. Engineering judgment must be applied in using the results of any type of testing - whether in situ or laboratory - to assure both adequate safety and design economy.

High Strain, Remolded Strength Another measure of the in situ undrained shear strength is provided by the CPT friction sleeve resistance. The friction sleeve interacts with soil that has already undergone bearing capacity failure induced by the tip of the penetrometer. Thus, the friction sleeve resistance is a measure of soil large strain, remolded strength. The ratio between strengths calculated from the cone end bearing and from the friction sleeve is indicative of soil sensitivity.

In moderately to highly overconsolidated, non-sensitive clays, friction sleeve resistances can indicate higher strengths than those calculated using the cone end bearing resistance. This often reflects the dilative (strain hardening) nature of shear failure in overconsolidated soils. Engineering judgment must be applied in deciding which strain level, and thus which strength, is representative for the particular design problem to be solved.

A1.5 Equivalent SPT Blowcount N-Values An equivalent SPT blowcount can be correlated with CPT data by using a mathematical model of the SPT procedure and soil resistances measured during CPT (Douglas and Olsen, 1981). This procedure has been checked by comparison to actual SPT results at various sites throughout the world (Douglas and others, 1981, Douglas and Strutynsky, 1984, and Olsen and Farr, 1986) with generally good results.

The particular SPT equipment used to develop the CPT-SPT correlation chart (Figure A6) consisted of a SPT trip hammer system. This SPT hammer is characterized by reasonably repeatable, measured hammer input energy efficiencies of about 60 to 70% (Douglas and Strutynsky, 1984). This hammer input energy level is similar to that recommended (Seed and others, 1984) as the "standard" Standard Penetration Test input energy. SPT results are both equipment and operator dependent. SPT hammer efficiencies have been measured to range from 35 to over 90% of the theoretical 4200 in-lbs (30 inch height of fall, 140 lbs hammer) SPT input energy. Variable SPT input energy results in variable blowcounts (Douglas and Strutynsky, 1984, Seed and others, 1984). This problem of non-uniform input energy during SPT provides a limitation for quantitative design purposes.

The approach of using the extensive SPT data base, in addition to the CPT data base, by performing CPT and then deriving equivalent SPT blowcount N-values, typically results in higher quality site information. This is because CPT is continuous, has higher resolution, is less expensive, and is much more consistent and repeatable than SPT. The chart that was used for correlating CPT to SPT for this study is presented in Figure A6. After determining the overburden normalized equivalent SPT N'-value, the equivalent SPT blowcount N-value was calculated by dividing the overburden normalized value by the overburden normalization factor CN, as defined in Eq. A3.

The equivalent SPT N-values reflect the higher resolution of the CPT measurements as compared to actual SPT. Performance of actual SPT includes averaging of soil resistance over about a 24 inch interval (18 inch sampler embedment and 2 to 3 sampler diameters ahead of the sampler). Equivalent SPT values correlated with CPT data have a resolution of about six inches. Rather than coarsen the 6 inch resolution equivalent SPT N-value to fit a 24 inch resolution actual SPT N-value, interpreted values are based on point by point CPT data. These high resolution, equivalent SPT values should be more useful for design purposes, especially in interlayered deposits, where thin, weak soil seams cannot be adequately characterized by actual SPT blowcount methods. The high resolution equivalent SPT values and actual SPT measurements should be similar in thick homogeneous strata.

Discrepancies between CPT equivalent SPT N-values and actual, measured SPT N-values are often due to inconsistencies in the performance of actual SPT. Poor fit of CPT equivalent and actual SPT in weak soils with very low blowcounts (0 to 3) can be due to limited accuracy of high capacity CPT loadcells used at the extreme low end of their range, but are more likely caused by extensive borehole disturbance in easily disturbed soil, and set of the SPT sampler under the self-weight of the hammer and drillrods. Discrepancies between equivalent and actual SPT values in very dense or hard soils with high blowcounts, especially in gravelly soils, can be due to both erratic penetrometer or SPT sampler interaction with large soil particles, and basic differences in modes of penetration of the two techniques. Indications of very weak soils, using any method, should strongly encourage additional testing, including undisturbed sampling and sophisticated laboratory testing.

## A2.0 OVERBURDEN PRESSURE NORMALIZATION

Overburden normalization of CPT data for correlation purposes is necessary in order to remove the effects of increasing confining pressure with depth on measured results. Cone end bearing resistances can be normalized to an effective vertical overburden pressure of 1 TSF by using the following equations: $qc1 = qc * CN$ (Eq. A3); and $CN = 1.0 - 0.5 * \log (Sv')$ (Eq. A4); where: qc1 is the overburden normalized cone end bearing resistance, in TSF; qc is the measured cone resistance, in TSF; CN is the overburden normalization factor; and Sv' is the effective vertical overburden stress in TSF.

Overburden normalization curves are variable (Douglas and Martin, 1980). Most were developed using laboratory CPT and SPT on large scale samples of clean sands, compacted at various relative densities and subjected to various overburden pressures. Application of laboratory results to natural soils may be limited. The CN presented in Equation A4 is similar to that proposed (Seed and others, 1977) for the effect of overburden on SPT blowcounts.

The friction ratio is not normalized based on the assumption that overburden pressure affects friction sleeve and cone end bearing resistance similarly. Since the quantities are divided by each other to compute friction ratio, overburden effects should cancel. Some experience (Olsen and Farr, 1986) indicates that this assumption may oversimplify actual conditions for deep soundings. The friction resistance may be less sensitive to overburden pressure than the cone end bearing resistance. Thus, in soundings deeper than about 100 ft, the friction ratio may gradually decrease with increased penetration, independent of any changes in soil conditions, other than overburden pressure. Due to the variability in overburden normalization curves, no specific correction for overburden pressure on friction ratio has been recommended or used for this study. For this study, effective stresses in Equation A4 were computed using assumed water tables and soil unit weights.

## A3.0 TEST DRAINAGE CONDITION

The CPT loading rate is such that drained and undrained conditions exist during penetration of sands and clays, respectively. Partial drainage may occur in mixed soils. Lack of boundary drainage control during any in situ test complicates data analysis, especially in mixed soils, as both frictional and cohesive behavior can be exhibited during testing.

CPTU piezometric data indicate that minor differences in cone end bearing and friction ratio response can correspond with major changes in pore water pressure response during the test (Douglas and others, 1985). The complex volumetric strain field around the penetrometer (Davidson and Boghrat, 1983) precludes reliable geotechnical effective stress analysis of CPTU results in partially drained soil.

Empirical estimates of either drained or undrained parameters can be made in soils composed of mixtures of granular and fine grained particles. These parameters must not be combined - they are to be used alternatively. Combination of the drained and undrained parameters for geotechnical analysis will result in significant overestimation of in situ shear strength.

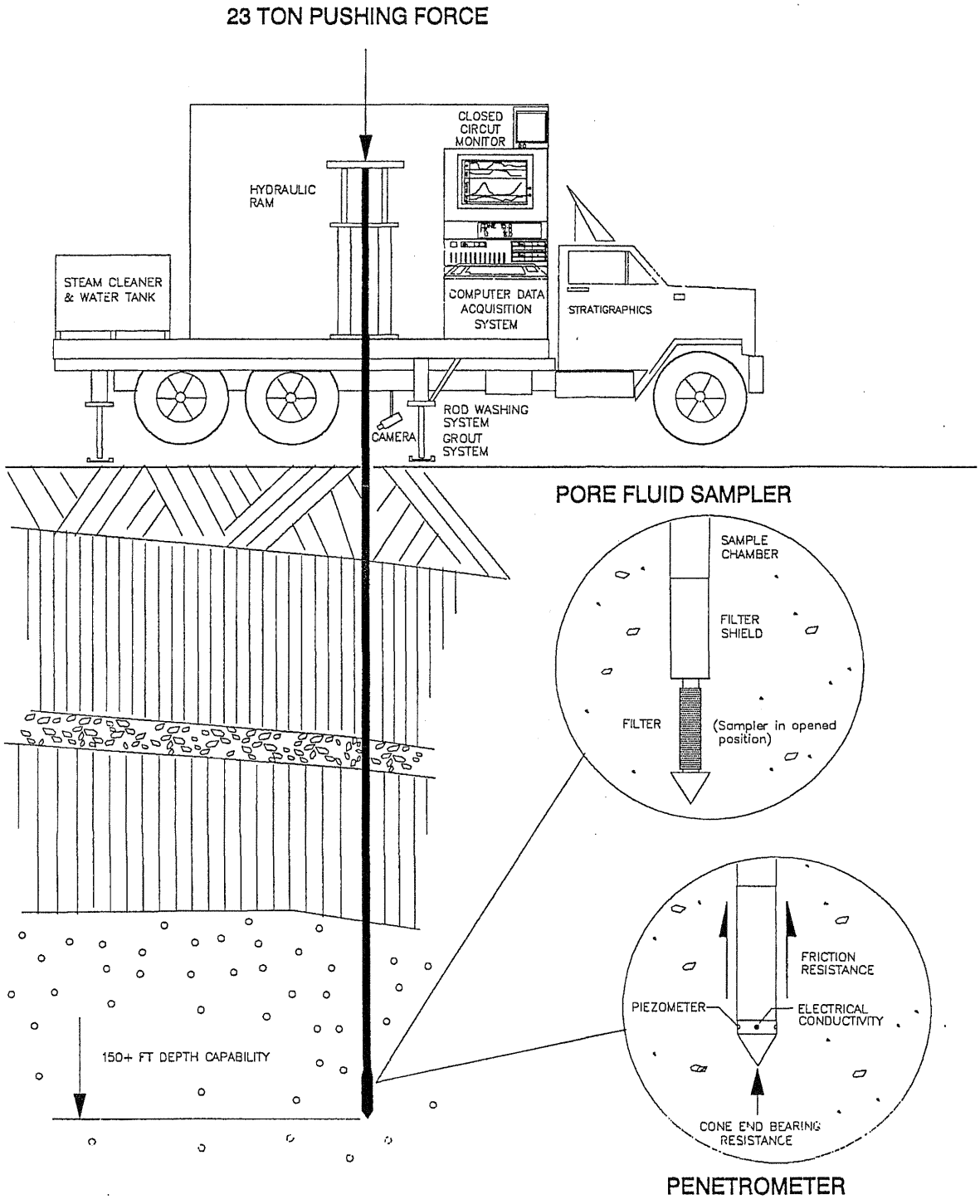
Structure rate of loading will help determine which geotechnical parameters, whether drained or undrained, should be appropriate for design use. Depending on project needs and extent of such soils at a site, geotechnical laboratory testing including CU tests with pore pressure measurements and consolidation tests will also be useful in assigning appropriate design parameters. Field instrumentation during construction using low volume change piezometers may be appropriate for some projects.

## A4.0 RECOMMENDED PRACTICES

The STRATIGRAPHICS parameter evaluation program tracks the CPT data through a series of correlation charts, Figures A2 through A6. Parameters are computer evaluated and tabulated at discrete intervals. Some practices are recommended when reviewing tabulated data and correlated parameters:

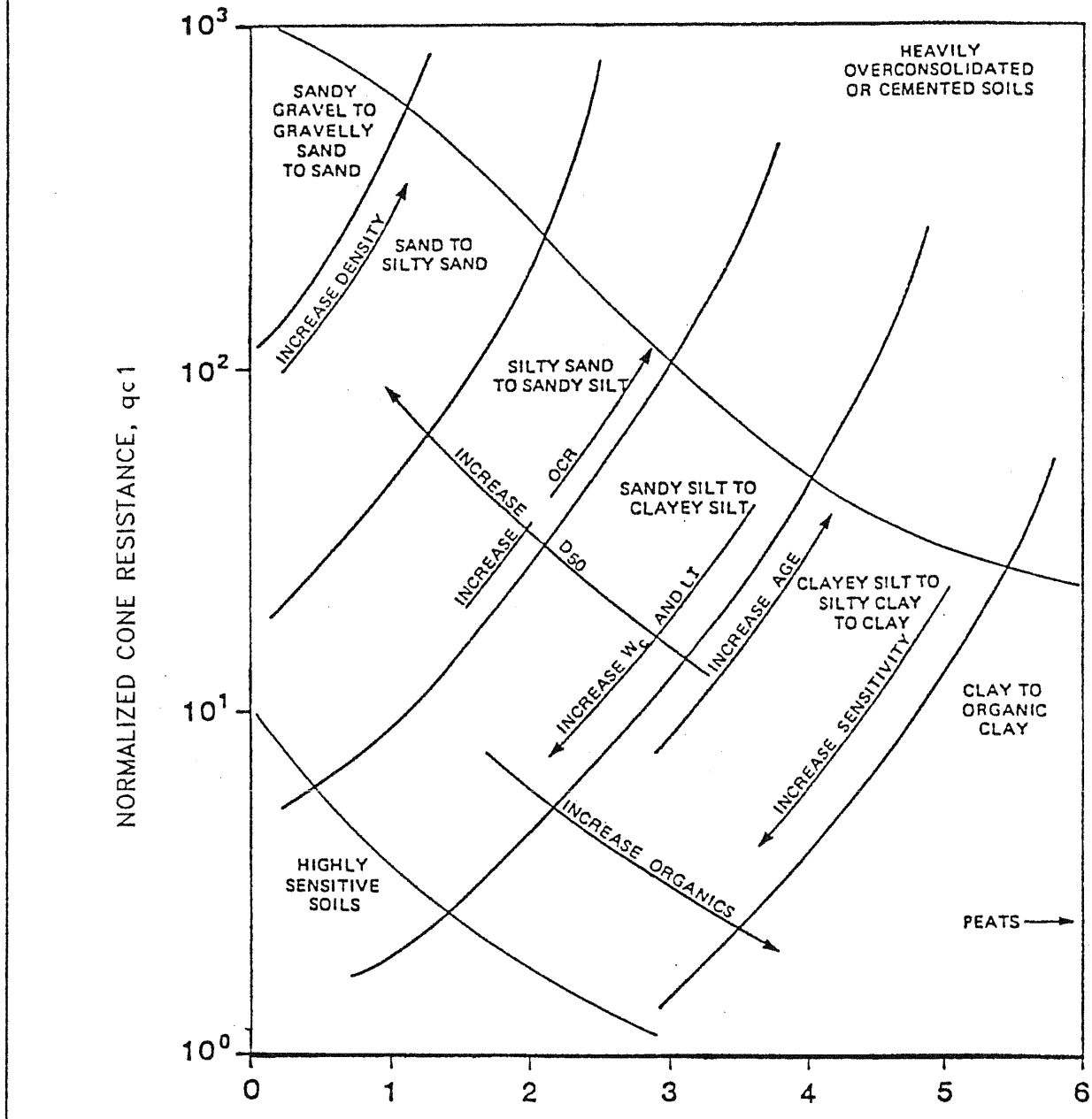
1) stratigraphic units should be defined on the basis of the continuous sounding logs and project requirements. The tabulations are then used to provide layer properties. Use of the tabulations without the review of the continuous sounding logs can lead to the choice of non-representative parameters, especially in interlayered deposits. It should be noted that taking discontinuous borehole soil samples also often provides a poor representation of subsurface conditions;
2) CPT correlations have been developed using empiricism. The empirical data base is world-wide, and includes decades of CPT experience. However, unique local conditions may differ from those in the global data base. Thus, the tabulations should be viewed as indicating trends rather than as the exact equivalent of specific laboratory tests performed under boundary and drainage controlled conditions; and
3) while CPT suffers from none of the effects of sample disturbance as found during drilled investigations, boundary conditions are not well defined during any in situ test such as CPT. The derived parameters are not intended to replace appropriate drilling and undisturbed sampling, other in situ and laboratory testing, and use of engineering judgment.

Review of CPT results and project requirements is used to define the need for additional information. Zones delineated by CPT (or, in fact, any other test) providing low factors of safety should be further investigated. Select undisturbed sampling followed by geotechnical triaxial and consolidation testing may be indicated for low strength cohesive or partially drained mixed soil strata. Monitoring wells may be installed or groundwater samples taken in CPT(U) identified high permeability strata during geo-environmental investigations. Laboratory and other test results can then be extrapolated across the site based on CPT(U) defined stratigraphy.




# PENETROMETER SUBSURFACE EXPLORATION SYSTEM

***STRATIGRAPHICS***




SOIL BEHAVIOR TYPE CLASSIFICATION CHART

After Douglas and Olsen, 1981

***STRATIGRAPHICS***

Figure 2

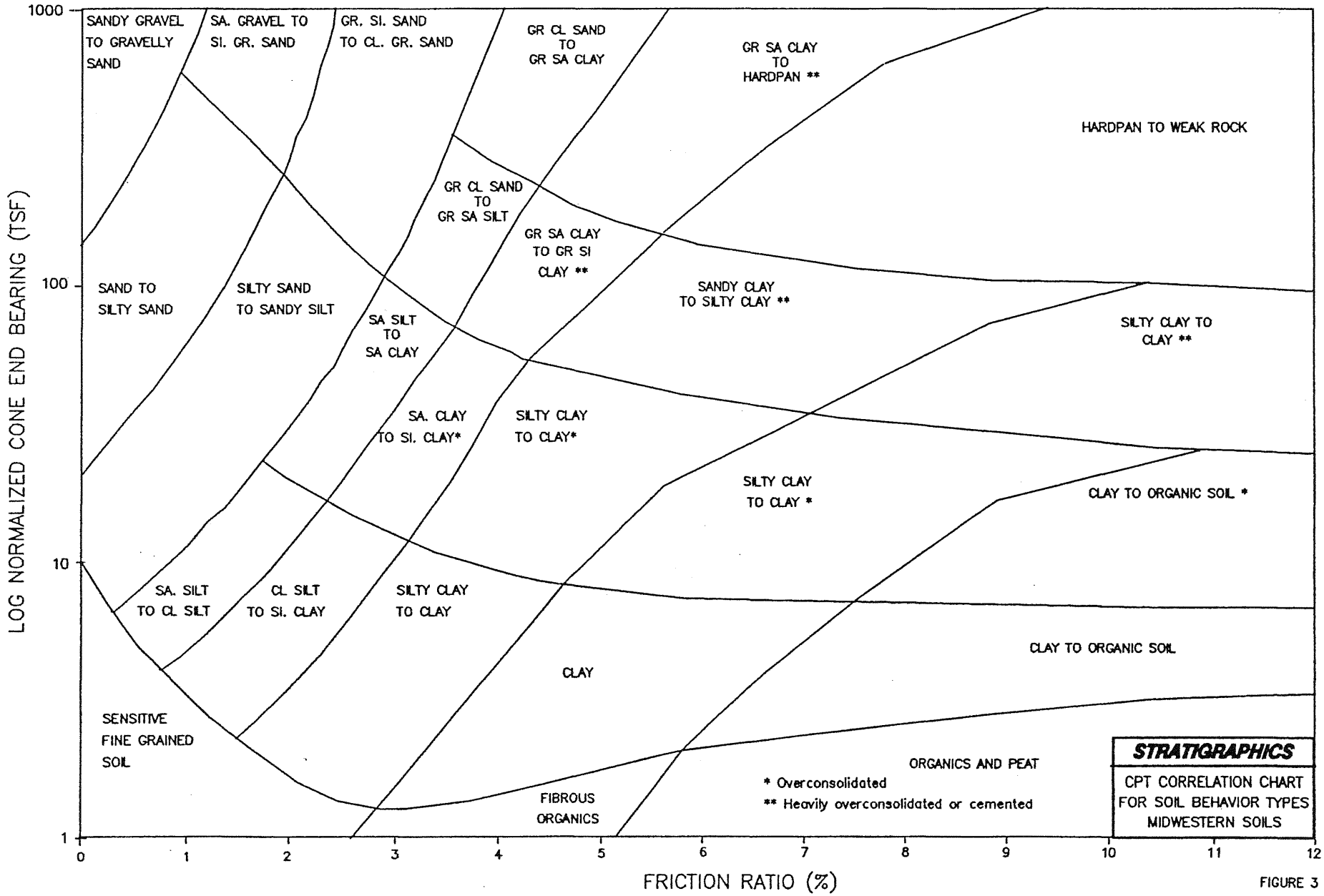
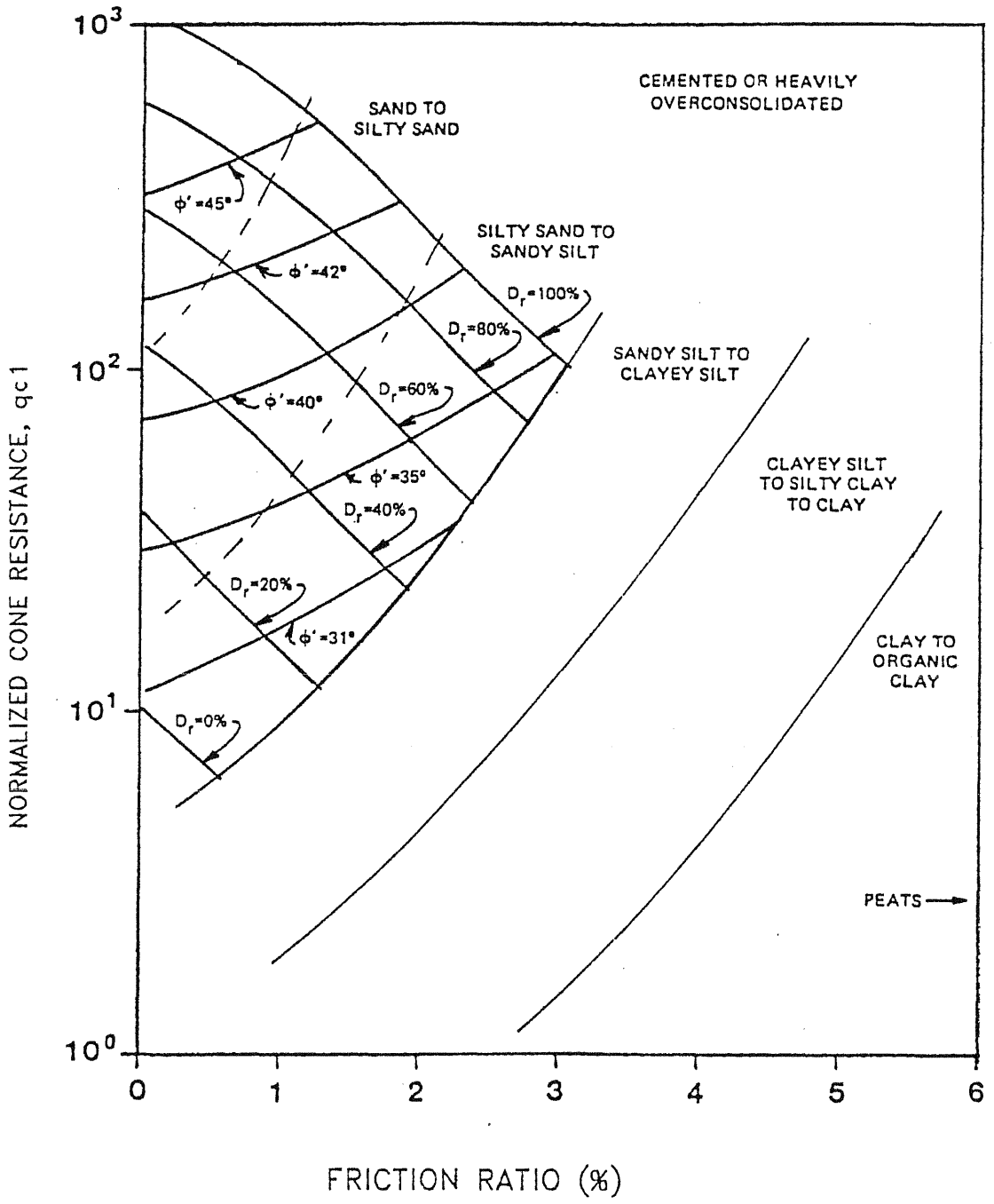

1000
100
10
1
LOG NORMALIZED CONE END BEARING (TSF)
SANDY GRAVEL TO GRAVELLY SAND
SA. GRAVEL TO SI. GR. SAND
GR. SI. SAND TO CL. GR. SAND
GR CL SAND TO GR SA CLAY
GR SA CLAY TO HARDPAN **
HARDPAN TO WEAK ROCK
GR CL SAND TO GR SA SILT
GR SA CLAY TO GR SI CLAY **
SAND TO SILTY SAND
SILTY SAND TO SANDY SILT
SANDY CLAY TO SILTY CLAY **
SA SILT TO SA CLAY
SILTY CLAY TO CLAY **
SA. CLAY TO SI. CLAY*
SILTY CLAY TO CLAY*
SILTY CLAY TO CLAY *
CLAY TO ORGANIC SOIL *
SA. SILT TO CL SILT
CL SILT TO SI. CLAY
SILTY CLAY TO CLAY
CLAY TO ORGANIC SOIL
CLAY
SENSITIVE FINE GRAINED SOIL
ORGANICS AND PEAT
* Overconsolidated
** Heavily overconsolidated or cemented
FIBROUS ORGANICS
STRATIGRAPHICS
CPT CORRELATION CHART FOR SOIL BEHAVIOR TYPES MIDWESTERN SOILS
0
1
2
3
4
5
6
7
8
9
10
11
12
FRICTION RATIO (%)

FIGURE 3

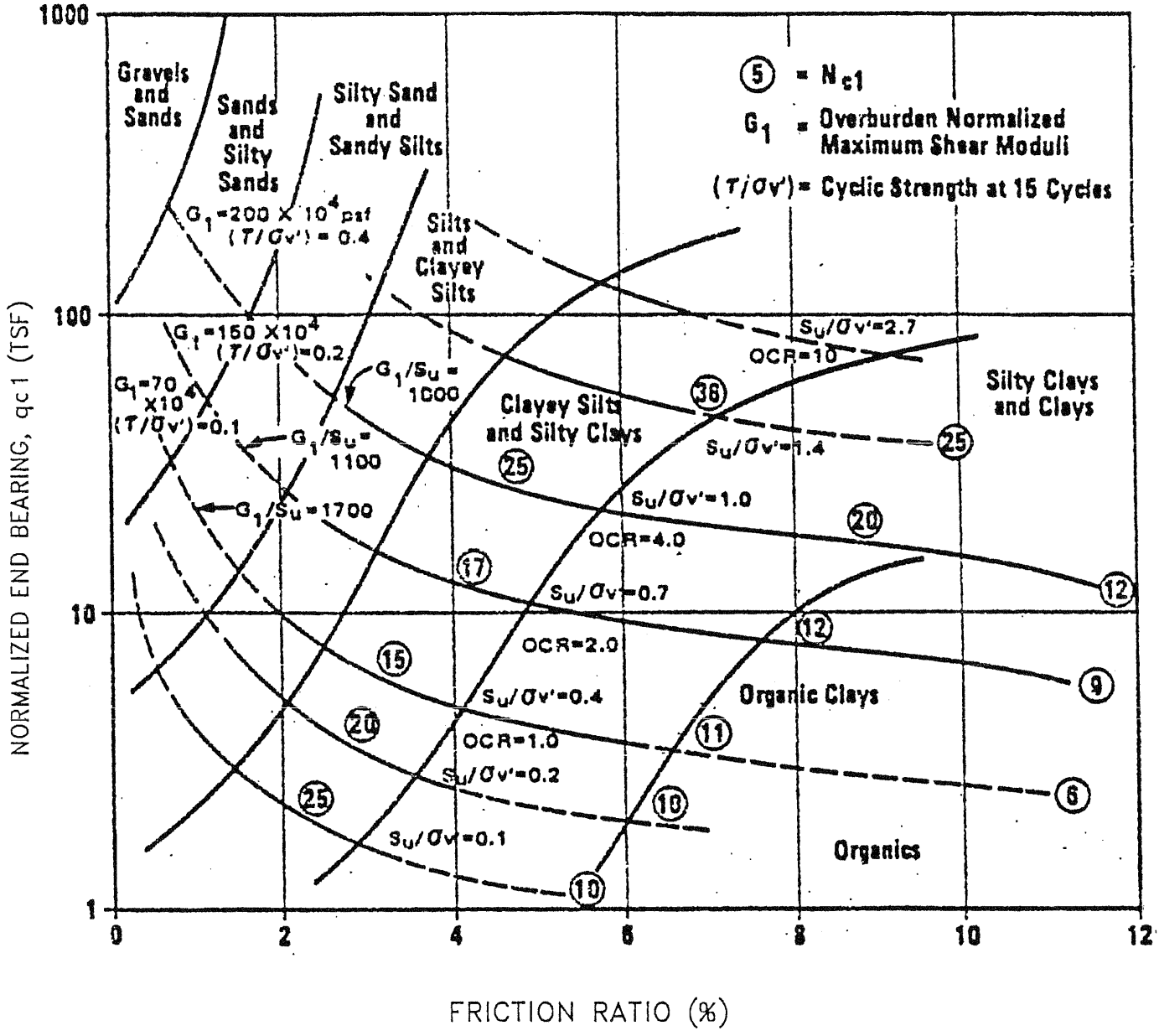



EXPANDED SOIL BEHAVIOR TYPE CLASSIFICATION CHART WITH EQUIVALENT OVERBURDEN NORMALIZED FRICTION ANGLE AND RELATIVE DENSITY TRENDS

After Douglas and Strutynsky, 1984

***STRATIGRAPHICS***

Figure 4




COMPOSITE TRENDS IN UNDRAINED SOIL PROPERTIES

After Douglas, Strutynsky, et. al., 1985

***STRATIGRAPHICS***

Figure 5

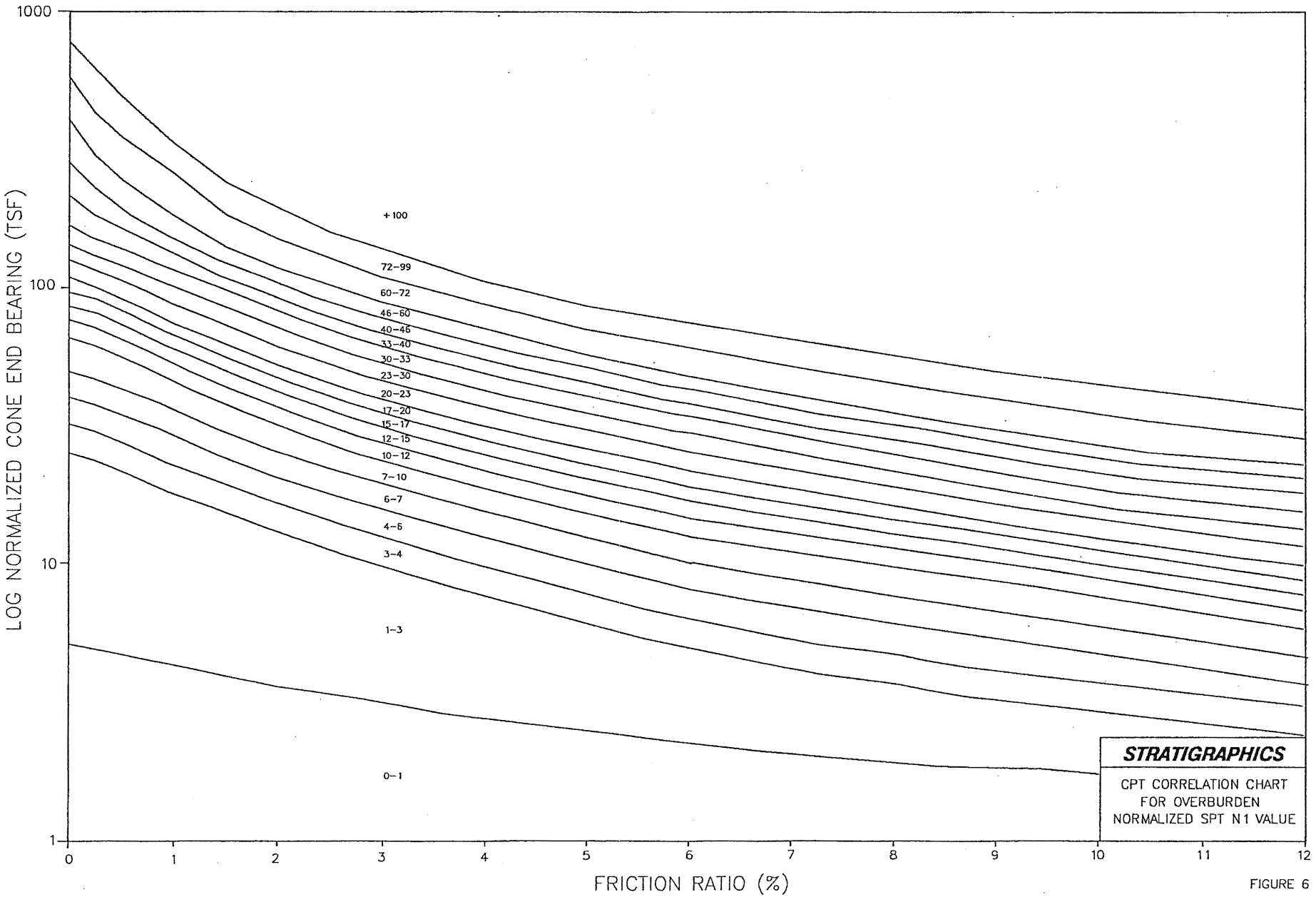
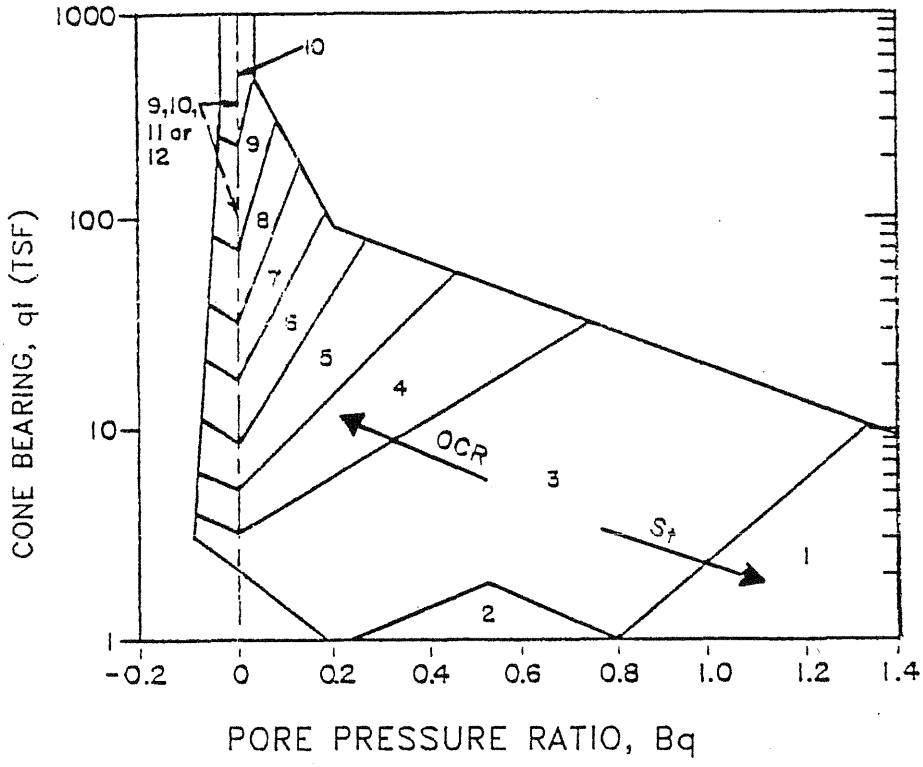

1000
100
10
1
LOG NORMALIZED CONE END BEARING (TSF)
+100
72–99
60–72
46–60
40–46
33–40
30–33
23–30
20–23
17–20
15–17
12–15
10–12
7–10
6–7
4–6
3–4
1–3
0–1
0
1
2
3
4
5
6
7
8
9
10
11
12
FRICTION RATIO (%)
STRATIGRAPHICS
CPT CORRELATION CHART
FOR OVERBURDEN
NORMALIZED SPT N1 VALUE

FIGURE 6




| ZONE | SOIL BEHAVIOR TYPE |
|---|---|
| 1 | ORGANIC MATERIAL |
| 2 | CLAY |
| 3 | CLAY |
| 4 | SILTY CLAY TO CLAY |
| 5 | CLAYEY SILT TO SILTY CLAY |
| 6 | SANDY SILT TO CLAYEY SILT |
| 7 | SILTY SAND TO SANDY SILT |
| 8 | SAND TO SILTY SAND |
| 9 | SAND |
| 10 | GRAVELLY SAND TO SAND |
| 11 | VERY STIFF FINE GRAINED (*) |
| 12 | SAND TO CLAYEY SAND (*) |
| (*) | OVERCONSOLIDATED TO CEMENTED |

After Robertson & Others, 1986

***STRATIGRAPHICS***

Figure 7

APPENDIX B

**Excerpt from Baligh, M.M. and J. Levadoux, "Pore Pressure Dissipation After Cone Penetration," Department of Civil Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1980.**

6.2.4 Evaluation of $c_h$ (probe)

At a given degree of consolidation, the predicted horizontal coefficient of consolidation $c_h$ (probe) is obtained from the expression

$$c_h \text{ (probe)} = R^2T/t \qquad (6.2)$$

where R is the radius of the cone shaft, t is the measured time to reach this degree of consolidation; and T is the time factor. Table 5.1 provides values of T for different probe types at various degrees of consolidation.

An analytical method {equivalent to the graphical method described in Section 6.2.3} to check the validity of the prediction method consists of determining $c_h$ at different dissipation stages, i.e., different u. Large differences between $c_h$ at various degrees of consolidation indicate an inadequate initial distribution of excess pore pressure or significant coupling, or creep behavior.

The estimated values of $c_h$ (probe) at 50% dissipation can be used in foundation problems involving horizontal water flow due to unloading or reloading of clays above the maximum past pressure. For problems involving vertical water flow in the overconsolidated range, the vertical coefficient of consolidation, $c_v$(probe), can be estimated from the expression:

$$c_v \text{ (probe)} = (k_v/k_h)\, c_h \text{ (probe)} \qquad (6.3)$$

where $k_v$ and $k_h$ are the vertical and horizontal coefficients of permeability, respectively. Reliable estimates of the in situ anisotropy of clays as expressed by the ratio $k_h/k_v$ is difficult to determine in the laboratory because of the effects of sample size, sample disturbance, ... etc. and is the subject of controversy (Rowe, 1972; Casagrande and Poulos, 1969). In situ tests to determine $k_h/k_v$ are almost nonexistent. Table 6.2 provides rough estimates of $k_h/k_v$ for different clays.

6.2.5 Prediction of $k_h$ (probe)

Approximate estimates of the horizontal coefficient of permeability, $k_h$ (probe), can be obtained from the expression:

$$k_h \text{ (probe)} = (g_w/2.3s_{vo}) * RR(\text{probe}) * c_h \text{ (probe)} \qquad (6.4)$$

where $s_{vo}$ is the initial vertical effective stress (kg/cm$^2$); $g_w$ is the unit weight of water (=$10^{-3}$ kg/cm$^3$); and, RR(probe) is the recompression ratio during early stages of consolidation around the probe (50% dissipation, say).

Results in both the upper and lower Boston Blue Clays indicate that:

$$\text{the average } RR(\text{probe}) = 10^{-2} \qquad (6.5)$$

$$\text{and generally } 0.5 * 10^{-2} < RR(\text{probe}) < 2 * 10^{-2} \qquad (6.6)$$

6.2.6 Prediction of $c_v$(NC)

For foundation clays consolidated in the normally consolidated range, estimates of the coefficients of consolidation can be obtained from $c_h$ (probe) by means of the expressions:

$$c_h(NC) = (RR(probe)/CR) * c_h (probe) \quad (6.7)$$

for horizontal water flow, and

$$c_v(NC) = (RR(probe)/CR) * (k_v/k_h) * c_h(probe) \quad (6.8)$$

for vertical water flow.

The compression of ratio CR is the average slope of the strain vs. log effective stress plot in the appropriate effective stress range expected during consolidation of the foundation clay. Values of CR should be obtained from good quality samples carefully tested in the laboratory. Table 6.2 provides rough estimates of CR based on empirical correlation with index properties of various clays.

**Table 6.2 Empirical Correlation and Typical Properties of Clays**

1. Compression Ratio CR (from Ladd, 1973)

$CR = C_c/1+e_o$ = slope of the strain vs. log stress curve
$e_o$ = initial void ratio
$c_c$ = virgin compression index = slope of e vs. log stress
$w_L$ = liquid limit
$w_N$ = natural water content

| | |
|---|---|
| $c_c = 0.009 (w_L\% - 10\%)$ | Terzaghi and Peck (1967) |
| $C_c = 0.54 (e_o - 0.35)$ | Nishida (1958) |
| $C_c = 0.01$ to $0.15 (w_N\%)$ | MPMR (1958) |
| $C_c = 0.6 (e_o - 1)$ for $e_o < 6$ | |
| $C_c = 0.6 (e_o - 1)$ for $e_o < 6$ | |
| $C_c = 0.85 (e_o - 2)$ for $6 < e_o < 14$ | Kapp, (1966) |

2. Anisotropic Permeability of Clays (from Ladd, 1976)

| Nature of Clay | $k_h/k_v$ |
|---|---|
| 1. No evidence of layering | 1.2 +- 0.2 |
| 2. Slight layering, e.g., sedimentary clays with occasional silt dustings to random lenses | 2 to 5 |
| 3. Varved clays in northeastern U.S. | 10 +/-5 |

# APPENDIX C

Geotechnical Site Characterization, Robertson & Mayne (eds) © 1998 Balkema, Rotterdam, ISBN 90 5410 939 4

# Brine plume mapping using cone penetrometer and geophysical methods

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ABSTRACT: Naturally occurring brines (concentrated solutions of chloride salt and water) are pumped from deep wells and are transmitted by pipeline to industrial processing facilities. An accidental brine release affected shallow groundwater quality at a site in Michigan. The chloride brine plume was delineated using non-intrusive surface geophysical, minimally intrusive cone penetrometer, and downhole geophysical methods. Surface electromagnetic surveys were used to map the areal extent of the plume. Direct push cone penetrometer soundings with soil electrical conductivity measurements were used to profile stratigraphy and detect electrical conductivity anomalies associated with brine intrusions. Anomalous zones were sampled, using penetrometer groundwater sampling, for direct chemical analysis. Geophysical monitoring stations were then installed in boreholes to allow periodic monitoring of the plume's response to remediation.

## 1 INTRODUCTION

Soil electrical conductivity (EC) measurements are uniquely useful during geo-environmental exploration of brine contaminated groundwater. Both surface and downhole methods can be used to monitor increases in EC resulting from the migration and diffusion of brine through groundwater. Surface methods have the utility of rapidly covering large areas to identify where brine intrusions might have occurred. Downhole methods are very useful in pinpointing the vertical extent of contamination as well as in estimation of brine concentrations. Downhole measurements can be obtained in cased boreholes, or through use of cone penetrometer soundings which include EC measurements.

Soil electrical conductivity is controlled by the conductance of the soil particles and the conductance of the fluid occupying the soil pore spaces. The ratio between pore fluid and combined soil-pore fluid electrical conductivity is termed the formation factor (Archie, 1942). Clay particles can be electrically conductive due to adsorbed water and ionic electrical charges on the clay platelets, so clay electrical conductance depends on mineralogy, porosity and pore fluid characteristics. Sand grains are typically nonconductive, so sand conductance depends primarily on pore fluid characteristics and porosity. The addition of brine to groundwater greatly increases soil electrical conductance.

A brine groundwater contamination exploration method was developed based on several technologies. First, surface electromagnetic (EM) surveys can be used to rapidly map affected areas, and give reasonably good indications of the degree of impact of brine releases on groundwater, to depths as great as 60 m (200 ft). However, surface EM methods lack the ability to adequately quantify brine concentrations, cannot provide detailed definition of the depth intervals affected by brine intrusions, and cannot easily differentiate between natural electrically conductive clayey soils and zones of elevated chlorides.

Downhole geophysical induction logging can be performed to great depths in suitably cased boreholes. Data quality is high, allows vertical delineation of affected intervals, and allows estimation of brine concentrations. However, drilling and casing boreholes, and the disposal of large volumes of exploration derived wastes from drilling activities, are expensive and time consuming. Further, borehole stability can be a significant problem where thick sequences of saturated sands are encountered.

A high capacity, truck mounted, geo-environmental cone penetrometer system,

including downhole EC logging and penetrometer groundwater sampling, can be used to vertically profile subsurface conditions and obtain direct groundwater samples. The penetrometer exploration method is fast and accurate, and provides high resolution lithologic and electrical conductivity data. The direct push penetrometer exploration method requires no borehole, so no soil cuttings are generated, and borehole stability is of no concern.

## 2 GEOPHYSICAL METHODS

The electromagnetic (EM) geophysical method determines electrical properties of earth materials by inducing electromagnetic currents in the ground and measuring the secondary magnetic field produced by these currents. An alternating current is generated in a wire loop or coil above the ground's surface. Both the primary magnetic field (produced by the transmitter coil in the instrument) and the secondary field (produced by currents in the earth) induce a corresponding alternating current in the receiver coil of the instrument. The coils are kept at a fixed distance and orientation relative to the ground to simplify data analysis.

After compensating for the primary field, both the magnitude and relative phase (in-phase and quadrature) of the secondary field are measured. The quadrature-phase component, using simplifying assumptions of homogeneous and isotropic conditions, is converted to a value of apparent soil electrical conductivity (EC). This value represents an estimate of the local average soil EC. The depth of measurement is dependent on the instrument's coil spacing, orientation, and operating frequency, and the actual subsurface EC variations. Averaging limits discrimination of thin, high concentration brine intrusions from broader, more diffuse plumes. Multiple profiles using differing coil spacing can be performed to bracket approximate depths of brine affected groundwater. Data quality may be degraded by cultural interference as caused by utility lines, steel fences or other large metallic objects.

Surface electromagnetic measurements were taken by Geosphere with Geonics EM38, EM31 and EM34 systems, using coil separations of 1 m (EM38) , 3.7 m (EM31), and 10 m or 20 m (EM34). The nominal explored depth is proportional to coil spacing. For the shallow, near field EM38 instrument, the explored depth is about 1.5 m; for the intermediate EM31 it is about 6 m; and for the deep, far field EM34 instrument, the explored depth is about 15 m with a 10 m coil spacing, 30 m with a 20 m spacing, and 60 m with a 40 m spacing.

Instruments were carried manually, and measurements were digitally logged during profiling at the chloride brine release site. Shallow and intermediate readings in the source area were typically taken at 15 m (50 ft) intervals along lines 15 m apart using the EM38 and EM31 instruments. EM34 (deep far field) coverage was conducted on lines spaced 60 m (200 ft) apart in the western portion of the plume, where the chloride brine had migrated to much greater depths.

Permanent geophysical monitoring stations were installed using hollow stem auger drilling techniques. A water filled, PVC casing was grouted into place to provide an access conduit for lowering downhole geophysical logging tools. Screened intervals are not necessary (or even desired) as there is no need for direct communication with the surrounding groundwater/soil system. In induction logging, the field is induced in the surrounding soil through the casing itself. Electrically conductive (i.e., steel) casing materials cannot be used.

Periodic downhole logging of the geophysical monitoring stations was performed at the chloride brine release site using a Geonics EM39 induction system. The induction technique has been used for decades by the petroleum industry for formation characterization in oil and gas wells. The Geosphere application of these methods to shallow groundwater exploration includes increased resolution due to slim, compact logging tools (3.6x130 cm or 1.4x50 in) and slower logging rates. This permits the detection and resolution of formation conductivity changes across vertical intervals of less than 0.3 m (1 ft). The EM39 induction logger is capable of measuring with an accuracy of 2 mS(milli-Siemen)/m in the range of 0 to 1000 mS/m.

The geophysical monitoring station provides significant advantages over traditional screened monitoring wells at brine affected sites. A continuous EC profile is obtained from the surface to the bottom of the cased hole, where traditional monitoring wells only provide data across the screened interval. This is significant as brine plumes typically sink with time, retreating from screened intervals, which can lead to misleading results. The geophysical monitoring station avoids the costs of installing monitoring well clusters, and eliminates data gaps which occur where monitoring wells are screened in different portions of the aquifer. Monitor well purging and analytical testing are also eliminated, leading to additional cost savings.

Like surface EM and penetrometer CPTU-EC methods, the borehole EM39 system measures the

bulk (soil and pore fluid) EC. With suitable assumptions of formation factors, a value of groundwater conductivity, and thus approximate concentration of a predominant ion such as chloride, can be estimated from downhole EC measurements.

## 3 CONE PENETROMETER SYSTEM

The STRATIGRAPHICS cone penetrometer system is used during geo-environmental and geotechnical exploration programs in difficult soil conditions. The heavy (240 kN and 300 kN, or 24 and 30 ton) truck mounted rigs are fully self-contained, and include data acquisition systems, dry and wet work areas, water tanks, steam cleaners, decontamination and grouting systems, separate rodstrings for sounding and sampling, optional dynamic rod driving, and heavy duty downhole equipment for use in glaciated terrains (Figure 1).

Cone penetrometer (direct push) systems require no borehole to advance probes and samplers and result in very little exploration derived waste. Downhole equipment is decontaminated during retrieval using an automatic rodwasher, and the open hole is pressure grouted. Most exploration activities are performed inside an enclosed portion of the rig, providing all-weather capability and a low visual profile during operations. Truck mounted

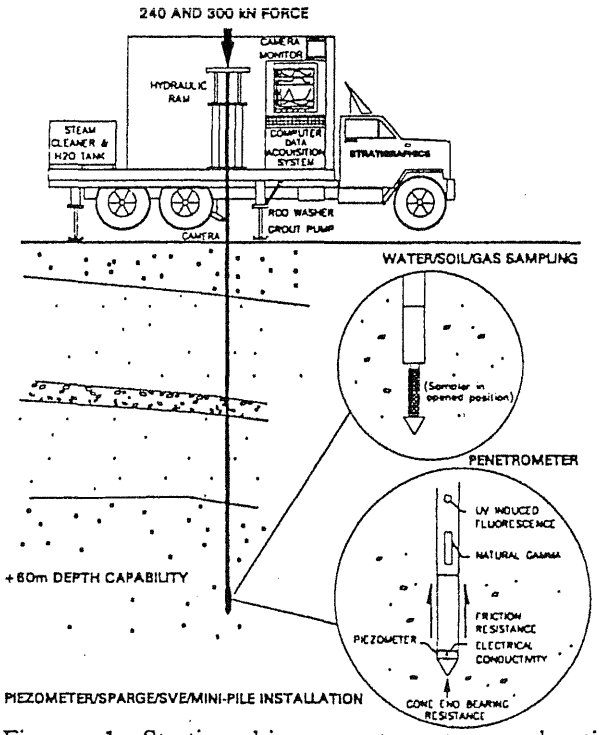


Figure 1 Stratigraphics penetrometer exploration system

penetrometer systems can be very productive, with as much as 400 m (1300 ft) of stratigraphic logging per day, with depth capacity exceeding 60 m (200 ft). As many as 18 groundwater, or up to 30 soil or soil gas samples, can be acquired in a day.

Soil resistance to penetration acting on the tip and soil friction on the sides of the penetrometer are separately measured during CPT. These measurements are accurate and repeatable, and have been used for the evaluation of stratigraphy and geotechnical parameters for decades. Performance of geo-environmental CPT is specified by ASTM Standards D5778, D6067 and Guide D6001.

The CPT tip resistance increases exponentially with soil grain size. Tip resistance in a sand aquifer is typically one to two orders of magnitude greater than in a clay aquitard. For example, the CPT tip resistance varies from about 10 to 40 MPa (100 to 400 tons per square ft (tsf)) in a dense sand aquifer, while tip resistance in a stiff clay aquitard ranges from about 0.5 to 1.5 MPa (5 to 15 tsf). The friction ratio (proportion of friction to tip resistance) is also used as an indicator of soil type. The friction ratio allows discrimination between loose sands and hard silts and clays, where tip resistances can be similar. The friction ratio ranges from about 1% in a sand to greater than about 3% in a clay. Silts have intermediate friction ratios.

High resolution, continuous soil profiling (sounding) for geo-environmental exploration is most often performed by STRATIGRAPHICS using the Piezometric Cone Penetration Test with soil Electrical Conductivity measurements (CPTU-EC). The cone tip and friction resistance measurements (*CPT*U-EC) are evaluated for soil types and geotechnical parameters (Douglas and Olsen, 1981). The piezometric measurement (CPT*U*-EC) allows evaluation of soil saturation, hydraulic conductivity, potentiometric surfaces, and soil types (Saines et al, 1989, Robertson et al, 1986). The soil Electrical Conductivity measurement (CPTU-*EC*) provides information on soil moisture in vadose zone soils and indications of groundwater quality in saturated soils. The EC measurement has proved very useful in exploration for inorganic (metal, brines and landfill leachate) contamination and somewhat useful in non-aqueous phase liquid (NAPL) exploration.

Soil EC is measured by STRATIGRAPHICS using a rugged two electrode array mounted on the tip of the penetrometer (Strutynsky, et al, 1991). A 3 kHz AC voltage is applied to the array to control polarization and contact resistance effects. EC is computed based on in-phase currents induced across the array and a reference resistor. The EC

measurement has a resolution of about 1-3 cm.

The STRATIGRAPHICS Penetrometer Sampler can be deployed in groundwater, soil or soil gas sampling modes by using interchangeable components. The groundwater sampler is a heavy wall, shielded wellpoint sampler. The shield prevents cross contamination and clogging of the sampler screen. The shield is retracted to allow groundwater to flow through a 0.5 m (20 inch) long screen into the barrel. Sample can be decanted from the barrel or can be pumped to the surface using an inertial pump. A small diameter pressure transducer can be lowered into the sampler to log the rate of groundwater inflow. Inflow results can be analyzed to estimate soil hydraulic conductivity.

Penetrometer exploration can be used at sites where predominant soil grain sizes are less than about ½ the diameter of the downhole tools, i.e. less than about 3-4 cm (medium to coarse gravel). A small fraction of larger particles can be tolerated, as long as the coarser particles are within a matrix of much finer soil grains, as is common in many glacial till units. Deep penetration can be limited by excess friction on the rod string where soft, squeezing clays are encountered. Rod friction can also be a problem where thick sequences of hardpan silts or very fine, saturated sands are encountered. Thick sequences of very soft soils, such as peat layers, can limit deep penetration as little lateral support is provided to the slender penetrometer rod string in the weak layer, while attempting to push through dense soils at depth. Extremely dense (SPT blowcounts greater than about 100) can be difficult to penetrate. Dynamic rod driving may help in this situation.

## 4 SITE CHARACTERIZATION

Chloride brine production (40% chloride salt solution) from well fields in Michigan is transported to a processing facility through pipelines buried at shallow depths. At one site, galvanic corrosion at a welded pipeline joint led to a release of about 40,000 gallons of chloride brine. The initial response removed over 100,000 gallons of surface water and brine, but a portion of the released brine permeated into a thick sand aquifer, and some seeped into a nearby creek. Chloride brine migration was primarily controlled by differences in density between the heavy brine and lighter fresh groundwater, and by the generally westward regional groundwater flow.

Soils in the release area consist of about 180 m (600 ft) of sands, silts and clays, which overlie shale bedrock. These soils represent a sequence of lakebed and shoreline deposits in a paleo environment when water levels in the Great Lakes were much higher than at present. The sand aquifer is probably the result of dune and beach activity. The aquifer ranges in thickness from about 6 m (20 ft) near the brine release point, to over 40 m (130 ft) at a distance 600 m (2000 ft) west of the release point. An aquitard consisting of interlayered clays, silts, and silty sands underlies the sand aquifer.

The suspected release point and surrounding area were initially profiled to depths of about 6 m using near field EM38 and intermediate EM31 surface geophysical instruments. Within a week, the shallow plume was mapped to an area of about 35 acres. Purge and monitoring wells were installed to control the migration of the chloride brine through the aquifer. Additional geophysical profiling, and installation of more purge and monitoring wells, was performed in several phases over a period of years, as it became apparent that westward plume migration was continuing.

Due to the dense chloride brine sinking to the top of the westward dipping aquitard layer and the westward regional flow of groundwater, a far field EM34 surface geophysical instrument had to be used for profiling the central portion of the plume. At a distance of about 600 m (2000 ft) west of the release point, the plume had migrated deeper than the layer resolving capabilities of the EM34 instrument. Further plume characterization was performed with the CPTU-EC cone penetrometer method.

A series of 33 CPTU-EC soundings, to depths as great as 50 m (165 ft) and totaling 1061 m (3481 ft) of data, and 27 penetrometer groundwater samples, were completed to characterize the deep, westward extension of the plume. A thin zone of groundwater with slightly elevated chloride concentrations was eventually found to extend along the top of the confining aquitard unit to as far as 1200 m (4000 ft) west of the initial release area.

The indirect CPTU-EC data indicated that the sand aquifer was relatively homogeneous, with very few, thin, apparently discontinuous clay or silt seams or layers. In contrast, the aquitard was found to be much more heterogeneous than the aquifer, with interlayers of clays, silts, and silty sands. EC data (both CPTU-EC and geophysical) indicated groundwater unaffected by the chloride brine is low in electrical conductivity, which provides a very clear contrast to groundwater with elevated chloride content. Piezometric testing during CPTU-EC indicated aquifer hydraulic conductivities to range from about 1E-3 to over 1E-2 cm/sec. Aquitard

hydraulic conductivities ranged from about 1E-4 to less than 1E-8 cm/sec, depending on whether the testing was in silty sand or silty clay layers. The indirect penetrometer evaluations of stratigraphy, hydraulic conductivity and EC agreed very well with indirect geophysical, direct sampled borehole, and pump test data collected at the spill site.

The CPTU-EC data were evaluated to delineate the extent of the sand aquifer and clay aquitard units. Depth intervals within aquifer soils, where peak EC measurements were encountered, were selected for direct penetrometer groundwater sampling. Sample targeting using the continuous CPTU-*EC* sounding logs significantly reduced the number of samples and analytical testing required to adequately characterize groundwater chloride concentrations. Near the plume source, where CPTU-*EC* measurements were greater than about 400 mS/m (4mS/cm), direct penetrometer groundwater sampling was typically not performed, as high chloride concentrations were not in question for these conditions.

A comparison between CPTU-EC penetrometer data and a drilled, sampled and geophysically logged monitoring station is shown in Figure 2. The two exploration points were within

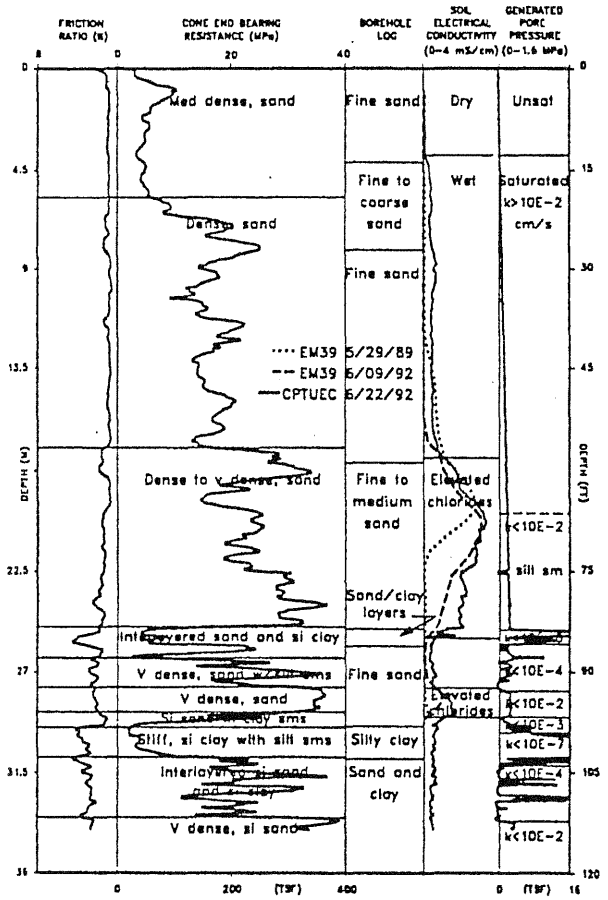

Figure 2 Comparison between CPTU-EC, EM-39 and borehole samples

about a 9 m (30 ft) distance of each other, with the CPTU-EC sounding slightly closer to the plume axis. Very good correspondence is observed between the soil types evaluated from the CPTU-EC measurements and visual classification of obtained samples. The continuous CPTU-EC logs provide data across unsampled intervals in the discontinuously sampled borehole, and greatly increased resolution of thin layering.

Comparison between the CPTU-*EC* and downhole EM39 data also shows very good correspondence. The CPTU-*EC* data provide higher resolution (2-3 cm versus 15-30 cm for EM39) of layering. In many instances, this can be advantageous (for example, during other projects when trying to detect thin LNAPL or DNAPL layers). A disadvantage to the high CPTU-*EC* resolution is that in gravelly soils where particle size is comparable to EC sensor resolution, a significant amount of noise can be exhibited in the EC data.

The CPT*U*-EC piezometric data in the example sounding log indicate that the bottom of the aquifer unit is slightly less permeable than at shallow depths. This fact, not apparent from visual descriptions of drilled samples, may explain the somewhat unusual shapes of the EM39 geophysical and CPTU-*EC* logs, and thus the distribution of chloride concentrations at the bottom of the aquifer.

The peak value of EC (and thus, highest chloride brine concentration) might be expected to fall at the interface between the sand aquifer and the underlying aquitard at 25.5 m, if the aquifer was homogeneous in hydraulic conductivity. Instead, the peak EM39 and CPTU-*EC* values were measured at a depth of about 21 m. This is the depth at which aquifer hydraulic conductivities slightly decrease, as indicated by CPT*U*-EC piezometric measurements. EC measurements slowly decrease with depth from this point, and somewhat abruptly decrease at about 23 m. The CPT*U*-EC piezometric data indicate a thin (<10 cm) silt seam at this depth, not detected during drilled sampling. A very abrupt decrease in EC finally occurs at the aquifer/aquitard interface, at 25.5 m.

A comparison between peak EC data measured in the CPTU-EC soundings and average EC data from surface geophysical surveys is presented in Figure 3. Generally good correspondence can be seen between the two exploration methods. As expected, the CPTU-EC peak data are much higher than the average data from the surface EM surveys. The deep, low concentration chloride affected groundwater in the western portion of the site was only detected using

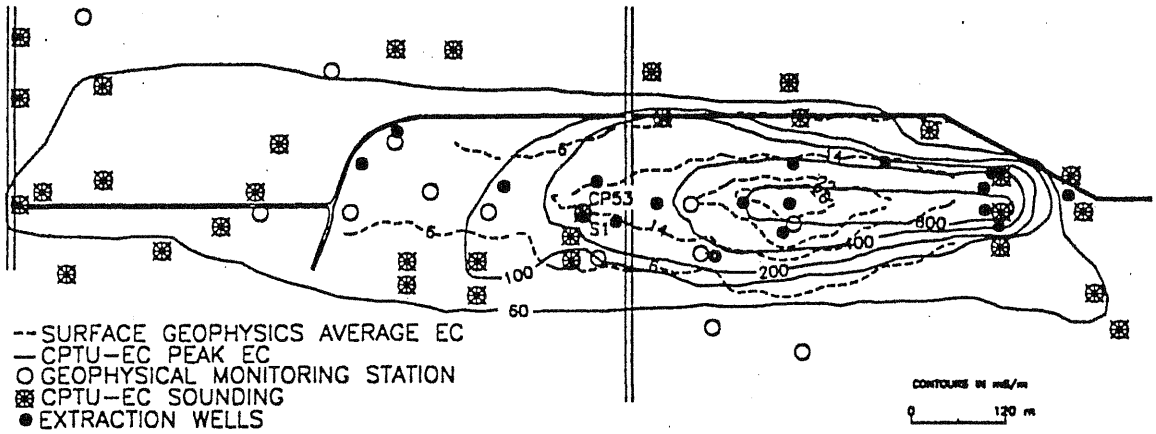


Figure 3 Surface geophysical average EC and CPTU-EC peak EC

CPTU-EC data. The surface EM geophysical survey was of great benefit where plume depths did not exceed about 20-30 m.

Correlations were developed from comparing CPTU-*EC* and downhole EM39 data to laboratory chloride concentrations obtained from groundwater samples, in order to allow estimation of chloride concentrations. For the CPTU-*EC* data, and for chloride concentrations less than about 1000 ppm (parts per million), the following relationship was derived: chloride concentration, in ppm = (0.8 * EC (in uS/cm))-171. For chloride concentrations up to 50,000 ppm, an alternate relationship was developed: chloride concentration, in ppm = (1.9 * EC (in uS/cm))-1029. For a regulatory maximum chloride concentration in groundwater of 250 ppm, the corresponding CPTU-*EC* value had to be less than about 500 to 550 uS/cm.

It is important to note that these relationships were developed at a site where background groundwater was very low in dissolved minerals, and thus of low electrical conductance. Application of these correlations to other sites is limited - site specific correlations should be performed at each project site.

## 5 CONCLUSION

An exploration technique for groundwater affected by chloride brine was developed based on surface and downhole geophysical, and direct push cone penetrometer methods. Indirect and direct measurements using these methods were obtained and compared to results of traditional drilled and sampled boreholes and monitoring wells. The new technique provided good technical and economic justification for extensive use at the described site. Use of the combined geophysical and cone penetrometer exploration technique was then adopted for use at other brine release sites in the area. These programs met with very good success and acceptance by regulatory agencies.

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## GPS General Overview

The Global Positioning System (GPS) may be viewed as continuous radio wave transmissions of extremely accurate (1 second in 30,000 to 300,000 years) timing signals from a constellation of earth orbiting satellites (space vehicles – SV) to a receiver (station) on earth. The time delay from satellite transmission of the timing signal to its reception, along with the velocity of wave propagation (speed of light through the atmosphere) is used to calculate the distance from a satellite to the receiver (velocity * time = distance). Using spherical trigonometry with the calculated distance to at least 4 different satellites, and knowing the precise orbital path of each satellite, the exact position (x, y, z coordinates or latitude, longitude and elevation) of the receiver can be calculated. Satellite orbital information is transmitted along with timing signals from each satellite.

There are three major sources of error in GPS measurements. First is an inadequate number of satellites - a minimum of 4 satellites is required for accurate x, y, and z positioning. Second is errors in broadcast ephemeris, propagation errors through the ionosphere, and receiver clock biases and noise. The third is the intentional corruption of the civilian clear access/coarse acquisition (CA) GPS signal code performed by the US Department of Defense (DOD) for purposes of national defense. The CA signal code corruption is called *selective availability* (*SA*).

The military (encrypted) portion of GPS has an autonomous accuracy of at least 18 meters horizontally and 30 meters vertically, adequate for the original purpose of GPS - targeting sites with nuclear weapons. With selective availability (SA) corruption of signals, the civilian (CA) portion of the GPS system has an autonomous accuracy of about 100 meters horizontally, and 160 meters vertically. Inexpensive, consumer receivers that only use CA code have this low level of accuracy.

Intermediate cost GPS receivers are available that incorporate a second antenna which allows additional, non-GPS radio wave differential corrections to GPS, allowing horizontal accuracy of about 10 meters. These additional radio wave corrections are available for free from US Coast Guard surface stations, located along various navigable waterways. Subscription (for fee) services based on commercial satellite or cellular tower transmission of these additional radio wave corrections are also available.

Higher cost differential receivers have been developed for accurate surveying purposes that not only use the encoded GPS timing signal, but also account for phasing of the radio frequency carrier wave. These code and carrier phase differential receivers can provide positional accuracy on the order of centimeters. This requires post-processing of recorded GPS data with corrections from a fixed GPS base station. These types of high accuracy receivers with post processing software are used by STRATIGRAPHICS for surveying.

To correct for selective availability (SA) and atmospheric errors, one uses at least two receivers. One receiver (or BASE station) is fixed in position during the survey period, and the other (REMOTE station) is located at the points requiring surveying. Any apparent (and false) motion of the fixed BASE station, due to SA or atmospheric perturbations, is used in corrections to the REMOTE station data set. GPS software is then used to post-process the data, combining satellite measurements from the two receivers to achieve accurate surveying measurements. The accuracy of these post-processed, differentially corrected GPS positional measurements is about 1 ppm of the baseline length (straight-line distance between BASE and REMOTE stations). With a baseline length of 1 mile, this error can be theoretically as low as 2 millimeters.

PROCEEDINGS OF THE FIRST INTERNATIONAL CONFERENCE ON SITE CHARACTERIZATION – ISC'98/ATLANTA/GEORGIA/USA/19-22 APRIL 1998

# Geotechnical Site Characterization

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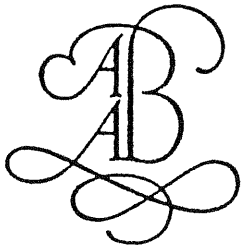
VOLUME 1



A.A. BALKEMA/ROTTERDAM/BROOKFIELD/1998

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# Groundwater drinking supply protection using cone penetrometer methods

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ABSTRACT: The Ohio Environmental Protection Agency (OEPA) has the responsibility to oversee public water systems in Ohio. When chlorinated solvents were detected in the municipal wellfield of Bridgeport, OEPA decided to try cone penetrometer exploration methods to study the problem. Penetrometer stratigraphic profiling, with groundwater, soil and soil gas sampling, and field GC/MS chemical analysis, were used to map the plume impinging on the wellfield, and locate the source of the plume. This method was then applied to studies of contaminant plumes affecting the wellfields of Coal Grove and the Belmont County Sanitary Sewer District #3, among others. This paper will present penetrometer equipment descriptions, exploration program philosophy, and short case histories of these investigations

## 1 INTRODUCTION

OEPA investigations were undertaken at the Bridgeport, Coal Grove and Belmont County Wellfields, among others, to locate the sources of contaminant plumes affecting the wellfields. Another investigation objective was to gather data to evaluate potential response actions to ensure safer water supplies for the future. The choice of exploration method would be primarily controlled by four factors: 1) cost effective plume delineation - it was important that stratigraphy and groundwater chemistry be rapidly evaluated, to allow subsequent exploration points to be located based on actual site conditions, rather than on an arbitrary grid pattern. This approach would avoid expensive, multi-phased exploration typical of many groundwater studies; 2) very low contaminant concentrations - this would require use of relatively sophisticated field analytical equipment; 3) exploration in urbanized areas - it was important that methods be as unobtrusive as possible; and 4) geological conditions - wellfield aquifers were 15-30 m (50-100 ft) deep, and both gravelly and heaving sands might be encountered.

The consultant (Lawhon and Associates) recommended, and OEPA approved, use of a cone penetrometer exploration system (Strutynsky and Sainey, 1991) along with a field analytical laboratory to achieve the goals of the program. The consultant and OEPA provided senior professionals to immediately evaluate all exploration results and plan subsequent exploration locations, while the penetrometer company (STRATIGRAPHICS) provided a geotechnical engineer or hydrogeologist to evaluate stratigraphy and recommend sampling procedures. OEPA also provided oversight of the entire program.

Initial groundwater samples would be collected around the most contaminated well or lateral, in the case of the Ranney Well, to determine the direction of plume transport. A series of upgradient exploration lines would then be run transverse to the expected axis of the plume to delineate the plume and identify its source. A number of penetrometer soundings, depending on encountered geological conditions, would be performed to develop stratigraphic cross-sections. Groundwater samples would be collected at multiple depths at each location to determine the vertical distribution of contamination within the aquifer. Field analytical testing would allow a 3-dimensional profile of the plume to be rapidly developed, allowing subsequent exploration locations to be chosen based on the complete analytical database. Penetrometer soil and soil gas sampling could be performed, in addition to groundwater sampling, to confirm potential source areas.

## 2 CONE PENETROMETER SYSTEM

The STRATIGRAPHICS cone penetrometer system

was designed in 1986 for use during both geo-environmental and geotechnical exploration programs in difficult soil conditions. The heavy (240 kN and 300 kN or 24 and 30 ton) truck mounted rigs are fully self-contained, including data acquisition systems, dry and wet work areas, water tanks, steam cleaners, decontamination and grouting systems, separate rodstrings for sounding and sampling, optional dynamic rod driving, and heavy duty downhole equipment for use in glaciated terrains (Fig 1). Cone penetrometer (direct push) systems require no borehole to advance probes and samplers, and result in little exploration derived waste. Downhole equipment is decontaminated during retrieval using an automatic rodwasher, and open hole is pressure grouted. Most exploration activities are performed inside an enclosed portion of the rig, providing all-weather capability and a low visual presence. Truck mounted penetrometer systems can be very productive, with as much as 400 m (1300 ft) of stratigraphic logging per day, with depth capacity exceeding 60 m (200 ft). As many as 18 groundwater, or up to 30 soil or soil gas samples can be acquired in a day.

High resolution, continuous soil profiling (sounding) for geo-environmental exploration is most often performed by STRATIGRAPHICS using the indirect Piezometric Cone Penetration Test with soil Electrical Conductivity (CPTU-EC, Fig 2). The cone tip and friction sleeve resistance measurements (*CPTU*-EC) are evaluated for soil types and geotechnical parameters (Douglas and Olsen, 1981). The piezometric measurement (CPT*U*-EC) allows evaluation of soil saturation, hydraulic conductivity, potentiometric surfaces, and soil types (Saines et al, 1989). The soil Electrical Conductivity measurement (CPTU-*EC*) provides information on soil moisture in vadose zone soils and indications of groundwater quality in saturated soils. The EC measurement has proved very useful in exploration for inorganic (metal, brines and landfill leachate) contamination (Strutynsky et al, 1998) and somewhat useful in LNAPL or DNAPL exploration (Strutynsky et al, 1991).

The STRATIGRAPHICS Penetrometer Sampler can be deployed in groundwater, soil or soil gas sampling modes by using interchangeable components. The groundwater sampler is a heavy wall, shielded sampler. The shield prevents cross-contamination of the sample and screen clogging. The shield is retracted to allow groundwater to flow through a 0.5 m (20 inch) long screen into the barrel. Sample can be decanted from the barrel or can be pumped to the surface using an inertial pump. The sampler is typically tripped out after each sample to allow thorough decontamination. The rate of groundwater inflow and equilibrium levels can be recorded using a small

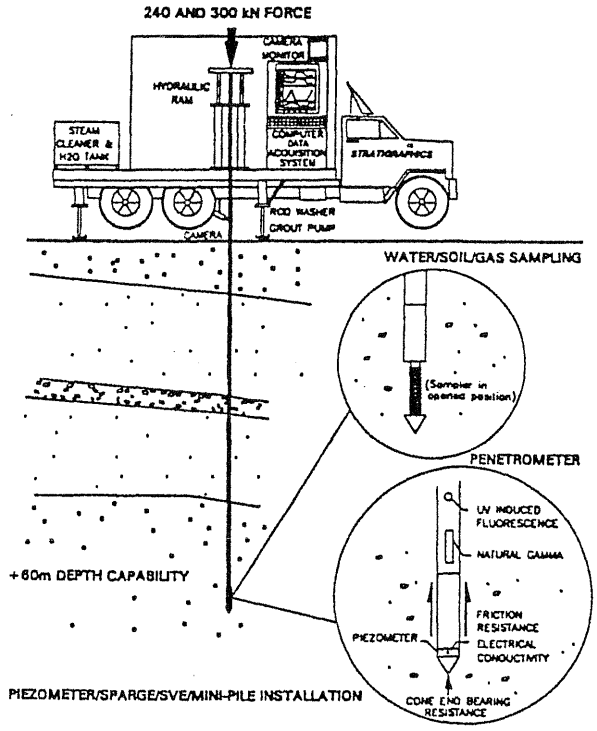


Figure 1 Stratigraphics penetrometer exploration system

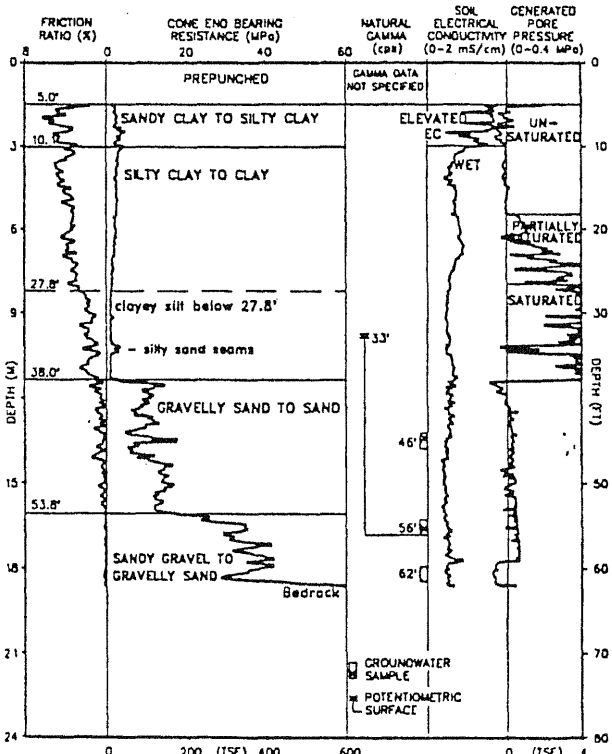


Figure 2 Example stratigraphics CPTU-EC sounding log

diameter pressure transducer. Inflow test results can be analyzed using rising head slug test solutions.
The soil sampler consists of a barrel, sealed with a locking piston. The piston is unlocked with a wireline tool to obtain the sample. The sampler is tripped out of the hole for sample extrusion and decontamination. The soil gas sampler is a smaller version of the groundwater sampler. Samples are contained within Tedlar bags, or are routed through portable vapor analyzers.

## 3 ANALYTICAL TESTING

A Hewlett-Packard Model 5890 Series II Gas Chromatograph (GC) and a Hewlett-Packard Model 5971 Series Mass Spectrometer (MS) were operated by the analytical company (Aqua Tech Environmental Laboratories- ATEL) in a trailer mounted, on-site field laboratory. A Tekmar 2000 purge and trap device, and a Tekmar 2016 auto sampler for automated sample handling, were also used. The samples were analyzed using EPA method 524.2 with a detection limit of 0.5 ug/l. The contaminants of concern (COC's) varied for each site, but were primarily chlorinated solvents, and their breakdown products.

## 4 BRIDGEPORT WELLFIELD INVESTIGATION

The Bridgeport wellfield is located in southeastern Ohio, along a channel of the Ohio River, and serves 3600 residents. The wellfield is within the unglaciated Appalachian Plateau Ohio River Aquifer. Beginning in 1989, very low levels of TCE and cis-1,2-DCE were detected during routine wellfield monitoring; soon PCE was also detected. After multiple well sampling events confirmed the continual presence of the COC's, OEPA decided to perform an investigation during the summer of 1994.

Ten CPTU-EC soundings for stratigraphy, 26 dissipation tests for hydraulic conductivity and potentiometric surfaces, 52 groundwater (from 57 attempts), and 9 soil gas samples were acquired during the course of a 13 day field program. Soil gas samples were obtained in vadose zone soils around the suspected source after the groundwater sampling program defined the limits of the plume.

Evaluation of the CPTU-EC soundings revealed variability (sand and cinder fills, buried refuse, or clay) at shallow depths. Shallow soils were typically moist to wet. Deeper stratigraphy was more uniform, and typically consisted of sands and silty sands, with some local gravelly layers. Saturated conditions were typically found below depths of 10-13 m (35-45 ft). The aquifer was characterized as a continuous water table aquifer, with few, apparently discontinuous, aquiclude interlayers. Bedrock was typically encountered within about 21-26 m (70-85 ft) of the surface.

CPTU-EC soundings in the identified source area indicated somewhat different stratigraphy, with finer grained soils predominating, and significant thicknesses of interlayered sands, silts and clays. Bedrock was also found at a shallower depth (18 m or 59 ft), consistent with a steep slope of a buried bedrock valley, as indicated by nearby rock outcrops.

Plume concentration maps were developed at three different depth intervals. In the upper interval, concentrations ranged from less than 0.5 ug/l, to as high as 9,700 ug/l total COC's at the source area. The upper portion of the plume angles away from the wellfield following regional ground water flow. In the middle interval, concentrations ranged from less than 0.5 ug/l, to as high as 1,900 ug/l total COC's near the center of the plume (Fig 3). In the lower interval, concentrations ranged from less than 0.5 ug/l to 105 ug/l total COC's, again with the highest concentrations near the center of the plume. The results indicated that while most of the COC's are drawn towards the wellfield through the middle depth interval, contamination of the wellfield is actually occuring in the lower depth interval .

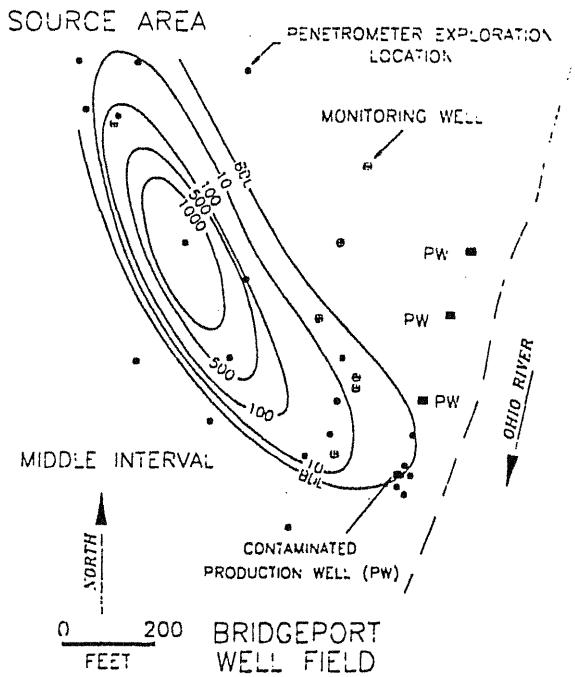

Figure 3

The investigation identified the source of the contamination as a dry cleaner located about 365 m (1200 ft) northwest of the wellfield. OEPA positioned 6 permanent monitoring wells along the plume. These are used as an early warning system, allowing wellfield operators to modify wellfield production to lessen capture of the plume.

## 5 COAL GROVE INVESTIGATION

The Coal Grove wellfield is located on the banks of the Ohio River in southern Ohio. The four production wells are configured within about 1/2 hectare (1.5 acres), and serve 4700 residents. The production wells are within alluvial deposits associated with the Ohio River and a tributary, Ice Creek. TCE and DCE have been detected in some of the production wells since 1988. One production well (CG-2) was taken out of service in 1989 due to high contaminant levels, and has been intermittently pumped to waste to control contamination of the other production wells. Five monitoring wells had been installed upgradient of the wellfield. TCE and DCE detections increase with distance upgradient.

Upgradient (southeast) of the wellfield is a coal dock. Further upgradient is a closed facility which had operated for numerous years as a truck terminal and as a tanker truck repair and cleaning operation. In 1993, USEPA conducted an emergency removal action at this facility . During the removal action, on-site wastes were found to contain various volatile organic compounds (VOC's), including TCE. OEPA determined that additional groundwater data were required to protect the wellfield from further damage. The penetrometer method successfully used at Bridgeport was chosen for use at Coal Grove. The investigation had to proceed in two parts (1994 and 1995) due to lack of permission to enter the tanker truck cleaning facility.

Fourteen CPTU-EC soundings for stratigraphy, 38 dissipation tests for hydraulic conductivity and potentiometric surfaces, and 61 groundwater samples (from 64 attempts) were acquired during the course of the first 12 day field program. CPTU-EC soundings revealed 5.5-14 m (18-46 ft) of silty clay, underlain by granular soils. The gravelly sand to silty sand aquifer saturated thickness varied from about 1.2 m (4 ft) downgradient to 13 m (43 ft) upgradient of the wellfield. The aquifer ranged from water table to confined, depending on surficial clay thickness. Bedrock was encountered at the base of the aquifer, at depths between 17-26 m (55-87 ft).

The results from field GC/MS analytical testing on obtained samples showed that the VOC plume followed a linear flow path, apparently originating to the southeast of the coal dock facility, on the northern boundary of the closed tanker truck cleaning facility (Fig 4). The plume narrowed with distance upgradient of the wellfield. The ability to rapidly obtain data from the field analytical lab, as well as stratigraphic information from the cone penetrometer, was instrumental in locating this narrow plume. As the investigation proceeded, it became apparent that if sampling had been strictly conducted on the sample grid which was originally surveyed at the site, the narrow, most contaminated portion of the plume would have been entirely missed, with significantly different conclusions as to the source of groundwater contamination.

To complete this investigation and confirm the source of the VOC's, the first program was used to support an administrative search warrant for exploration at the closed tanker truck cleaning facility. With the unexpected accompaniment of local TV news reporters, the warrant was served, the property was entered, and additional exploration was conducted. Four CPTU-EC soundings for stratigraphy, 6 dissipation tests for hydraulic

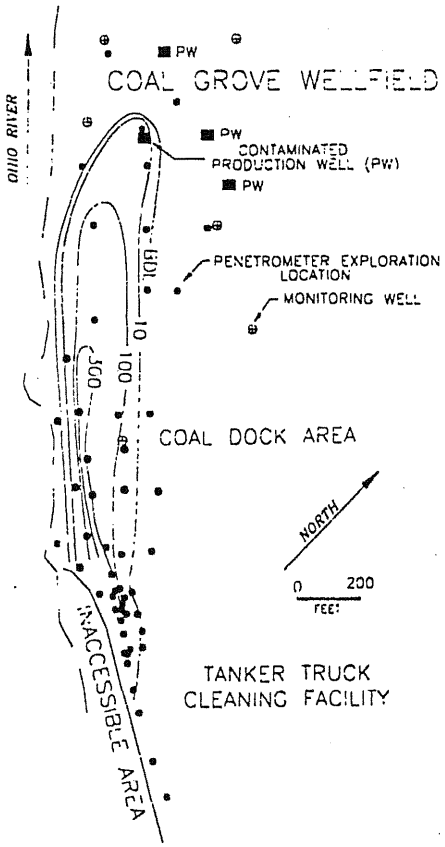


Figure 4 Source area

conductivity and potentiometric surfaces, 37 groundwater samples (from 37 attempts), and 30 soil samples were acquired during the second 10 day field program.

The second program showed that the high concentrations of VOC's continued in a very narrow plume less than 15 m or 50 ft wide to a corner of the closed tanker truck cleaning facility's wastewater treatment plant. This confirmed that the source of the VOC contamination was the tanker truck cleaning facility. Following this sampling effort, OEPA conducted a pump test at the wellfield. The data obtained from the pump test, along with the groundwater analytical data, were used to evaluate future impacts to the wellfield. OEPA concluded that contaminant levels at the wellfield could be expected to remain constant for some time into the future. However, it was also concluded that, without the continued pumping to waste of production well CG2, higher contaminant levels would be expected in other production wells. OEPA is currently evaluating both technical and legal means to address the threat to the Coal Grove wellfield.

## 6 BELMONT COUNTY SANITARY SEWER DISTRICT 3 RANNEY WELL INVESTIGATION

The Belmont County Sanitary Sewer District 3 serves about 25,000 people in southeastern Ohio with water from a single Ranney Collector Well (BC#3). This well is located near the Ohio River, and consists of six laterals, which are screened near bedrock. The well can supply up to 25 million liters (6.5 million gallons) of water per day. Contaminants cis-1,2-DCE, 1,1,1-TCA, PCE and 1,1-DCA have been detected in the well.

The Ohio Department of Transportation (ODOT) discovered VOC contamination in soil and groundwater during an environmental investigation of a nearby property (Site) during a highway relocation project. The Site is about 365 m (1,200 ft) southwest of BC#3. Various chemicals, including chlorinated solvents and petroleum products, were distributed from a bulk plant located at the Site. ODOT had detected the following VOC's in Site soils and groundwater: VC; PCE; TCE; cis-1,2-DCE; trans-1,2-DCE; 1,1,1-TCA; and BTEX compounds. Initial results indicated that VOC's were migrating in ground water north-northeast from the Site toward BC#3, and towards the southeast with regional groundwater flow.

ODOT notified OEPA of its findings in early 1996. During the fall of 1996, OEPA performed a field investigation to achieve the following goals: 1) identify all sources of BC#3's contamination; 2) determine the vertical and horizontal extent of contaminant plumes, 3) determine rates of migration; and 4) determine whether the suspect Site was impacting BC#3. The investigation was successful in achieving all these goals.

A major portion of the investigation was conducted using penetrometer exploration methods developed during the Bridgeport and Coal Grove investigations. Six CPTU-EC soundings for stratigraphy, 8 dissipation tests for hydraulic conductivity and potentiometric surfaces, and 55 groundwater samples (from 58 attempts) were acquired during the course of the 10 day field program. The CPTU-EC soundings revealed fine grained soils to depths of about 11-14m (38-47 ft), followed by a confined, gravelly sand aquifer. Groundwater sampling was conducted to determine the lateral and vertical extent of contamination within the aquifer.

The most common groundwater contaminant was found to be cis-1,2-DCE, with concentrations as high as 4,200 ug/l. The following cis-1,2-DCE detections were observed between the Site and BC#3: 300 ug/l about 135 m (440 ft) south of BC#3;

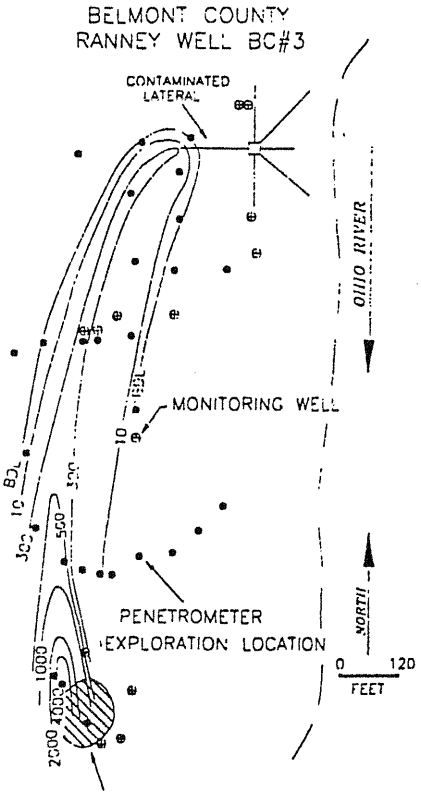


Figure 5

360 ug/l about 40 m (140 ft) south of BC#3; and 90 ug/l about 15 m (50 ft) south of BC#3. Data showed that the plume was being drawn northward from the Site, directly against the regional ground water flow direction, and into the end of the western lateral of BC#3 (Fig 5). This unusual, reversed flow path reflects the very large capture zone of the high capacity Ranney Well. The investigation showed that VOC's are migrating from the Site to BC#3 via ground water flow paths primarily in the upper portion of the aquifer. It also showed that the Site is apparently solely responsible for the BC#3's cis-1,2-DCE contamination.

ODOT and OEPA agreed that excavation and off-site disposal of contaminated soils and debris prior to highway construction would best remediate the Site. Source removal, as opposed to treatment, was selected both to complete the highway project on time and to eliminate further contamination of the aquifer. The source removal took place during the summer of 1997. About 20,000 tons of contaminated, non- hazardous, solid waste and about 1,550 tons of hazardous waste were excavated and removed from the Site.

## 7 CONCLUSIONS

Thirty four CPTU-EC soundings, totaling 685 m (2250 ft) of data; 205 groundwater, 9 soil gas, and 30 soil samples (3755 m or 12210 ft of sampler deployment) were obtained during the 45 days of field exploration for these 3 projects. Penetrometer costs (less mobilizations) totaled about $133,000. A total of 244 samples, plus numerous QA/QC samples, were analyzed by the field laboratory using GC/MS. The cost for the field analytical laboratory totaled about $45,000 (less mobilizations). While this cost is comparable to costs for off-site analyses with a 24 hr turnaround, having analytical results within 15-30 minutes of sample acquisition allowed optimal placement of subsequent exploration locations. Accurate targeting of exploration locations was the key factor in significantly decreasing overall cost and duration of these investigation programs.

OEPA rapidly and cost-effectively investigated contaminated municipal wellfield groundwater supplies by the use of high capacity penetrometer stratigraphic profiling, rapid penetrometer groundwater, soil and soil gas sampling, a sophisticated field analytical laboratory, and immediate evaluation of acquired data by senior professionals. Complex contaminant plumes, which often followed unusual groundwater flow paths, were characterized within days rather than months or years. Plumes were delineated, sources identified, and realistic models developed for planning long term monitoring and site remediation activities. OEPA has used these projects during in-house training sessions as examples of innovative and effective groundwater exploration.

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PROCEEDINGS OF THE FIRST INTERNATIONAL CONFERENCE ON SITE CHARACTERIZATION – ISC'98/ATLANTA/GEORGIA/USA/19-22 APRIL 1998

# Geotechnical Site Characterization

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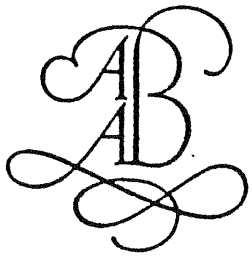
VOLUME 1



A.A. BALKEMA/ROTTERDAM/BROOKFIELD/1998

Andrew I. Strutynsky, Raymond E. Sandiford, and Dennis Cavaliere

# USE OF PIEZOMETRIC CONE PENETRATION TESTING WITH ELECTRICAL CONDUCTIVITY MEASUREMENTS (CPTU-EC) FOR THE DETECTION OF HYDROCARBON CONTAMINATION IN SATURATED GRANULAR SOILS

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REFERENCE: Strutynsky, A.I., Sandiford, R.E., and Cavaliere D., "Use of Piezometric Cone Penetration Testing with Electrical Conductivity Measurements (CPTU-EC) for the Detection of Hydrocarbon Contamination in Saturated Granular Soils," Current Practices in Ground Water and Vadose Zone Investigations, ASTM STP 1118, David M. Nielsen, Martin N. Sara, Editors, American Society for Testing Materials, Philadelphia, 1991.

ABSTRACT: Piezometric Cone Penetration Testing with soil Electrical Conductivity measurements (CPTU-EC) was used for the detection of hydrocarbon saturated granular soils at two airport fuel storage areas. Details of the CPTU-EC equipment and site subsurface conditions are provided. Test program phases, including laboratory testing, field insitu testing and CPTU-EC data interpretation are described. Comparisons are made between CPTU-EC and adjacent monitor well data. Limitations to the CPTU-EC method are discussed.

KEY WORDS: Piezometric Cone Penetration Test, Soil Electrical Conductivity, free phase petroleum, hydrocarbon product contamination, airport fuel tank farms, computerized data acquisition, continuous soil profiling.

## INTRODUCTION

Programs to remediate ground water accumulations of free phase petroleum hydrocarbon products, consisting primarily of aviation jet fuels, are ongoing at the fuel tank farms at John F. Kennedy (JFKIA), La Guardia, and Newark International Airports, in and around the city of New York. The Port Authority of New York and New Jersey (Port Authority) frequently requires supplemental ground water information in addition to that acquired in monitor wells at the sites.

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STRATIGRAPHICS, a consulting company specializing in penetrometer data acquisition, was retained by Port Authority to evaluate the use of penetrometer soil electrical conductivity measurements (CPTU-EC) to delineate the accumulations of hydrocarbon products in the subsurface at the sites. STRATIGRAPHICS personnel had previously conducted similar studies on using penetrometer conductivity measurements for the detection of hydrocarbon contaminated soils and for the detection of ground water ice crystals in Arctic permafrost soils (Reference 1).

The penetrometer technique provides various advantages during geo-environmental subsurface investigations. These advantages include a relatively non-destructive test procedure; immediate, computerized data reporting and interpretation; continuous profiling; a high degree of exploration personnel safety; and lower exploration costs and higher productivity as compared to borehole techniques.

The experimental program for evaluating the applicability of penetrometer soil electrical conductivity measurements for the detection of free phase petroleum hydrocarbon products in ground water consisted of two phases. The first was a laboratory study using typical site soils, ground water, and jet fuel. A series of 60 tests was performed in order to establish a range of expected field measurements. The initial laboratory study was followed by field studies at the Satellite and Bulk Fuel Farms at JFKIA.

CPTU-EC soundings were performed adjacent to monitor wells for comparisons between penetrometer and monitor well data. CPTU-EC soundings were also performed at intermediate locations for correlation to the areal distribution of hydrocarbon product accumulations. A total of 48 CPTU-EC soundings were performed during the field study (Figures 1 and 2).

## SOIL ELECTRICAL CONDUCTIVITY

Soil electrical conductivity is controlled by the conductance of the system of soil particles and fluids occupying the soil pore spaces. Factors affecting soil electrical conductivity, especially for sand aquifers, include:

Mineralogy Siliceous sand grains are essentially non-conductive, so granular soil electrical conductance is dependent on the quantity and conductance of the soil pore fluid. Clay minerals have some electrical conductance due to adsorbed water and ionic charges, thus clay conductance depends on both mineralogy and pore fluid characteristics.

Pore Fluid The electrical conductance of pore fluids plays the major role in granular soil electrical conductivity. Sands saturated with conductive fluids, such as saline water or landfill leachates, have a relatively high conductivity. Sands saturated with petroleum hydrocarbon products typically have low electrical conductivity because most petroleum hydrocarbon products are poor conductors.

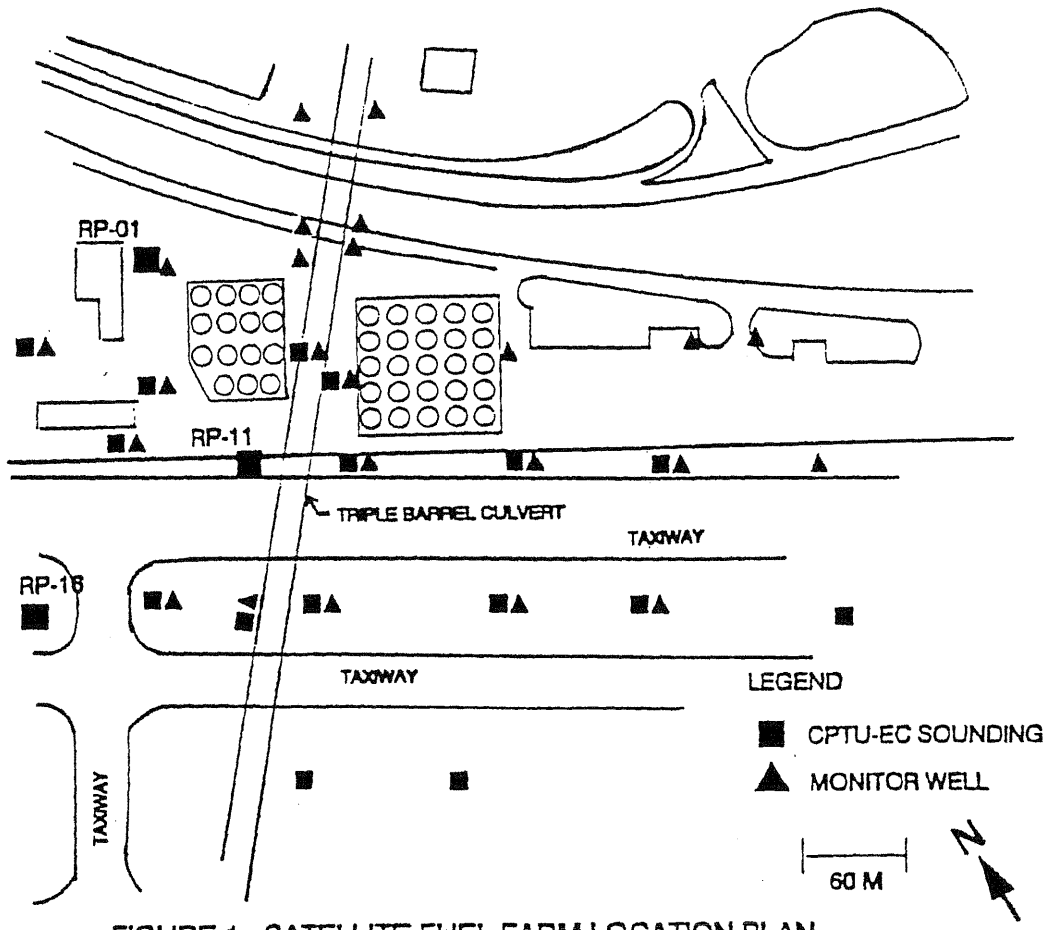


FIGURE 1 - SATELLITE FUEL FARM LOCATION PLAN

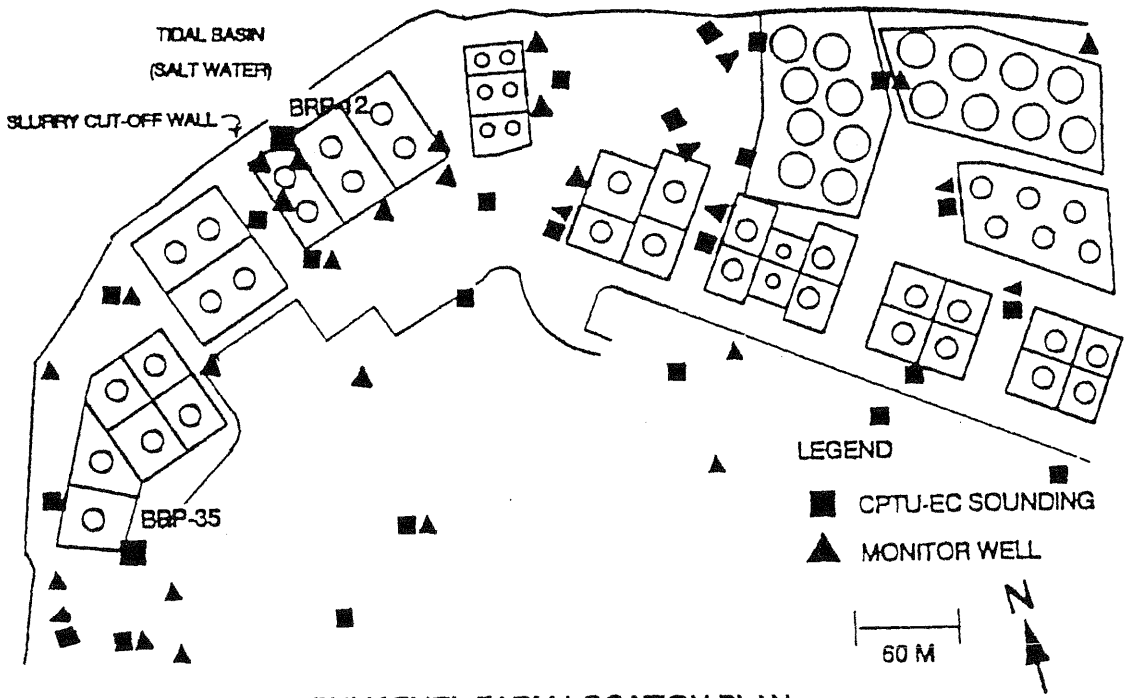


FIGURE 2 - BULK FUEL FARM LOCATION PLAN

Saturation The degree of soil saturation has a pronounced effect on soil electrical conductivity. Conductivity increases with increases in water saturation. Partially saturated sands have low electrical conductivity.

Porosity Soil porosity has an affect on soil electrical conductivity (Reference 2). Less pore fluid is required to fully saturate the pore space of a low porosity (dense) soil, resulting in lower soil electrical conductivity.

## LABORATORY PROGRAM

The laboratory program to determine the effects of free phase petroleum hydrocarbon contamination on granular soil electrical conductivity included a total of 60 tests. Samples of soils from JFKIA site excavations, brackish (salty) ground water from site monitor wells, and samples of jet fuel were used to provide a range of variables that might be encountered during field testing. Soil samples were compacted to different porosities (densities) to determine the sensitivity of test results to porosity changes. Over the range of porosities expected to be representative for field conditions, the effects of porosity variation on soil electrical conductivity were considered to be relatively minor when compared to the changes in soil conductivity induced by variation in hydrocarbon content.

Laboratory testing showed that the electrical conductivity of the JFKIA sand samples depended primarily on the amount of water filling the soil pore spaces (degree of water saturation). Soil conductivity decreased with increasing substitution of pore water by jet fuel (Figure 3). A jet fuel saturated sand sample had an electrical conductivity similar to that of a dry sand sample.

The laboratory study indicated that in order to discriminate between dry sands above the water table, and free phase petroleum hydrocarbon product saturated sands below the water table, data on soil saturation was also required. A pore water pressure transducer, used during Piezometric Cone Penetration Testing (CPTU), was added to the CPTU-EC penetrometer to determine soil saturation.

Soil stratigraphy defined by Cone Penetration Test (CPT) measurements can be used to distinguish between the effects of soil type and pore fluid chemistry on measured soil conductivities. Thus, the soil shear resistance measurements of the CPT penetrometer, the piezometric measurement of the CPTU penetrometer, and soil electrical conductivity measurements were all combined in a CPTU-EC penetrometer in order to provide sufficient data to define petroleum hydrocarbon product contamination of saturated granular soils.

## PENETROMETER TECHNIQUE

CPTU-EC penetrometer testing consists of smoothly pushing a small diameter (0.044 m - 1.7 inch), instrumented probe (penetrometer) directly into the ground, while a computer data acquisition system displays and records the soil shear resistance, pore water pressure response and soil electrical conductivity during penetration (Figure 4).

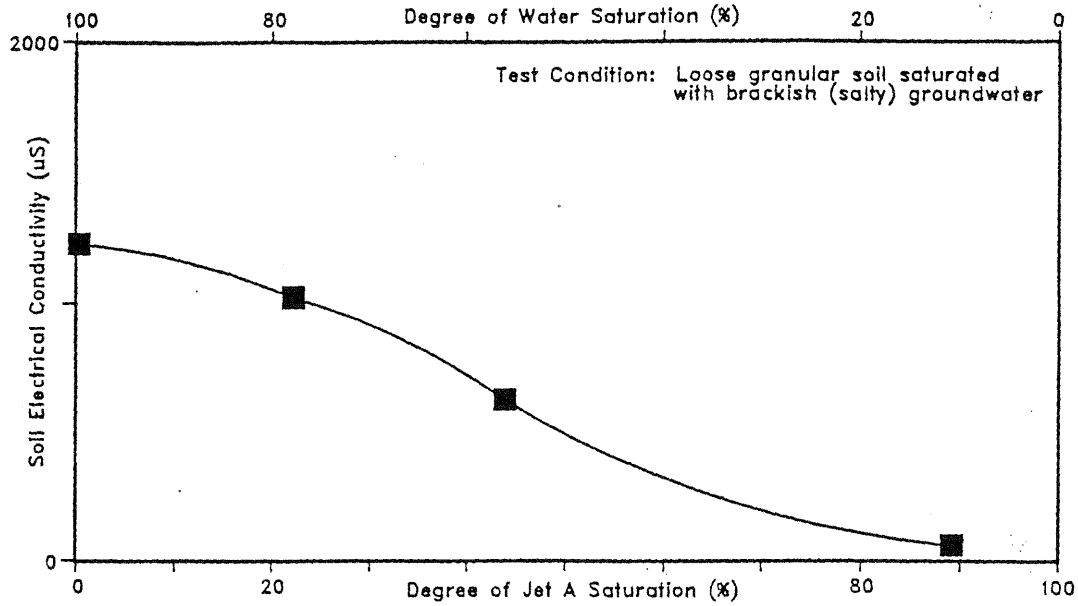


FIGURE 3 – EFFECT OF JET A PRODUCT CONTAMINATION ON GROUNDWATER SATURATED GRANULAR SOIL ELECTRICAL CONDUCTIVITY

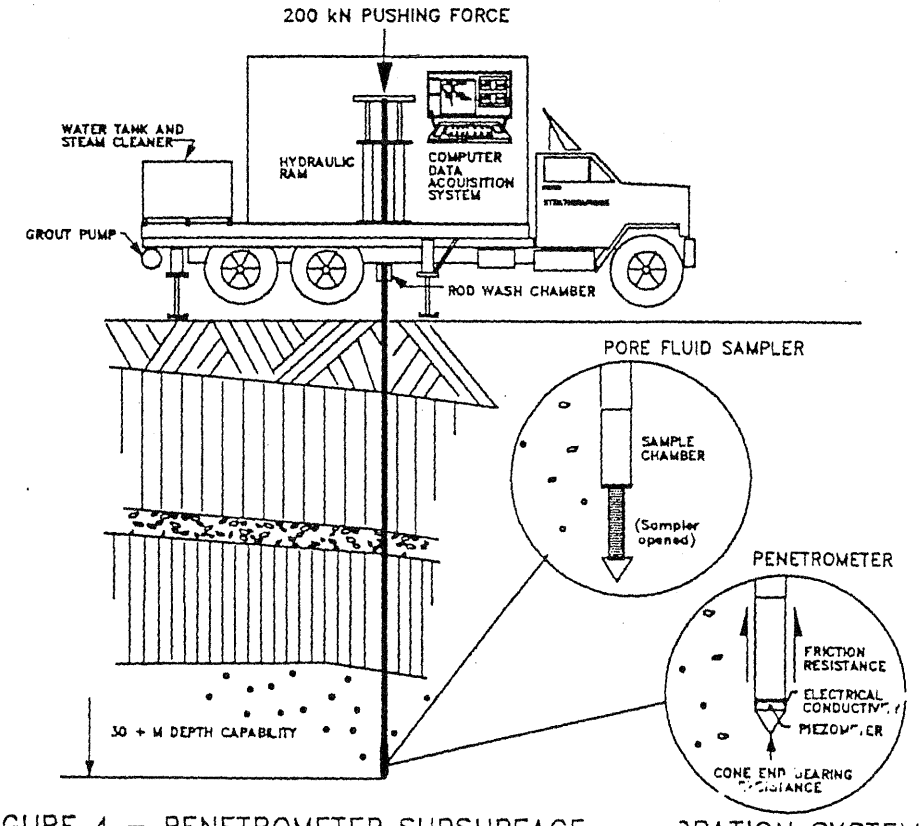


FIGURE 4 – PENETROMETER SUBSURFACE ... ORATION SYSTEM

The penetrometer is mounted at the downhole end of a string of sounding rods. A hydraulic ram is used to smoothly push the penetrometer and rod string directly into the ground, without drilling a borehole, at a constant rate of 0.02 m/sec (4 ft per minute). Electronic signals from downhole sensors inside the penetrometer are transmitted by a cable, strung through the hollow sounding rods, to a data acquisition and display computer system at the surface.

CPTU-EC data are used to develop continuous profiles of geotechnical, hydrogeological, and gross geochemical soil conditions rapidly, accurately and economically. Penetrometer samplers can be used to obtain ground water or soil samples for laboratory testing (Reference 3).

Site disturbance is minimized since no borehole cuttings or drilling fluids are generated during penetrometer operations. Personnel exposure to contaminated soil is significantly less than exposures during drilling and sampling. Penetrometer downhole equipment is easily decontaminated by steam cleaning during retrieval. The small open hole left in soils above the water table after penetrometer retrieval is readily grouted.

## CPTU-EC PENETROMETER MEASUREMENTS

The CPTU-EC penetrometer incorporates cone resistance, friction sleeve resistance, piezometric, thermal and soil electrical conductivity sensors. The resistance of a soil to penetration is measured on the tip and along the sides of the CPTU-EC penetrometer. The soil resistance acting on the cone tip is controlled primarily by soil grain size and porosity. The cone resistance measurement has a resolution of about 0.05 to 0.10 m (2 to 4 inches). The sliding friction between the soil and the penetrometer is measured along a sleeve mounted just behind the cone tip. The CPT-EC friction sleeve resistance measurement has a resolution of about 0.15 m (6 inches).

A pressure transducer in the tip of the penetrometer is used to measure the soil pore water pressure response to penetration. Pore water pressure response is primarily controlled by the degree of saturation, potentiometric surface, compressibility and horizontal permeability of the penetrated soil (Reference 4). The CPTU-EC piezometric measurement has a resolution of about 0.03 m (1 inch).

The soil electrical conductivity is measured between two electrodes also mounted in the tip of the CPTU-EC penetrometer. The electrodes are insulated from the steel body of the penetrometer by plastic insulators. The CPT-EC soil electrical conductivity measurement has a resolution of about 0.04 m (1.5 inches). A thermistor inside the CPTU-EC penetrometer provides data on downhole equipment temperatures. These data can be used to adjust the measured soil conductivity to a corrected conductivity at a reference temperature of 25 degrees C.

CPTU-EC data are acquired as analog signals from the transducers inside the penetrometer. The analog signals are transmitted by cable strung through the sounding rod string to a computerized data acquisition system inside the penetrometer truck. The data acquisition system translates the analog signal to a digital value using a 16-bit, analog to digital (A/D) converter. The 16-bit conversion provides a digital data resolution of 1 part in 32,768.

The CPTU-EC data are logged at a 2 Hz frequency. This logging frequency provides insitu soil data at about 0.01 m (3/8 inch) depth intervals. Data appear on a high resolution, color computer monitor in real time. Real time data display allows for the immediate definition of site conditions. Data are logged on hard disk for permanent storage. A preliminary, hard copy sounding log is generated at the conclusion of each test. Recorded data are computer processed to develop interpretations of site conditions.

## GENERAL CPTU-EC DATA INTERPRETATION

Correlations between penetrometer data and soil type classifications have been developed from geotechnical soil bearing capacity theory, and observational criteria from adjacent CPT soundings and drilled and sampled boreholes (Reference 5). The CPT cone resistance increases exponentially with increases in soil grain size. The CPT friction ratio (the friction sleeve resistance divided by the cone resistance) increases with increases in the fines content of a soil. A correlation scheme based on the cone resistance and friction ratio values (Figure 5) has proved most useful in interpreting soil types from CPT measurements.

Soil saturation is evaluated using the CPTU-EC piezometric data. Atmospheric (zero) water pore pressure is measured in unsaturated soils. Hydrostatic pore water pressures are generally recorded in high permeability, granular soils below the water table. High pore water pressures are recorded in saturated, fine grained soils during penetrometer advance.

## CPTU-EC FIELD TESTING PROGRAM

A total of 48 CPTU-EC soundings were performed at the JFKIA Satellite and Bulk Fuel Farms. The stratigraphy at the two sites is somewhat similar. The surficial soils at both sites consist of a hydraulically placed, fine to medium sand fill, ranging in thickness from about 1.5 to 4.6 m (5 to 15 ft).

At the Satellite Fuel Farm site, this sand fill overlies a discontinuous tidal flat deposit, which consists of about 0 to 1.5 m (0 to 5 ft) of silty clay and peat. At the Bulk Fuel Farm, heterogeneous deposits of refuse and silt interlayer the hydraulic sand fill and tidal flat deposits. Underlying the tidal flat deposits at both sites is a fine to medium sand stratum in excess of 30.5 m (100 ft) thick.

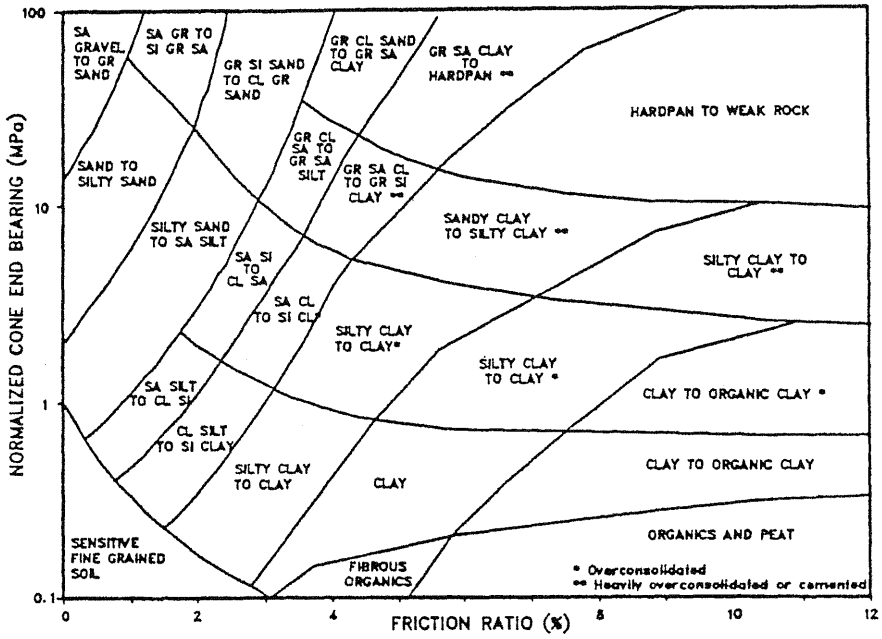


FIGURE 5 – CORRELATION CHART FOR CPT SOIL TYPES

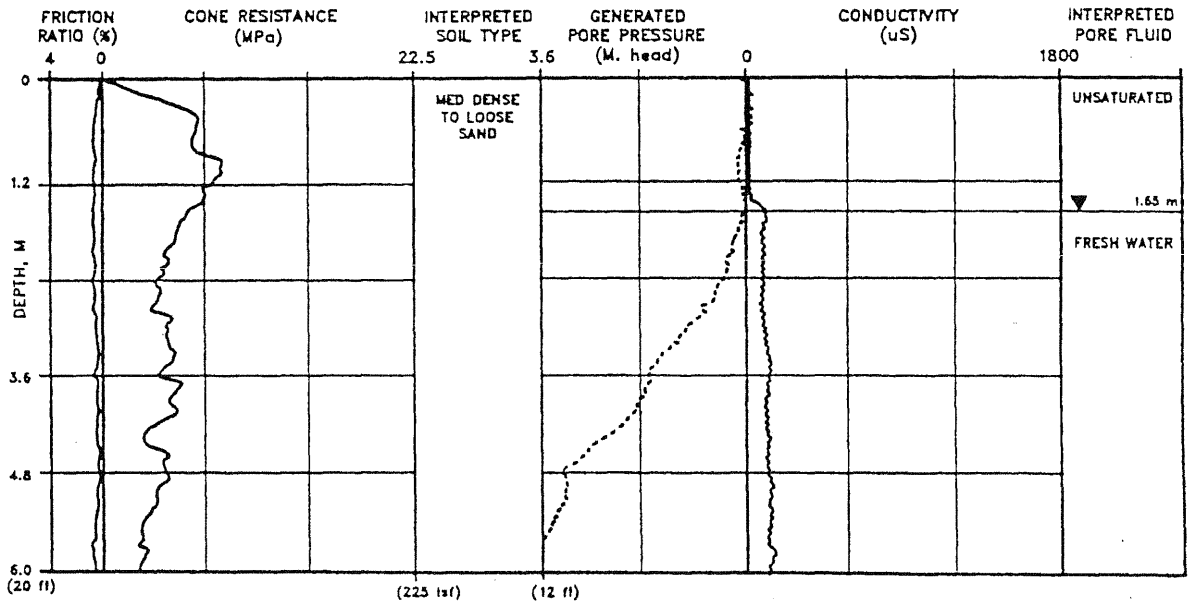


FIGURE 6 – CPTU–EC SOUNDING RP–16

The tidal flat deposits form discontinuous aquitards across the sites, resulting in both locally perched and water table (unconfined) aquifer ground water conditions. At the Bulk Fuel Farm site, the ground water has been partially contained by a slurry cut-off wall. The deeper ground water at both sites is brackish (somewhat salty) with moderate electrical conductivity. Shallow ground water is typically less salty and less conductive, probably reflecting a recent rainwater origin.

The JFKIA Satellite and Bulk Fuel Farms have significant subsurface accumulations of aviation jet fuel, as determined in monitor wells at the two sites. For the Satellite Fuel Farm, free phase petroleum hydrocarbon product thicknesses interpreted from CPTU-EC data were compared to product thicknesses measured in nearby monitor wells. This comparison showed that the general thickness patterns were very consistent, but that the insitu CPTU-EC data indicated product thicknesses to be generally 25 to 50% less than the monitor well product thicknesses.

These results confirm the hypothesis that monitor wells generally contain a thicker accumulation of free phase petroleum hydrocarbon product than is actually present in the soil. This occurs because most products float on the capillary zone above the water table. Thus, the product fills a monitor well for the thickness of the capillary zone and for a depth below the ground water table required to achieve buoyancy equilibrium between the product and ground water.

An uncontaminated, water table (unconfined) aquifer is indicated by the CPTU-EC sounding log at the Satellite Fuel Farm Location RP-16 (Figure 6). The shallow stratigraphy consists of a homogeneous sand stratum. The piezometric measurements indicate the sand to be of medium to high permeability, and indicate a water table at a depth of 1.65 m (5.4 ft).

The soil electrical conductivity increases just above the water table, reflecting increasing soil water content. Soil conductivities are relatively low and constant below the water table, reflecting low ground water salinity conditions. It was subsequently determined that a nearby water main was leaking, and the fresh water leakage was probably responsible for the low soil electrical conductivity measurements.

An accumulation of free phase petroleum hydrocarbon product is indicated by the CPTU-EC sounding log at the Satellite Fuel Farm Location RP-01 (Figure 7). The piezometric measurements indicate a free fluid surface at 1.83 m (6.0 ft) of depth. The very low soil conductivity between 1.83 and 2.10 m (6.0 and 6.9 ft) depths indicates a thin layer of product. Increasing soil conductivity below the product layer indicates increasing ground water salinity and density with depth.

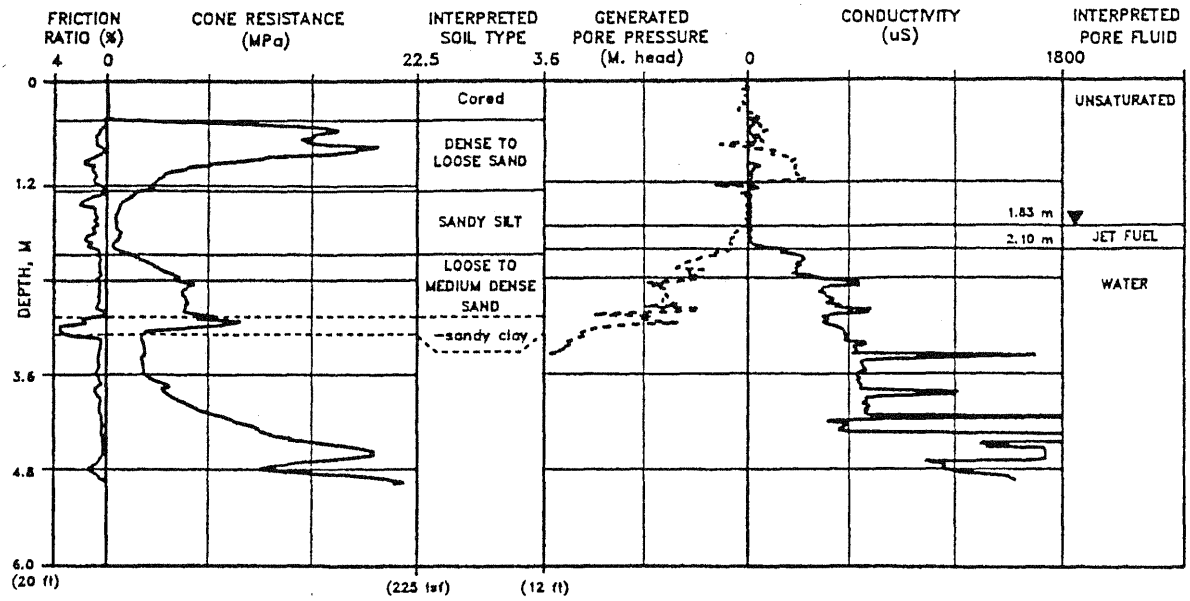


FIGURE 7 – CPTU–EC SOUNDING RP–01

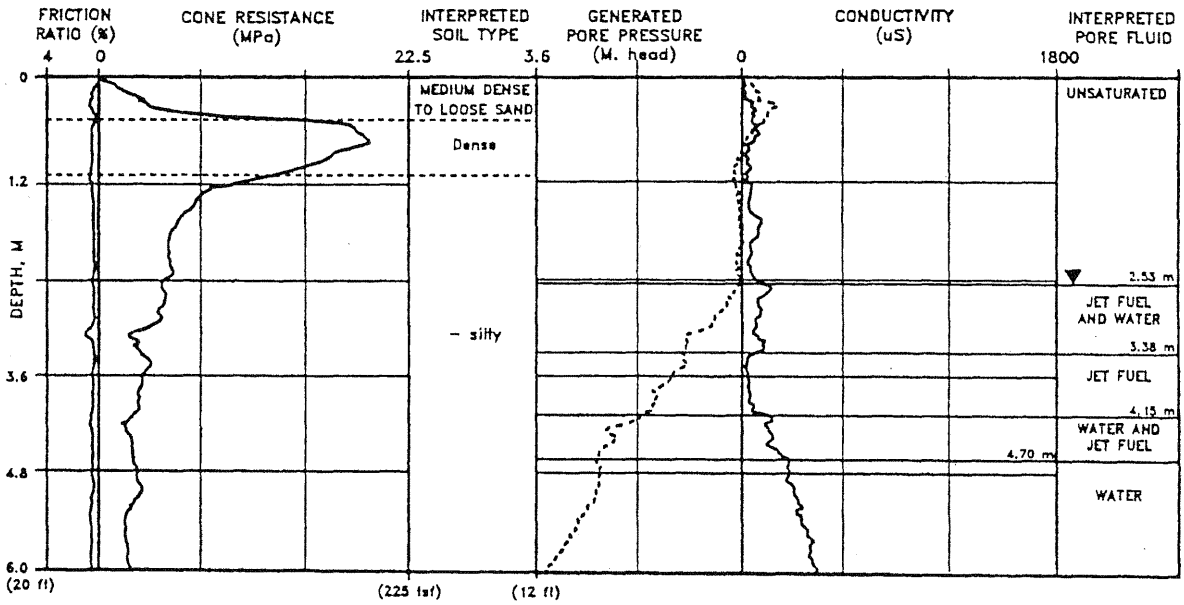


FIGURE 8 – CPTU–EC SOUNDING RP–11

Unusual results were obtained at the Satellite Fuel Farm Location RP-11 (Figure 8) next to a product recovery well. The CPTU-EC data indicate 0.85 m (2.8 ft) of a ground water-petroleum hydrocarbon product mixture, overlying a 0.76 m (2.5 ft) thick layer of product. The product layer overlies another mixed layer, which in turn overlies ground water.

This unexpected sequence is thought to be due to rapidly changing ground water conditions. Record rainfalls during the autumn of 1989 are conjectured to have both raised the locally depressed water table and filled in the cone of depression created by the nearby recovery well. The former surficial product layer became inundated. It is interpreted that due to soil permeability effects, insufficient time had passed prior to the December, 1989 CPTU-EC study for fluid density equilibrium between product and ground water to have been re-established .

This interpretation has been corroborated by CPTU-EC soundings combined with penetrometer ground water sampling at other project sites with similar rapidly changing ground water conditions. A monitor well, typically screened 1.5 m (5 ft) above and 3.0 m (10 ft) below the water table, would provide no hint of this phenomenon, because density equilibrium would occur almost instantaneously in the monitor well riser pipe.

Many of the CPTU-EC sounding logs at the Bulk Fuel Farm were not as definitive as those at the Satellite Fuel Farm. Product thickness trends from the CPTU-EC soundings did generally correspond with monitor well defined trends. However, the presence of perched ground water and product, numerous trapped product lenses, and complex ground water flow conditions caused by the slurry cut-off wall and the discontinuous aquitard, caused CPTU-EC data interpretation to be much more subjective than at the Satellite Fuel Farm.

Ground truthing the CPTU-EC data, acquired at 0.01 m (3/8 inch) intervals to monitor wells screened over 5 m (15 ft) lengths may not be appropriate for the complex site conditions at the Bulk Fuel Farm. The CPTU-EC sounding log at Location BRP-12 (Figure 9) illustrates some of the difficulties in interpreting data at sites with a complex hydrostratigraphy.

The CPTU-EC results were definitive in areas of the Bulk Fuel Farm where uniform conditions existed. The presence of free phase petroleum hydrocarbon product overlying a water table aquifer is indicated by the CPTU-EC sounding log at Location BRP-35 (Figure 10). Soil electrical conductivity is very low between the free fluid surface at a depth of 2.80 m (9.2 ft) and a depth of 3.29 m (10.8 ft), indicating a 0.49 m (1.6 ft) thick layer of product. A 0.15 m (0.5 ft) thick transition zone underlies the product layer and probably consists of soil saturated with both product and ground water.

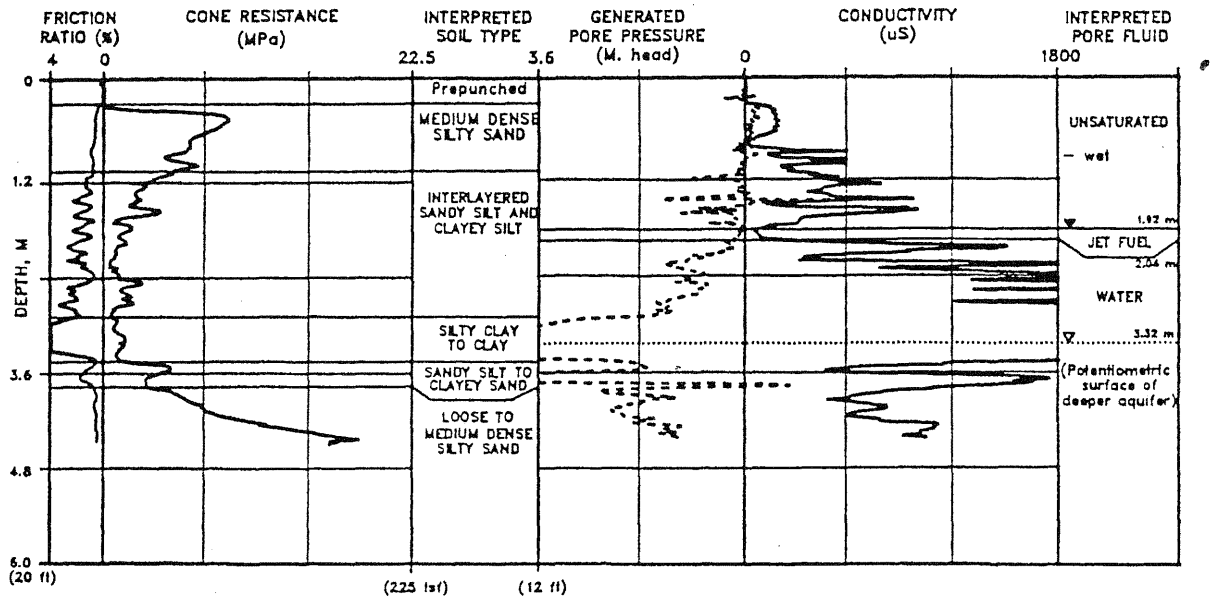


FIGURE 9 – CPTU–EC SOUNDING BRP–12

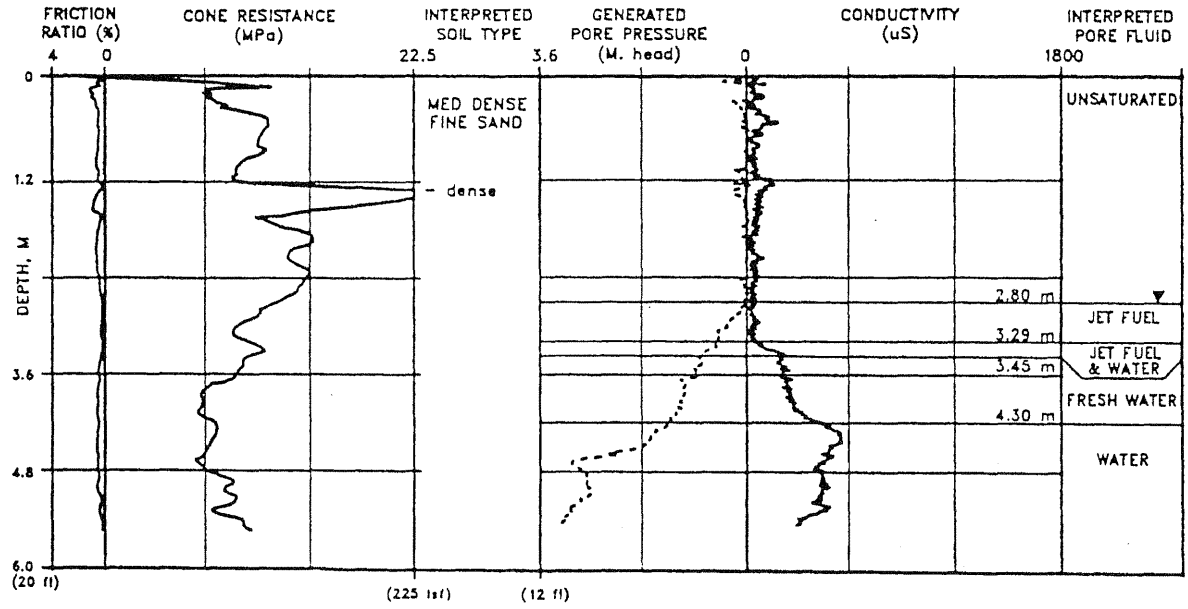


FIGURE 10 – CPTU–EC SOUNDING BRP–35

## CPTU-EC COSTS AND PRODUCTIVITY

A comparison of production rates and costs for CPTU-EC and conventional monitor well surveys is as follows:

| | CPTU-EC | Monitor Wells |
|---|---|---|
| Production Rate | 8 to 12/day | 1 to 2/day |
| Unit Cost | $66/m ($20/ft) | $131/m ($40/ft) |
| Cost per location, 6.1 m (20 ft) depth | $485/ea.* | $1066/ea.* |

* includes data interpretation or inspection.

The CPTU-EC method provides a more rapid means of surveying an area, and is less than one half the cost of conventional monitor well survey methods on a per location basis.

## CONCLUSIONS

The CPTU-EC penetrometer method has been shown to provide a rapid means of surveying sand aquifers for free phase petroleum hydrocarbon product contamination. In areas of more complex stratigraphy, additional testing is necessary to verify the applicability of CPTU-EC methods. Monitor wells with long screened lengths may not provide the best method of ground truthing CPTU-EC measurements at sites with complex hydrostratigraphic conditions.

Penetrometer ground water sampling should be included in CPTU-EC field investigation programs to provide direct samples of CPTU-EC identified anomalous ground water zones. Sensitive CPTU-EC piezometric transducers should be used to provide high accuracy in water table location.

The rapidity and the relative non-destructive nature of the CPTU-EC method especially provides advantages in areas of high priority usage or sensitivity, such as active apron areas of airport terminals, or in residential areas surrounding contamination sources. The CPTU-EC method in many cases, allows for more rapid and better definition of the true thickness of free phase petroleum hydrocarbon products in ground water. Cost savings in initial survey work should translate into better placement of permanent monitor and recovery wells, resulting in decreased overall remediation/investigation program costs.

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# USING INNOVATIVE SAMPLE COLLECTION AND FIELD ANALYTICAL TECHNIQUES TO RAPIDLY CHARACTERIZE MULTIPLE PETROLEUM HYDROCARBON SITES

## ABSTRACT

Innovative exploration methods and advanced on-site field analytical techniques identified the presence or absence of petroleum hydrocarbon constituents (PHCs) in the soil and groundwater at multiple sites, quickly and effectively. Where present, the vertical and horizontal extent of PHCs was identified. The field program was completed using two terraprobe systems, a cone penetrometer unit, and two mobile laboratories in a four-week time frame.

Piezometric Cone Penetrometer Tests with soil Electrical Conductivity (CPTU-EC) measurements were used to rapidly assess site hydrostratigraphy. Three CPTU-EC soundings were typically performed at each site. Aquifer and aquitard units were identified in real time. Soil and electrical conductivity measurements were used to evaluate whether free-phase products were present at each site. Small diameter piezometers were installed in each CPTU-EC hole to identify the direction of ground water flow and to allow for sampling of ground water. Penetrometer soil and ground water sampling were performed when lighter weight geoprobe units could not penetrate to desired depths. The penetrometer truck was able to complete exploration work at one and one-half sites per day, on average.

Using a phased approach, soil and ground water samples were analyzed for PHCs in the field, providing quality real-time data. During Phase I, all soil samples were analyzed for total petroleum hydrocarbons (TPH) by infrared (IR) spectroscopy, using a modification of USEPA Method 418.1. Data from these initial locations directed subsequent soil and ground water sampling, both horizontally and vertically. Approximately 30 percent of the samples underwent subsequent analysis (Phase II)

using a gas chromatograph (GC) for the specific analyte determination of benzene, toluene, ethylbenzene, and xylenes (BTEX), and fuel fingerprint identification.

## INTRODUCTION

Corporate policy requires environmental assessment of all properties considered for acquisition or divestiture. One objective of these assessments is to determine the extent, if any, to which soil and ground water have been impacted by past operations. The knowledge is required to determine financial exposure and environmental obligations.

In 1992, approximately 400 miles of product pipeline in northern Illinois, Indiana, and western Ohio was investigated. Environmental assessments were required at seven pumping stations and three terminals associated with this pipeline. In addition, eight old spill sites at various locations along the pipeline right-of-way were investigated. Table 1 is a summary of site activities. Timing associated with negotiations and the desired close-date resulted in a 12-week window in which to complete the environmental assessments.

In response to a request for proposal, proposals ranging for $600,000 to $1,200,000 were received. The scope of work addressed in these proposals included the determination of the presence or absence of PHCs in soil and ground water and, if present, the vertical and horizontal extent. Both traditional (soil borings, monitoring wells, and off-site laboratory analyses) and innovative methods were proposed. Traditional assessment methods were rejected for the following reasons:

1. Time constraints did not allow the use of slower methods.

2. Data quality objectives did not require USEPA Level IV data.

3. Cost.

The plan that proposed the use of a cone penetrometer truck (CPT), two geoprobe units and field based analytical procedures was selected for the following reasons:

1. CPT techniques offered acquisition of stratigraphic and hydrologic data.

2. Geoprobe soil and ground water sample collection methods offered the collection of a large number of samples in a short amount of time.

3. Use of the CPTU-EC and geoprobe did not result in the generation of soil cuttings and monitoring well purge water requiring off-site disposal.

4. The field analytical plan best suited corporate requirements and was backed with directly relevant experience.

5. The proposed project schedule was credible and met corporate requirements.

6. Use of the proposed innovative techniques substantially reduced the cost of the project.

TABLE 1
Project Summary

| Number of Sites | Total Number of Explorations | Total Number of Samples Collected | Total Number of Analyses[1] |
|---|---|---|---|
| 18 | 575 | 913 | 1,498 |

NOTES:

1 The total number of analysis includes quality control samples and multiple analysis of a single sample.

## TECHNICAL APPROACH

Three key elements used in the alternate approach to the 18 site investigations were CPT, geoprobe, and field analysis. This combination of innovative collection and on-site analytical techniques enabled the subsurface investigations of each site to be quick, thorough, and cost-effective.

**Cone Penetrometer.** The penetrometer technique provides various advantages during geo-environmental studies. These include a relatively nondestructive test procedure generating no cuttings or drilling fluids; real-time, computerized data acquisition and presentation; continuous profiling capability; minimal exposure of personnel to possible contaminants; and higher productivity with lower cost as compared to borehole techniques.

CPTU-EC soundings were performed at several locations within each study area. On-site personnel used these soundings to investigate stratigraphy, to determine the depth to ground water, and to identify soil sample collection depths. Each CPTU-EC sounding generated physical data about subsurface soil conditions interpreted from cone tip and friction sleeve-bearing resistance, generated pore pressure, and electrical conductivity.

CPTU-EC penetrometer testing consisted of using a large hydraulic ram to push a small diameter (1.7-inch) instrumented probe (penetrometer) into the ground while measuring the soil shear resistance to penetration. In addition to shear resistance, a pressure transducer and a soil electrical conductivity sensor were mounted on the cone tip. The pressure transducer was used to measure the water pressure response of the saturated soil. Time-dependent measures (dissipation tests) were used to calculate in situ hydraulic conductivities. Soil electrical conductivity primarily depends on pore fluid chemistry (identifying possible locations of nonconductive PHC layers[1]), soil saturation, and clay content. Downhole sensors transmitted electrical signals to an uphole computer for real-time display allowing immediate interpretation of subsurface conditions. Both soil and ground water samples could be collected by CPT techniques[2] when depths exceeded geoprobe capabilities.

The CPTU-EC data were reviewed before sample collection activities, and used to locate subsequent subsurface soil collection depths. Information about soil saturation and electrical conductivity was of particular interest for indicating the probable whereabouts of subsurface PHCs.

**Piezometer Installation.** Several small diameter (3/4-inch nominal) polyvinyl chloride (PVC) piezometers were installed at each site. All piezometers were screened across the water table in an attempt to intercept any hydrocarbon layer that might be present. The 15-foot-long slotted PVC screen was covered with a geofabric before installation to reduce infiltration of fines.

At each piezometer location, the CPT rig pushed a steel casing to the required depth (approximately 20 feet below ground surface [bgs]). The PVC screen and riser were placed inside the casing, which was then retracted leaving the piezometer material below the water table. The piezometer installation was completed with a protective casing to minimize tampering. All downhole equipment and PVC piezometer materials were steam-cleaned prior to installation.

All penetrometer downhole equipment was automatically decontaminated during retrieval by passing it through a sealed rodwashing chamber, mounted below the hydraulic ram, and connected to the onboard steam cleaner. The open hole was grouted using a proprietary system that continuously pumped grout into the annular space.

**Geoprobe.** The geoprobe is a hydraulic pushing system mounted on a truck that can push 1.25-inch sampling rods to a depth of approximately 30 feet bgs. By using the geoprobe system to collect soil and ground water samples, a reduction in time and cost was realized. Each geoprobe unit was able to collect 10 to 15 soil samples a day from 8 to 10 explorations. Additionally, this technique did not generate soil cuttings. The geoprobe unit is relatively small and lightweight compared to traditional drill rigs making it easier to access congested terminal locations.

Initial subsurface sampling locations were sited next to potential source locations; subsequent explorations were placed downgradient from the potential sources. The specific locations for subsequent sampling were based on information obtained during the initial sample collection and analytical data from the mobile laboratory. By directing the exploration program in the field, only necessary samples were collected and analyzed. This reduced the number of samples necessary to characterize the site. Generally, soils were collected from strata exhibiting depressed electrical conductivity and from the area around the water table.

## DATA QUALITY OBJECTIVES

Data generated during field activities were characterized as USEPA Level I and Level II (USEPA, 1987).

With respect to the pipeline project, Level I data were qualitative and semi-quantitative and provided information on the presence or absence of contamination. Data included measurements from handheld photoionization detectors, pH meters, and specific conductivity probes. Level II data

were those data generated by an on-site laboratory and were both qualitative or quantitative. Level II data collected during this investigation included TPH by IR detection, volatile organic compounds (VOCs) by GC (mainly BTEX), and petroleum fingerprints using GC.

## FIELD ANALYTICAL METHODS

The detection of fuel-related hydrocarbons in site soils and ground water was performed using a combination of two analytical techniques: IR spectroscopy and gas chromatography. All soil samples were analyzed for TPH by IR; approximately 30 percent of the samples were also analyzed using GC.

**Total Petroleum Hydrocarbons by Infrared Analysis.** TPH were analyzed by IR spectroscopy as outlined in USEPA Method 418.1. The modified procedure[3] combined solvent extraction and silica gel cleanup into a rapid single step micro-extraction that uses smaller volumes of both solvent and sample. As many as 90 samples were analyzed in a single day by the two field operators. The analytical detection limit for this modified procedure is 50 milligrams per kilogram (mg/kg).

**Gas Chromatography Analysis.** GC was used for the specific determination of individual volatile aromatic hydrocarbons including BTEX[4], and to generate fuel "fingerprints" for selected mixtures of fuels through Carbon-28 ($C_{28}$). Generated fuel fingerprints were compared to known fuel products for both identification and quantitation and interpreted against current standards described in ASTM Method D 3328-78. The detection limit for the individual target fuel components in soil was one to two mg/kg, while the fuel mixtures had detection limits ranging from 10 to 100 mg/kg.

**Quality Control.** Quality Control for the aforementioned analytical methods was performed to a degree sufficient to evaluate data precision and accuracy and system performance while not inhibiting the ability to generate real-time data and maintain high sample throughput.

## COMPARATIVE ANALYSIS

Tables 2 and 3 contrast and compare a traditional approach to site investigations (i.e., drilling and off-site laboratory analysis) with the innovative approach used during this program. Through the use of innovative collection and analytical techniques, the overall cost and schedule of the program was reduced without compromising the data quality needed to meet project objectives.

**Impact On Program.** Table 2 presents the actual cost incurred by the innovative program. Table 3 is an estimate of the costs that would have been incurred if a more traditional approach had been followed. Table 4 is a comparison of the two methods illustrating the cost savings for each unit item. However, possibly the greatest savings is much more difficult to measure - is the reduction in cycle-time that shortened the schedule significantly.

## CASE STUDY

Investigation results for a terminal of approximately 37 acres is presented as a case study to illustrate the cost savings. The on-site review and historical data

TABLE 2
Project Cost Summary
Innovative Approach

| | No. of Explorations | No. of Samples | Mob/ Demob[1] | Average Unit Cost | No. of Days | Total Cost |
|---|---|---|---|---|---|---|
| Geoprobe | 508 | 757 | $5,000 | $335/ Exploration | 43 | $170,180[3] |
| CPT | 64 | 53 | $2,200 | $1,471/ Exploration | 19 | $94,150[4] |
| Field Analysis | -- | 1,498[2] | $46,900 | $151/Analysis | 43 | $226,198[5] |
| Drilling | 3 | 0 | $1,600 | $13,850/Well | 8 | $41,550[6] |
| Reporting | 18 Reports | -- | -- | $5,933/Report | 16 | $106,796 |
| Project Management | -- | -- | -- | $2,931/Site | 70 | $52,758 |
| Totals | 575 | -- | $55,700 | -- | -- | $691,632 |

Average Cost per Site - $38,456

Notes:

1 This includes the cost of staging, moving equipment and personnel to and from all locations.

2 Includes samples collected by other means (i.e., surface soils, sediments, surface water, and a smaller number of quality control samples).

3 Cost includes all labor (2-person crew).

4 Cost includes 51, 3/4-inch piezometer and all labor (2-person crew plus 1 inspector).

5 Cost includes all labor (2-person crew).

6 Cost includes three 4-inch PVC monitoring wells, and labor for a 2-person crew plus 1 inspector (monitoring wells were necessary because of a very thick gravel deposit (approximately 45 feet of gravel to the water table).

# TABLE 3
## Estimated Project Cost Summary
## Traditional Approach

| | Total No. of Explorations/Analysis | Mob/ Demob | Est. Cost Per Unit | Subtotal Cost | Est. No. of Drums | Estimated Cost for Drum Disposal | Total Cost |
|---|---|---|---|---|---|---|---|
| Soil Boring[1] | 508 | $1,750 | $600[4]/ Boring | $306,550 | 127 soil[2] | $209,550 | $516,100 |
| Monitoring Well Installation | 54 | $2,200 | $1,815[5]/ Monitoring Well | $92,565 Plus $41,550 three gravel wells see Table 1 | 14 soil[2] Plus 27 drums of purge water[3] | $31,065 | $165,180 |
| Off-Site Laboratory Analysis | 1,498 Analyses IR - 806 BTEX plus Finger Print - 346 | $4,300 Shipping Cost | IR - $180 BTEX plus Fuel Finger Print- $600[6] | IR - $145,080 BTEX plus Fuel Finger Print - $207,600 | -- | -- | $356,980 |
| Reporting[7] | 18 Reports | -- | -- | $5,933/ Report | -- | -- | $106,794 |
| ProjectManagement[7] | -- | -- | -- | $2,931/ Site | -- | -- | $52,758 |
| Totals | 562 Explorations; 1,498 Analysis | -- | -- | -- | 168 | $240,615 | $1,197,812 |

Average Cost per Site - $94,655

Notes:

1 Average depth of soil exploration from Table 1 is 12 feet.

2 Drill cuttings disposal. Assume one soil drum for every 4 soil borings requires off-site disposal and analysis: RCRA Characteristics $210 [reactivity $130, corrosivity $15, ignitability $65], TCLP analysis at $1,200, TPH at $60, Total BTEX at $100, trucking at $35/drum and bioremediation at $45/drum. Total cost per soil drum estimated at $1,650.

3 Purge water disposal. Assume one drum of purge water for every four wells requires off-site disposal. Analysis required: TPH at $60, Total BTEX at $100, Total BTEX at $100, and trucking at $35/drum, and treatment at $100/drum. Total estimated cost per purge water drum at $295.

4 Assume 4.25-inch hollow stem augers (HSA) with 5-foot sampling. Cost estimated at $35/foot and bentonite grout at $15/foot combined estimated cost of $50/foot. Labor cost included in footage rate.

5 Assumed 6.25-inch HSA 5-foot sampling at $35/foot and well material (4-inch PVC riser, $6/foot; 15-foot PVC screen, $32/foot; grout, $15/foot; protective casing $250 each) estimated cost per 25-foot installation $1,815. Labor cost included in footage rate.

6 Assume 24-hour turnaround is 3 times the cost of non-expedited analysis.

7 Cost for Reporting and Project Management assumed to be the same as presented in Table 2.

Table 4
Cost Summary
Innovative Compared To Traditional Approach

| | Average Cost Per Site | Average Cost Per Exploration | Average Cost Per Analysis | No. Of Days | Totals |
|---|---|---|---|---|---|
| Innovative Approach | $38.456 | $532[1] | $151[2] | 70 | $692.223 |
| Traditional Approach | $94.655 | $1.185[3] | $238[4] | 120 | $1.197.812 |
| Savings Using Innovative Approach | $56,199 | $653 | $87 | 50 | $505.589 |

Notes:

1 Average cost per exploration includes cost of geoprobe, CPT, and Drilling from Table 2 for 575 explorations.
2 Average cost per sample includes IR, BTEX, and fuel fingerprinting from Table 2 for 1,498 analysis.
3 Average cost per exploration includes cost for Soil Borings and Monitoring Well Installation from Table 3 for 575 explorations.
4 Average cost per sample includes IR, BTEX, and fuel fingerprinting from Table 3 for 1,498 analysis.

provided indicated that the pipeline manifold/sump area, the large aboveground breakout tanks, the railroad and truck-loading racks, and the warehouse were potential sources. The soil sampling and piezometer locations were placed using this information (Figure 1). Physical and chemical data from soils and ground water were collected at the Terminal site using a combination of cone penetrometer and geoprobe system sample collection techniques. All samples were analyzed using a combination of IR spectroscopy and GC. This work was completed including sample analysis and preliminary data evaluation in approximately five geoprobe/field laboratory days and two CPT days.

**Stratigraphy and Hydrogeology.** The terminal is located on a small hill. The large aboveground breakout tanks are located at the top of the hill, whereas the manifold area, loading racks and warehouse are at the bottom of the hill. The soils are interbedded sands, silts, and clays (Figure 2). There are two aquifers below the site, a perched system below the breakout tanks, and a regional sand and gravel aquifer.

**Data Interpretation.** Eighty-six soil, ten groundwater, five sediment, and four surface water samples were collected and analyzed for the presence and quantitation of petroleum hydrocarbons. PHCs were found in 44 of the soil samples associated with the loading racks and east of the large aboveground breakout tanks (see Figure 1). Sediment samples collected along the site boundary contained detectable concentrations of PHCs. No PHCs were reported in any surface waters associated with these sediment samples. Four of the ten ground water samples collected contained PHCs.

The apparently upgradient ground water sample (PW-0709) contained PHCs identified as weathered gasoline at 0.34 milligrams per liter (mg/L). The source area for these compounds was undetermined, and may have been related to an unidentified off-site source. The two ground water samples (PZ-0706 and PW-0707) collected downgradient from the bermed area (large aboveground breakout tanks) contained BTEX and a fuel fingerprint identified as gasoline at 9.4 and 83 mg/L, respectively. Gasoline was also identified in the ground water sample collected from the upper perched system (PZ-0704) at 0.94 mg/L (see Figure 2).

The soils data suggest that the bermed area, the manifold/sump area, and the two loading racks were probable source areas for the hydrocarbons present. The presence of PHCs in soils adjacent to the site boundaries and in the ground water suggested that PHCs may have migrated beyond the terminal boundary. Additionally, it appeared that PHCs may also have been migrating onto the site from an unidentified source area.

## RESULTS

The results of applying the innovative techniques described in this paper are as follows:

1. Corporate environmental assessment requirements were fulfilled and meet the negotiated divestiture time schedule.

2. A total of 18 sites (seven pumping stations, three terminals, and eight spill sites) were assessed in four weeks of field work. Total project duration was 12 weeks.

3. The concentration and extent of PHCs in soil and ground water were mapped for each spill site. The concentration and extent of PHCs in soil and ground water mapping did not extend beyond property boundaries.

4. Environmental assessment costs were substantially reduced by utilizing innovative rather than traditional techniques.

## CONCLUSIONS

By utilizing a cone penetrometer truck, two geoprobe units and field analytical procedures, the concentration of petroleum hydrocarbon constituents in soil and ground water was determined at 18 sites in a short time period and at reduced price. The extent of petroleum hydrocarbons in soil and ground water was mapped for each site. Mapping was limited to property boundaries for pumping stations and terminals. The successful completion of the environmental assessment fulfilled corporate requirements and met the negotiation divestiture time table.

## ACKNOWLEDGEMENTS

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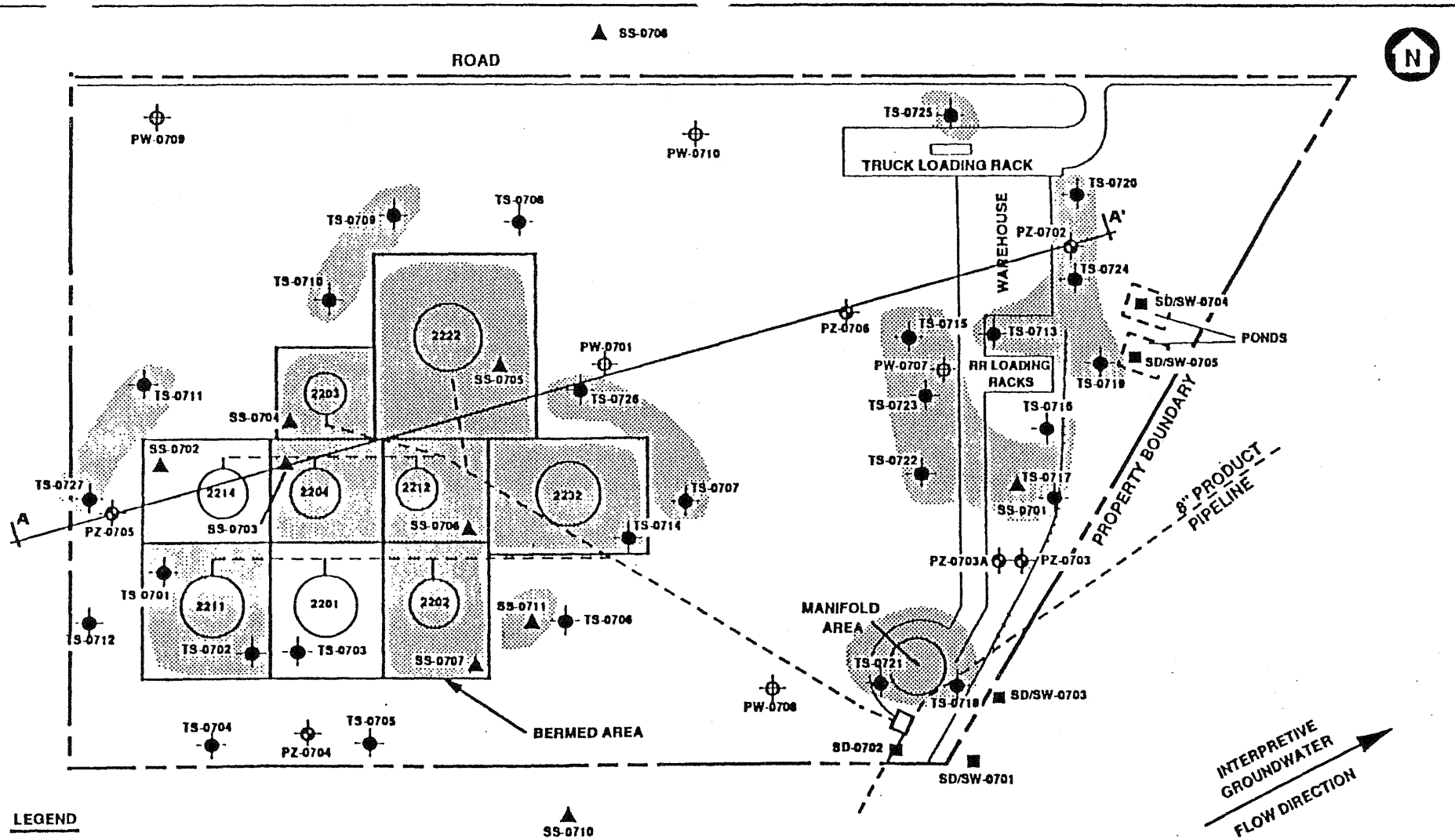
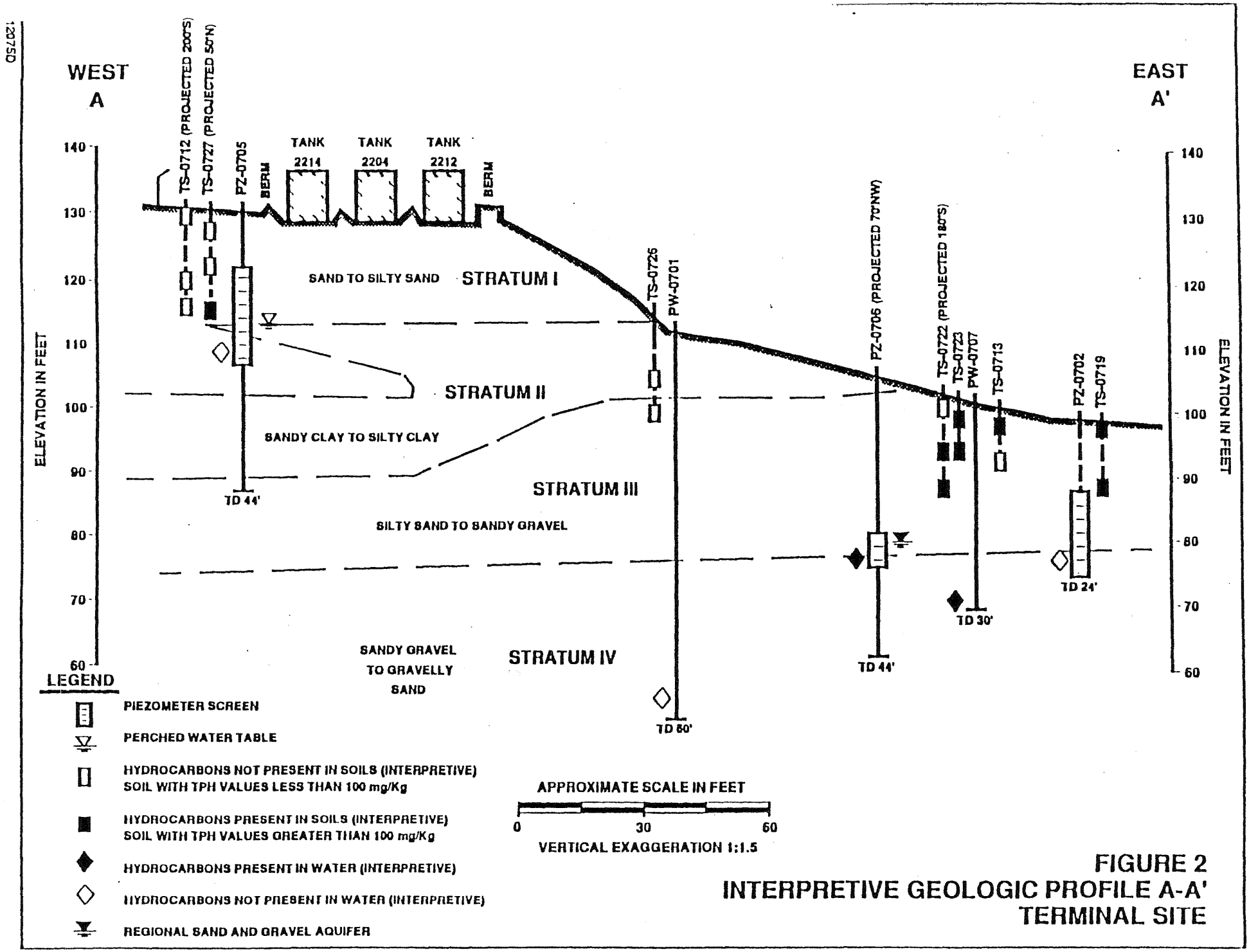



# FIGURE 1
# SITE PLAN
# TERMINAL SITE

92120750 (A)




# FIGURE 2
# INTERPRETIVE GEOLOGIC PROFILE A-A'
# TERMINAL SITE

# USE OF PIEZOMETRIC CONE PENETRATION TESTING AND PENETROMETER GROUNDWATER SAMPLING FOR VOLATILE ORGANIC CONTAMINANT PLUME DETECTION

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Timothy J. Sainey, P.G., ERM-Midwest, Inc., Columbus, Ohio

## ABSTRACT

Piezometric Cone Penetration Testing (CPTU) and penetrometer groundwater sampling were used in locating a volatile organic contaminant plume at an industrial site in southern Ohio. Nine CPTU tests (soundings) were performed to determine site hydrostratigraphy in real-time. On-site chemical analysis of penetrometer groundwater samples provided near real-time detection of contaminants. These results were used to define subsequent exploration points. Using this investigation approach, drilling operations to set monitor wells began as penetrometer exploration ended. Program quality increased, while exploration costs decreased by using this combination penetrometer-drilling rig approach.

## INTRODUCTION

Tricholoroethene (TCE), an industrial solvent, along with other volatile organic compounds, was identified in the groundwater at a manufacturing site in rural southern Ohio. Contamination was initially found in four monitor wells, located around a suspected source. The immediate soils consist of mixed sand, silt, and clay, overlying granular strata, which overlie bedrock. The water table is located at El. 550 ft, or 8 to 20 ft below the surface.

To define the limits of contamination, a soil gas survey was performed using a hand-held hammer drill to drive probes 5 ft into the ground. Probing traced contamination to an off-site agricultural field and defined the general direction of contaminant movement (Figure 1). As the survey expanded, indications of volatiles abruptly stopped. It was suspected that a thicker clay unit was masking volatiles that might be present in the groundwater. The limits of contamination still had to be determined, but additional exploration was subject to the following constraints:

- Contamination was determined to be moving off-site, where stratigraphy was uncertain.
- The off-site property owner did not want drilled boreholes and monitor wells in his field.
- Poor weather conditions prevailed during the late winter months of 1990.
- Agency deadlines and budgetary limitations influenced the scope and schedule.

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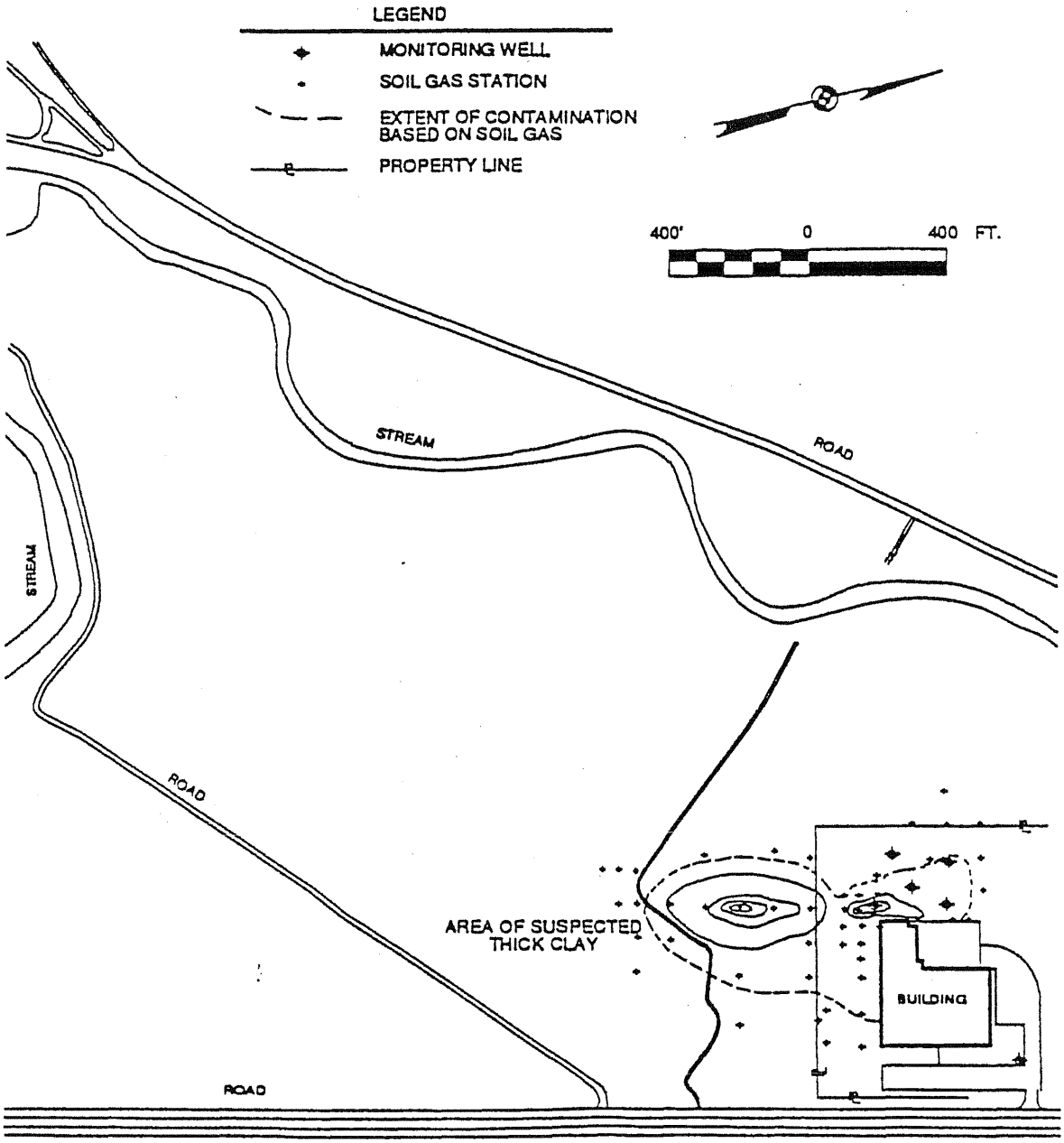


FIGURE 1 - EXTENT OF CONTAMINATION
BASED ON SOIL GAS SURVEY, APRIL 1988

The needs of the off-site property owner had to be met while still allowing exploration to proceed. His concerns were addressed by negotiating permission to set a maximum of nine wells to monitor the extent of contamination, with assurances of minimal surficial disturbance to future crop cultivation.

A possible solution to the constraints of the agreement was to use a drilling rig to split-spoon sample soils, and to sample groundwater by using either a Hydropunch sampler or wellpoints. The exploration boreholes would be drilled and plugged until the extent of contamination had been determined. At this point, the monitor wells would be set. However, the cost of drilling and plugging numerous exploratory boreholes, and the overall ineffectiveness of drilling rigs to advance the Hydropunch in dense sands and gravels, made the use of a drill rig less than optimal.

Another solution was to use a cone penetrometer rig to explore subsurface conditions followed by conventional drilling to set monitor wells. This plan had the following advantages:

- The penetrometer rig has an enclosed work area so that bad weather does not significantly impact productivity.
- It is capable of collecting high quality, continuous stratigraphic information in real-time, both allowing for efficient penetrometer groundwater sampling and allowing a drill rig to eventually set monitor wells without additional physical sampling.
- It can be used to hydraulically push groundwater samplers into sands and fine gravels, under suitable conditions.
- Penetrometer operations do not generate possibly contaminated drill cuttings or fluids that require expensive disposal.
- The method does not result in large diameter holes that require extensive grouting to seal.
- Penetrometer operations are more rapid and thus less expensive than drilling operations.

Use of the penetrometer exploration/drill rig well installation approach was decided upon as the most cost- and performance-effective solution for this project. An analytical laboratory was set up on-site allowing for successive exploration points to be optimally chosen on the basis of contaminant plume detection, rather than on an arbitrary grid pattern.

## PENETROMETER TECHNIQUE AND EQUIPMENT

Penetrometer methods are being used with increasing frequency, and they provide significant advantages for geo-environmental exploration. The technique uses a large hydraulic ram to push small (1.5 to 2.5 inch) diameter probes into the ground without drilling a borehole (Figure 2). Instrumented probes, called penetrometers, provide semi-direct and direct information on geotechnical, hydrogeological, and geochemical site conditions. Penetrometer samplers are used to obtain physical samples of subsurface materials.

Penetrometer methods are used to their greatest advantage in sand, silt and clay deposits. Penetrometer profiling (Figure 3) is continuous and accurate, and measurements (sounding

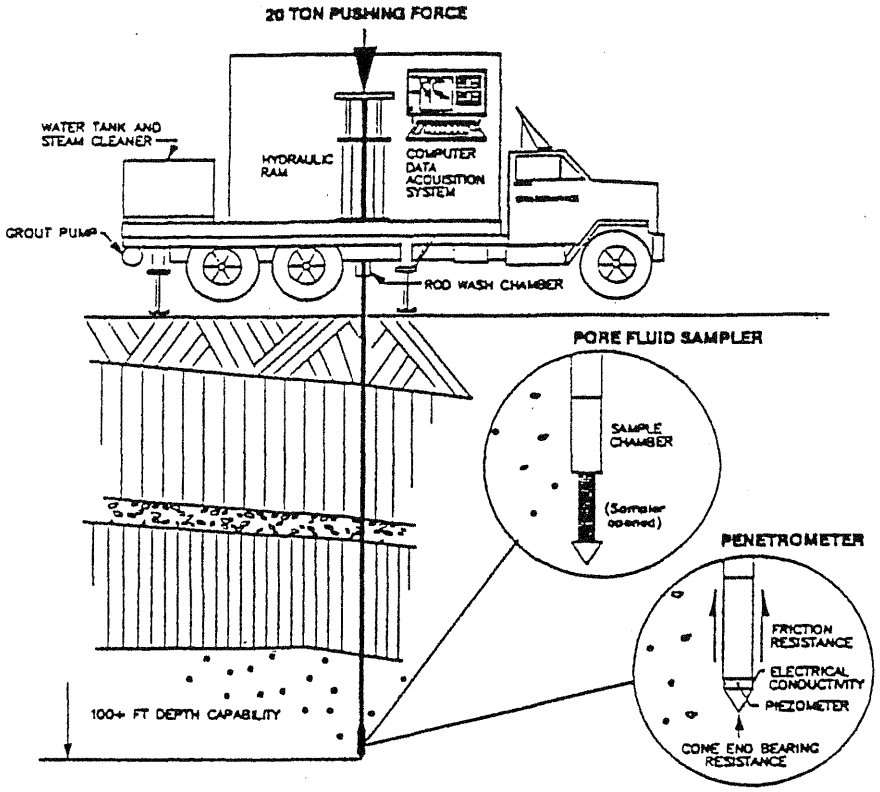


FIGURE 2 - PENETROMETER SUBSURFACE EXPLORATION SYSTEM

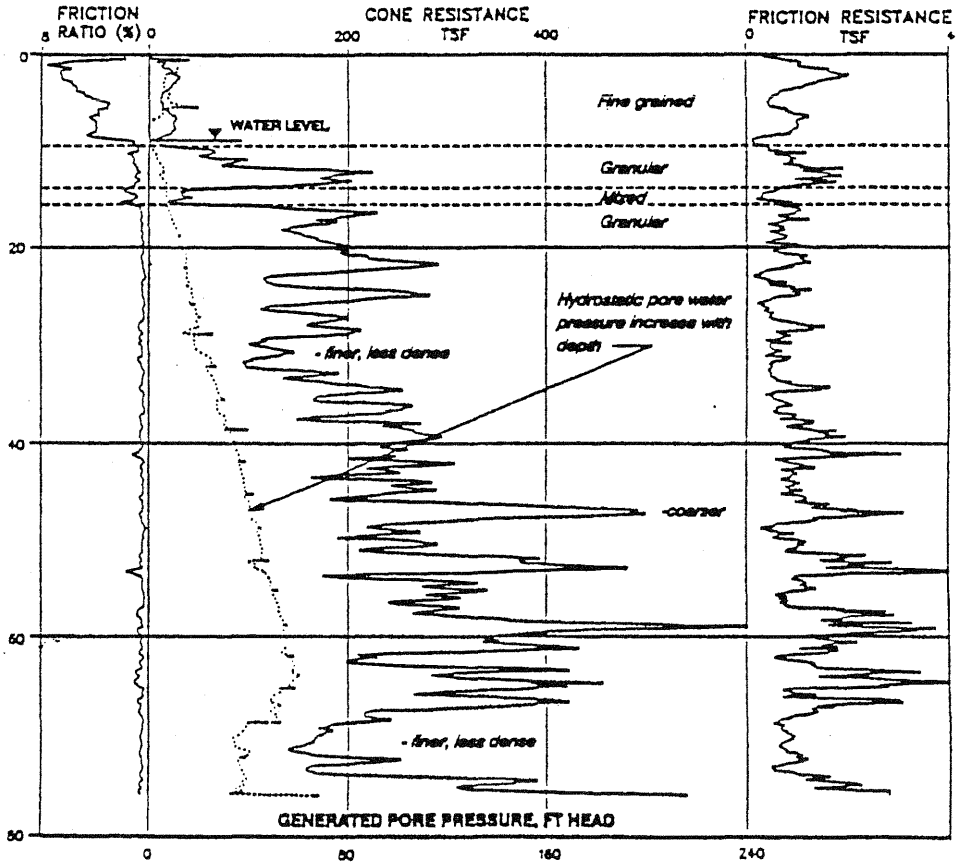


FIGURE 3 - CPTU SOUNDING LOG C-7

logs) are reliably interpreted for definition of aquifers and confining layers. Lateral continuity of layers is readily apparent from a series of adjacent penetrometer soundings.

Site disturbance and waste material disposal is minimized because no cuttings or drilling fluids are generated during penetrometer operations. Downhole equipment is steam cleaned during retrieval. Personnel exposure to contaminants is much less than exposures during drilling. Heaving sands pose little problem, as no open hole actually exists during penetrometer advance.

Three hundred to 900 ft of geotechnical soundings can be performed in a day, depending on access and project requirements. The special demands of geo-environmental investigations decrease daily footage, but productivity is still significantly higher than that using drilling rigs. Sounding depths in excess of 100 ft can be achieved, depending on site stratigraphy.

The penetrometer is mounted at the end of a series of heavy-wall sounding rods. A hydraulic ram is used to push the penetrometer into the ground at a rate of 4 ft per minute. Electronic signals from downhole sensors are transmitted by a cable, strung through the sounding rods, to a computer inside the penetrometer rig. Data are recorded at depth intervals of 3/8 to 3/4 inch. A real-time data display is monitored for evaluation of test performance and for immediate definition of site conditions. At the end of a sounding, the penetrometer and sounding rods are retrieved and decontaminated. Open hole can be grouted where cross-contamination between layers may occur. Open hole was allowed to collapse at the end of each sounding for this project, due to the lack of confining layers at the site.

A special truck is used to house, transport, and deploy the penetrometer. Twenty tons of truck weight and ballast are used to counteract the thrust of the hydraulic ram. The work area is enclosed and includes heating and air conditioning. Computers, penetrometers, samplers, electrical power, lighting, compressed air, grout and water pumps, steam cleaner for equipment decontamination, 275 gal water tank, tools and spare parts are all included within the penetrometer truck, providing for self-contained operations.

## Instrumentation

The basic electronic penetrometer consists of two separate soil shear resistance sensors, and is used to acquire information on soil strength and stratigraphy. Tests conducted with this penetrometer are called Cone Penetration Tests (CPT) and are specified by ASTM Standard D3441. Electronic CPT has been used for geotechnical engineering projects for more than 25 years, while less sophisticated, uninstrumented versions of the test (Dutch cone test) have been used since the 1930s.

Two laboratory grade, strain gage loadcells, mounted inside the penetrometer, are used to measure the soil shear resistance to penetration acting on the conical tip and along the cylindrical sides of the CPT penetrometer. CPT measurements are continuous, accurate and repeatable. The tip or cone end bearing resistance can respond to soil seams as thin as 2 to 4 inches. The side or friction resistance measurement has a resolution of about 6 inches.

A pressure transducer is added to the CPT penetrometer to additionally measure the soil pore water pressure response to penetration; this is called a Piezometric Cone Penetration Test (CPTU). CPTU piezometric data allow for the evaluation of soil saturation, water tables, potentiometric surfaces, and soil horizontal permeability in both aquifers and aquitards. The CPTU piezometric measurement has a resolution of about 1 inch.

Another penetrometer has been used to measure the shear resistance, piezometric response, electrical conductivity and temperature of penetrated soils. This penetrometer is useful in

detecting free hydrocarbon product on groundwater. This test type is termed CPTU-EC. Additional details on penetrometer instrumentation can be found in Strutynsky, et al., 1985 and 1991.

## Groundwater Samplers

The Hydropunch and BAT penetrometer samplers were used to sample groundwater for this project. The Hydropunch sampler (Figure 4) consists of a stainless steel, shielded wellpoint and sample barrel assembly (Edge and Cordry, 1989); it is deployed using the heavy-wall penetrometer sounding rod. The shield prevents contamination of the sampler while pushing. When the shield is retracted, groundwater flows under in situ pressure conditions into the 500 ml sample barrel.

A water level indicator can be lowered to the top of the Hydropunch in order to determine sampler filling. The sample is isolated in the barrel by two ball check valves. The entire sampler is retrieved to the surface to pour off the sample and for sampler decontamination. The tip of the Hydropunch sampler must be at least 4 ft below the water table to acquire a sample.

The BAT sampling system (Figure 5) consists of a wellpoint that is internally sealed with a septum (Torstensson, 1984). After pushing the wellpoint to depth, an evacuated 35 or 70 ml vial, also sealed with a septum, is wirelined down the casing. A double-ended hypodermic needle, mounted in an adapter below the vial, pierces both the wellpoint and the sample vial septa, and allows fluids to flow into the vial. The septa seal as the sample vial is retrieved to the surface, maintaining the sample at in situ pressure conditions. This procedure may be repeated to develop the wellpoint and to obtain increased sample volumes.

The BAT Enviroprobe and Mk. 2 wellpoints were used during this study. The Enviroprobe is shielded, while the Mk. 2 tip is unshielded. The Mk. 2 filter is exposed to possible cross-contamination during deployment. A thin-wall AQ drill rod is used to deploy the BAT samplers, as the heavy-wall penetrometer sounding rods are too small to pass the BAT sample vial.

# PENETROMETER DATA INTERPRETATION

Correlations between penetrometer data and soil type have been developed from observational criteria on adjacent CPT soundings and drilled and sampled boreholes (Douglas and Olsen, 1981). CPT soil classifications reflect the shear response of a soil to penetration. Soil shear response is not entirely controlled by grain size distribution. However, soil types evaluated from CPT data generally agree with those classifications based on soil grain size distribution methods, such as the Unified Soil Classification System (USCS).

The CPT cone end bearing resistance increases exponentially with increases in grain size. The cone end bearing resistance in dense sands ranges from about 150 to 300 tons per square foot (TSF), while the cone end bearing resistance in a stiff clay ranges from about 7 to 15 TSF. The proportion of CPT friction to cone end bearing resistance, termed friction ratio, is related to the fines content of a soil. The friction ratio is low in sands and high in clays. CPT measurements are computer analyzed using CPT soil classification charts (Figure 6) to quickly define site stratigraphy.

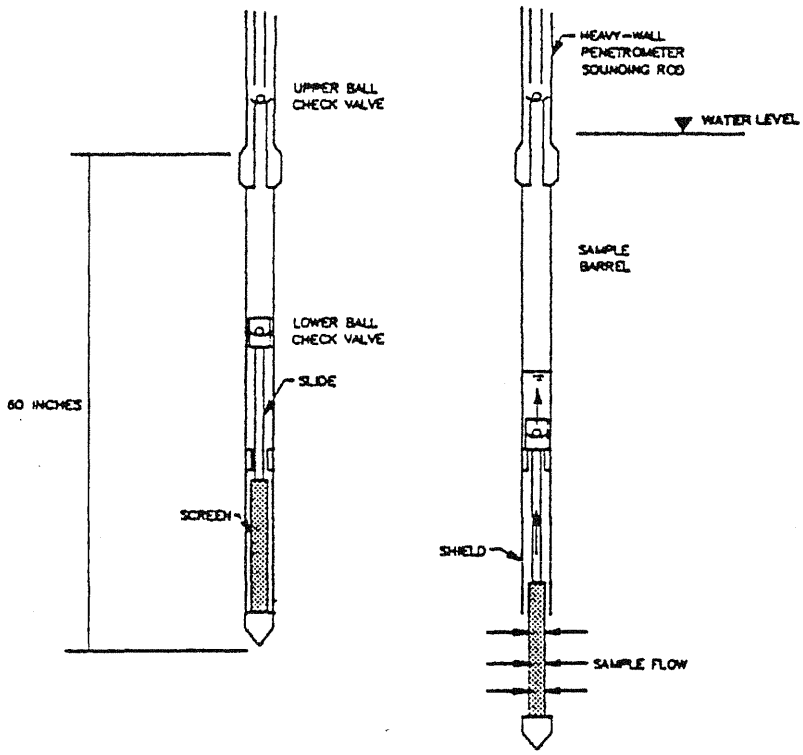


FIGURE 4 - HYDROPUNCH GROUNDWATER SAMPLER

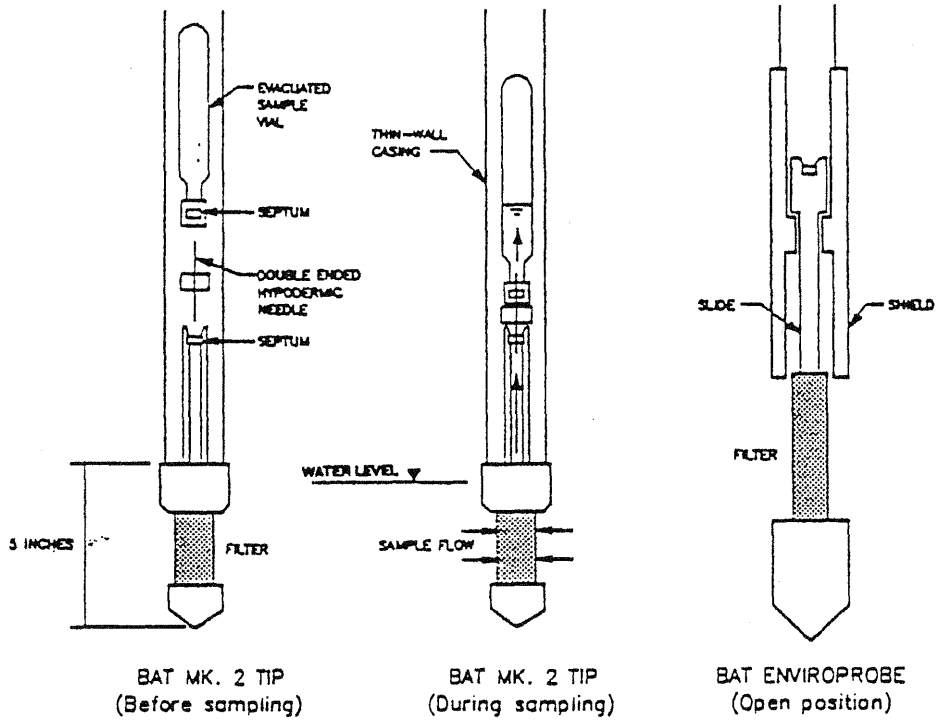


FIGURE 5 - BAT GROUNDWATER SAMPLING SYSTEM
Note: All dimensions approximate

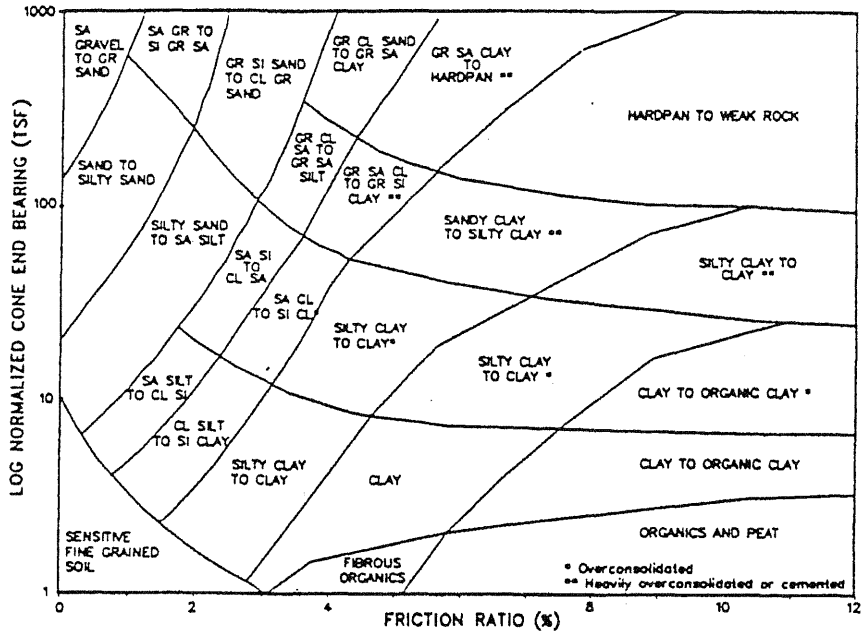


**FIGURE 6 - CORRELATION CHART FOR CPT SOIL TYPES**

The penetration of a saturated soil generates a localized pore water pressure field, in excess of equilibrium, around the penetrating probe. This generated pressure field dissipates quickly in soils of high permeability, so only the equilibrium pore water pressure field is measured in clean sands and gravels during Piezometric Cone Penetration Testing (CPTU). In low permeability soils, excess pore pressures require a significant amount of time to dissipate (Saines, et al., 1989). The dissipation of excess pore water pressure can be recorded as a function of time by pausing in the penetration process; this is termed a CPTU dissipation test. If the pauses are sufficiently long for all excess pressures to dissipate, measurements can be obtained of equilibrium potentiometric surfaces at multiple depths.

A CPTU dissipation test is somewhat similar to a falling head slug test, and can be used to calculate a value of soil horizontal permeability. However, tens to hundreds of feet of excess pore water pressure are induced in low permeability soils by penetrometer advance, as compared to several feet of head induced in a well during slug testing. The greater pressure changes during CPTU dissipation testing require soil compressibility effects to be included in analyses. The CPT cone end bearing resistance provides an index of compressibility for permeability computations.

## ON-SITE LABORATORY

A Hewlett-Packard HP 5890A gas chromatograph (GC) with two electron capture detectors (ECD) was selected as the on-site analytical instrument for this project. It has the advantage of:

- Achieving laboratory results in the parts per billion (ppb) range
- Having a programmable oven which provides better separation of the eluting compounds for more accurate identification
- Qualifying and quantifying compounds as compared to internal reference standards

For the analysis of volatile organics, U.S. EPA SW-846 Method 3810 Headspace was used. Calibration procedures were performed using standard mixtures to establish the internal standard curve. Sample analysis consisted of pouring collected water samples into a 1.0 ml syringe, and injecting this sample into a nitrogen purged 40 ml septum vial. The sample was then heated in a 70 deg C water bath for 15 minutes; 100 ml of headspace was drawn from the center of the septum vial and injected into the GC for analysis.

For quality control (QC), every 10th unknown was run, per a modified U.S. EPA Method 3810. Modifications are to allow samples to equilibrate to 70 deg C, to use 40 ml vials with Teflon face septa, and to inject 100 ml of headspace gas. For each 10th unknown, four samples were injected to determine the quality of data. These consisted of a:

- Sample containing reagent water that had been carried through all stages of sample collection of unknown constituents
- Sample containing reagent water spiked with known amount of target analytes
- Sample containing unknown constituents
- Sample containing unknown constituents spiked with known amount of target analytes

In addition to the field analyses, select duplicate samples were sent to an off-site analytical laboratory for verification. Sample preparation, standards and QC were assisted by an analytical subcontractor.

## PROGRAM RESULTS

CPTU soundings were performed at nine locations (Figure 7) during the period of February 6 to 13, 1990, for a total of 699 ft of test. Only partial days were worked on February 6 and 9, and no field work was done on February 10 when bulldozer support for access to locations in the wet, recently plowed field was not available. Twenty seven groundwater sampling attempts, with 22 successfully recovered samples, were also performed during this period. The sequence of penetrometer operations was as follows:

1) The penetrometer rig was set up, and a CPTU sounding was performed to determine hydrostratigraphy. The field sounding log was analyzed immediately to determine groundwater sampling depths.

2) The penetrometer rig was moved to provide about 5 ft of offset between the sounding and sampling hole to avoid vertical cross-contamination of samples.

3) Where sands were especially dense, or contained a high gravel content, a prepunch tool was pushed to nearly the sampling depth in order to facilitate sampler deployment.

4) The sampler was pushed to depth. Three groundwater samples were typically taken at each location at successively deeper penetrations (Figure 8), from shallow (15-31 ft), to intermediate (37-47 ft), to deep (68-90 ft). Three Hydropunch samplers were available on site, so as a sampler was being deployed, the others were being decontaminated.

The CPTU soundings revealed site soil conditions to have general lateral continuity, as can be seen on a stratigraphic cross-section (Figure 9). Site stratigraphy is summarized in Table 1.

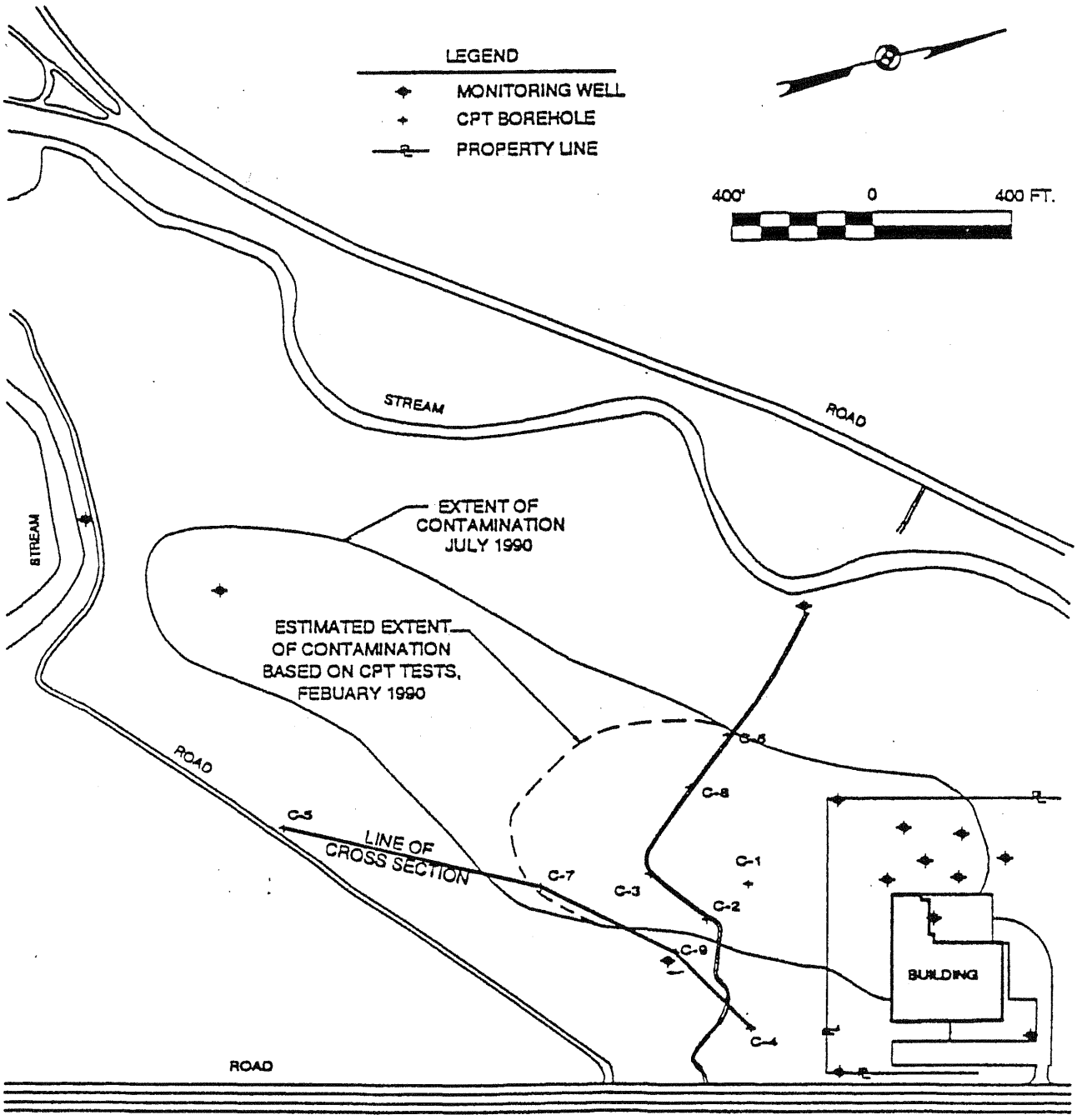


FIGURE 7 - LOCATION OF CPT TESTS, MONITOR WELLS, LINE OF CROSS SECTION AND EXTENT OF TCE CONTAMINATION AT THE TOP OF GROUNDWATER

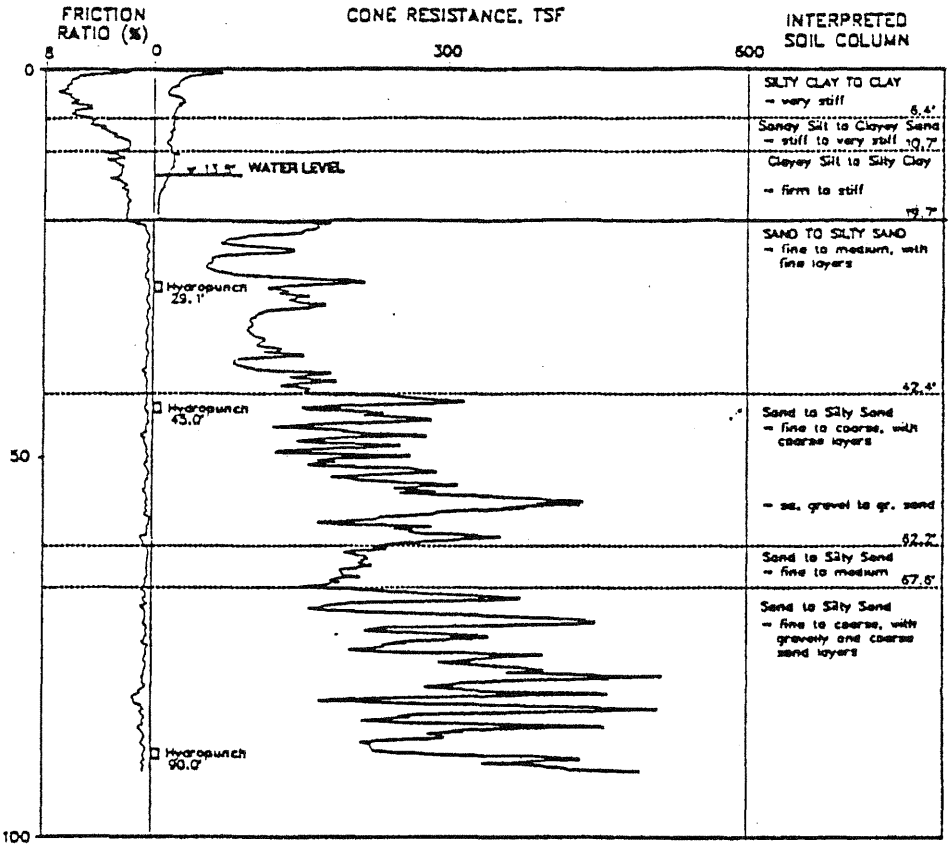


FIGURE 8 - INTERPRETED CPT SOUNDING LOG C-3 WITH SAMPLING DEPTHS

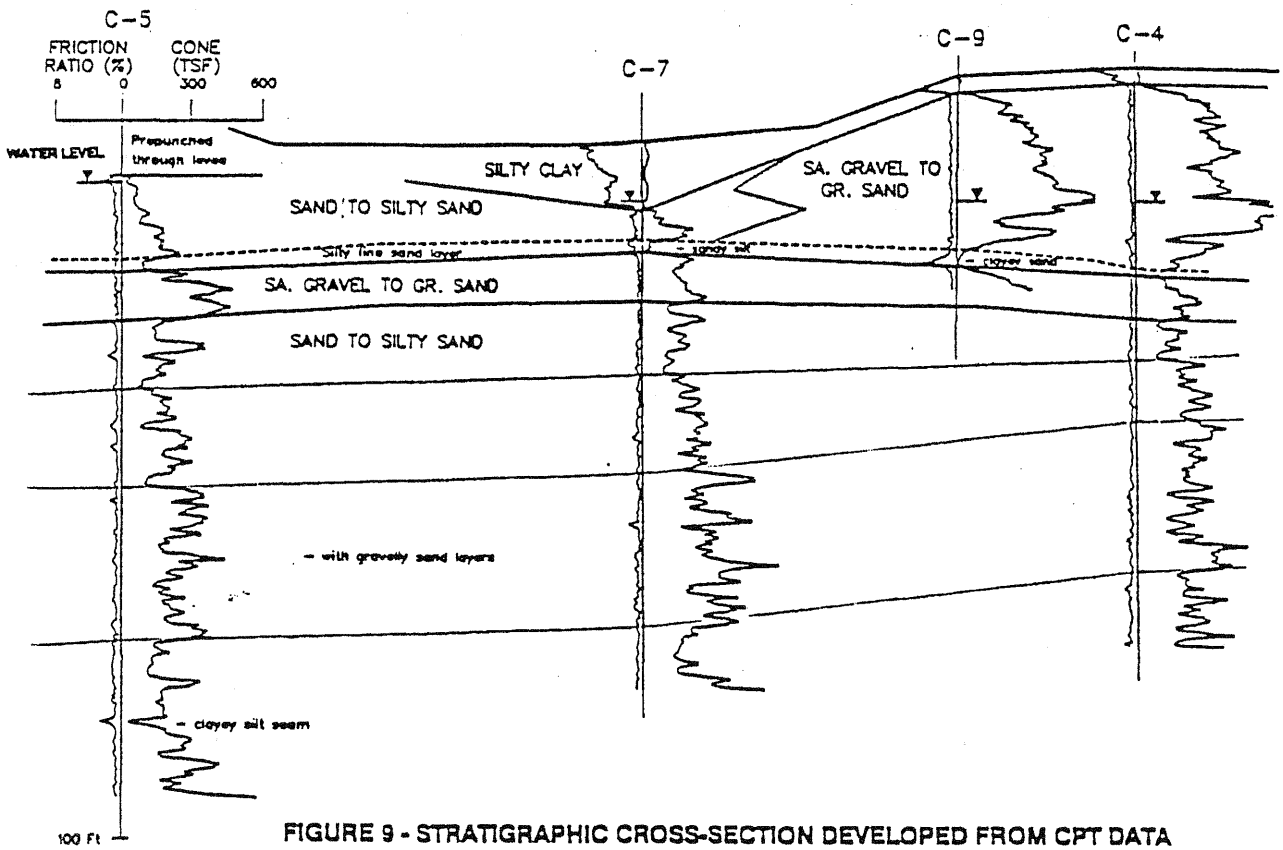


FIGURE 9 - STRATIGRAPHIC CROSS-SECTION DEVELOPED FROM CPT DATA

## TABLE 1
## CPTU SOIL STRATIGRAPHY

| STRATUM NUMBER | DEPTH | DESCRIPTION | INCLUSIONS |
|---|---|---|---|
| 1 | 0 ft to 2-3 ft (0 ft to 9-20 ft in C-3, C-7 & C-8) | Very stiff to firm sandy clay to clayey silt, with increasing silt content with depth | |
| 2 | 2-3 ft to 75-94 ft (completion depth) | Medium dense to dense sand to silty sand, with layers of gravelly sand and sandy gravel. | a) a seam of cl. silt at 84 ft at C-5<br>b) sa. silt from 13.8 to 15.5 ft at C-7<br>c) cl. sand from 24.4 to 26.6 ft at C-9 |

A highly detailed characterization of the site geology was obtained from the CPTU sounding logs. Split-spoon sampling during drilled investigations often results in poor recovery in sands and gravels, which make detailed description impossible. In contrast, the CPTU data provided a continuous record of the material being penetrated, thus allowing even minor changes to be recorded accurately (Figures 3, 8 and 9). The high resolution of the CPTU data was important in finding zones of higher permeability for future groundwater remediation and also verified the lack of confining layers at the site. The assumption of a thick, surficial clay zone interfering with the soil gas survey was verified by soundings C-3, C-7 and C-8 (Figures 3, 8 and 9).

Groundwater conditions were measured using CPTU piezometric data (Figures 8 and 9). Water table measurements were also taken using a water level indicator lowered into the open hole left after a sounding. The potentiometric surface at one groundwater sampling depth was measured by allowing the sounding rod string to fill through the Hydropunch sampler.

The Hydropunch sampler was successfully used in obtaining 22 groundwater samples out of 27 attempts. In general, the Hydropunch sampler worked well, especially in regards to depth capacity. Some disadvantages of the Hydropunch sampler were:

- Lack of definitive feedback as to whether the shield opened
- Minor galling and seizing of sampler parts as is common with unlubricated stainless steel assemblies
- Slight bending of the sample barrel during pushing with forces in excess of 10 tons

The BAT groundwater samplers were used during two sampling attempts at the site. The thin-wall deployment casing buckled while pushing the Mk. 2 wellpoint through the shallow gravelly sands at location C-2, which precluded taking a sample. The Enviroprobe was successfully used at location C-5 and illustrated some of the features of the BAT system, including the retrieval of multiple samples and rapid feedback as to wellpoint shield opening.

Groundwater samples were analyzed at the on-site laboratory for four organic volatiles that had been identified in the groundwater. TCE was found to be the most prevalent contaminant. Several samples were sent to an off-site laboratory for verification of the field results. On-site analytical results were consistently lower than results generated in the off-site laboratory. However, the on-site laboratory results were sufficiently accurate to guide the location of successive exploration locations.

## CONCLUSIONS

The approach of using a truck-mounted penetrometer rig, CPTU soundings, penetrometer groundwater samplers and an on-site GC laboratory to conduct geo-environmental site characterization studies, in combination with drill rigs to set monitor wells, proved to be highly advantageous in terms of:

- Minimal site disturbance and generation of wastes
- Collection and analysis of high quality, high resolution hydrostratigraphic data, with little or no downtime
- Optimal positioning of drill rig installed monitor wells, with little additional split-spoon sampling or geotechnical laboratory testing
- Meeting deadlines and budgetary constraints

Based on the results of the penetrometer investigation, monitor wells were installed using drill rigs along the downstream perimeter of the contaminant plume. Little split-spoon sampling was performed during well installation as stratigraphy had already been defined to a high degree by the CPTU sounding data. Several rounds of monitor well sampling have verified the accuracy of penetrometer groundwater sampling and the use of field analytical testing.

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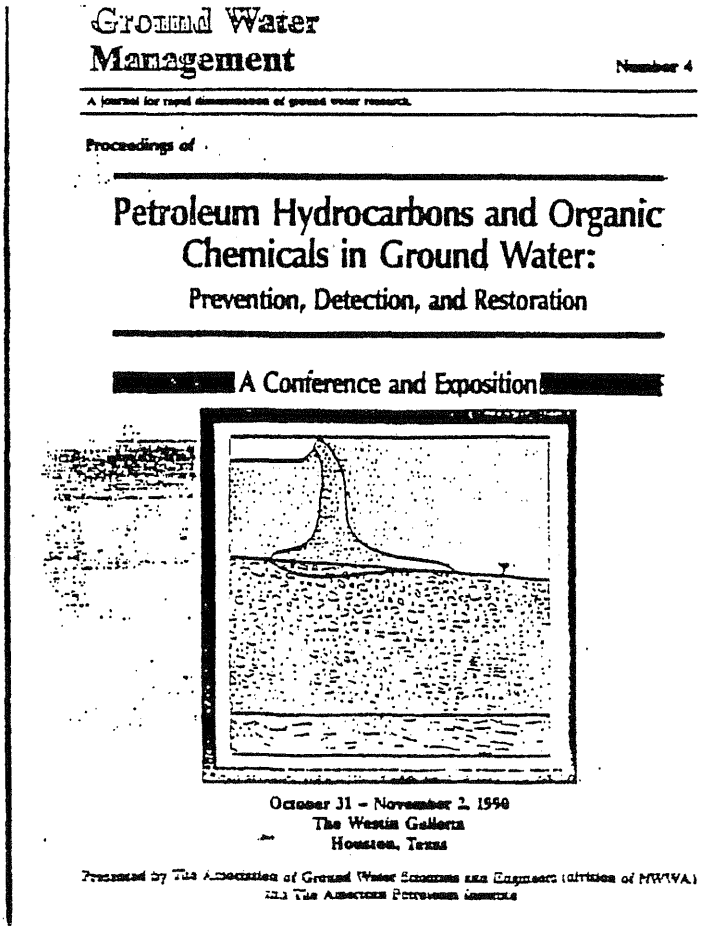

# USE OF PIEZOMETRIC CONE PENETRATION TESTING IN HYDROGEOLOGIC INVESTIGATIONS

By M. Saines, A. Strutynsky, and G. Lytwynyshyn

Presented at the

First USA/USSR Hydrogeology Conference
Moscow, USSR
July, 1989

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# USE OF PIEZOMETRIC CONE PENETRATION TESTING

# IN HYDROGEOLOGIC INVESTIGATIONS

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ABSTRACT

Piezometric Cone Penetration Testing (CPTU) is a powerful exploration tool for hydrogeologic investigations. CPTU consists of pushing a 1.4 to 1.7-inch diameter (3.6 - 4.4 cm) penetrometer to depths of 150 feet (45 m) or more in unconsolidated deposits of clay, silt, and sand. Sensors mounted inside the penetrometer provide data for the instantaneous evaluation of the following hydrogeologic parameters:

1) stratigraphy and lithology - identification of aquifers, aquitards, and definition of the lateral continuity of these units;

2) the position of the water table/potentiometric surface in sands and the water table-capillary fringe in silts and clays;

3) the hydraulic head in confined aquifers;

4) the slope of the water table or potentiometric surface, and therefore the direction of groundwater movement;

5) the vertical gradient by determining the head at various depths in each CPTU sounding; and

6) the permeability and transmissivity of aquifers.

The CPTU penetrometer is hydraulically pushed into the ground using a 20 ton (180 kN) truck. CPTU data are gathered by an on-board computer as continuous functions of both depth and time. Data consist of cone end bearing resistance, friction sleeve resistance, penetrometer deviation from vertical, and pore water pressure response to penetration. Lithologies are obtained by computer processing of CPTU sounding data using observational classification criteria based on an extensive library of comparisons between CPTU and drilled and sampled boreholes. Small diameter standpipe piezometers may also be installed using 20 ton CPTU equipment at a significant savings of time and money compared to drilling methods.

The continuous CPTU sounding yields accurate hydrogeologic data quickly and at low cost without drilling, sampling or laboratory testing. Test production rates vary from about 300 feet (90 m) to over 800 feet (250 m) per day, depending on project requirements. Cost comparisons are presented illustrating possible savings of up to 85 percent over continuously sampled and tested borings, and cost savings of 35-65 percent over the cost of borings with samples and laboratory tests at 5-foot intervals.

Limitations of the Piezometric Cone Penetration Test method include penetrometer refusal by coarse gravels, cobbles, and bedrock, or excessive friction on sounding rods during deep soundings. Depths of as much as 150 to 230 feet (45 to 70 m) can be reached with 20 ton CPTU equipment, depending on site stratigraphy.

## INTRODUCTION

In unconsolidated deposits of sand, silt, and clay, Piezometric Cone Penetration Testing (CPTU) provides excellent hydrogeologic data accurately, quickly, and inexpensively. CPTU consists of smoothly pushing a small diameter instrumented probe (penetrometer) into the ground using a hydraulic ram (Figure 1). High technology sensors mounted inside the penetrometer provide data for the evaluation of soil type, soil strength, and pore water response of penetrated soils. Testing is rapid and precise. In environmental investigations there is lessened exposure of personnel to potentially contaminated soil and groundwater. Small diameter, standpipe piezometers can also be installed using CPTU equipment; these piezometers can be tested for permeability, sampled for water quality, and monitored for water level changes over time.

Traditional site characterization studies have involved performing numerous soil boring, soil sampling and piezometer and/or observation well installations. These studies can be expensive, time consuming and yield somewhat subjective results. For example:

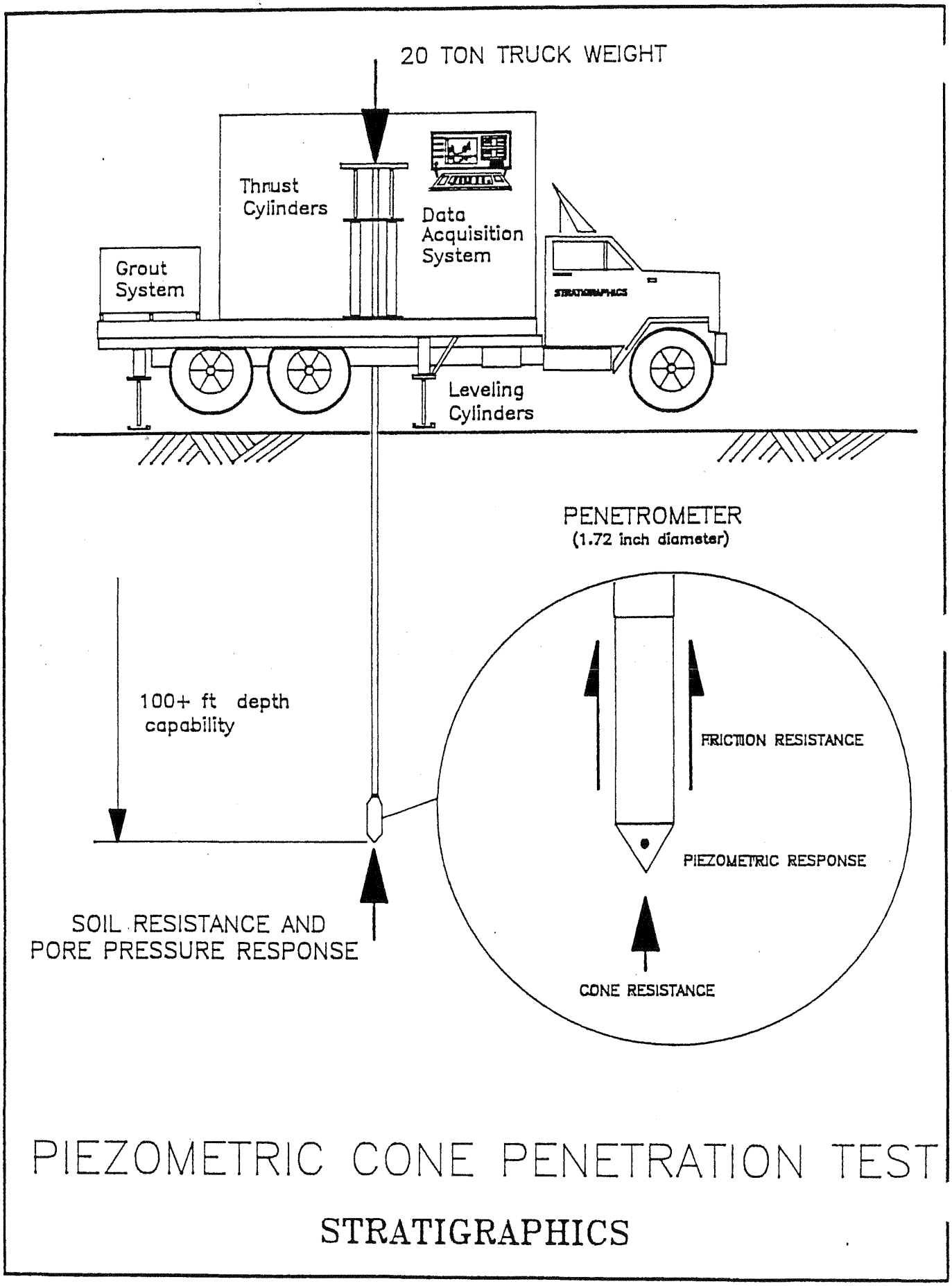



**FIGURE 1 — SCHEMATIC OF ELECTRONIC PIEZOCONE PENETRATION TESTING**

1) traditional discontinuous soil sampling is expensive, while continuous sampling is very expensive;

2) sample reliability is often degraded by poor recovery or other drilling problems;

3) transporting, handling, cataloging, classifying, testing and storing soil samples is both time consuming and expensive;

4) drilling and sampling results in disturbed soil samples;

5) field soil classification and geological logging are often subjective;

6) hydrogeological characterization requires expensive drilled well installations and testing;

7) long lag times, days or weeks, are often required for drilled wells to reach equilibrium conditions in low permeability soils; and

8) large quantities of fluids and cuttings are brought to the surface during drilling operations; in contaminated areas these fluids and cuttings require expensive handling and disposal.

CPTU suffers from none of these disadvantages. CPTU used independently for initial studies or in conjunction with a limited boring program, results in a less costly but more detailed site characterization study. (Olsen and Farr, 1986.)

A major benefit of using CPTU soundings for stratigraphic correlation is that the data are objective, whereas a geologist's visual log is subjective and dependent upon the quality of recovered samples. CPTU sounding data can delineate very small features (+/- 1 inch or 2.54 cm) which can be missed if sample quality is poor in continuously sampled boreholes; much thicker units, of course, are regularly missed in discontinuously sampled boreholes.

CPTU soundings are also more reliable than geophysical logging. CPTU response is directly related to primary soil characteristics such as grain size, void ratio, and permeability. Geophysical logs, such as natural gamma and electrical logs, reflect secondary soil properties such as radioactivity and electrical conductivity. Geophysical logging may also be affected by borehole characteristics and geometry, and groundwater chemistry.

## PRINCIPLES OF PIEZOMETRIC CONE PENETRATION TESTING

### Data Acquisition

Test Equipment and Procedures. CPTU consists of pushing an instrumented penetrometer into the ground while continuously recording the soil resistance and pore pressure response to penetration. A profile of the in situ soil mechanical properties is obtained rapidly and accurately. The penetrometer advance rate of 4 ft/min (2 cm/sec) is such that drained and undrained conditions exist while penetrating sands and clays, respectively. Both American ASTM and European ISSMFE standards specify various aspects of penetrometer test procedures.

The penetrometer is mounted at the end of a series of sounding rods. A set of hydraulic rams is used to push the penetrometer and rods into the soil at a constant rate. The thrust of the rams automatically varies according to soil resistance. A self-contained, 20 ton (180 kN) dead weight truck is used to counteract the thrust of the hydraulic rams, and to house and transport the test equipment (Figure 1). Test production rates vary from about 300 feet (90 m) to over 800 feet (250 m) per day, depending on terrain, pore pressure dissipation monitoring requirements, and hole grouting.

All work is performed from inside the vehicle, so testing can efficiently proceed in all types of weather. Additionally, the enclosed work space shields activities from onlookers, resulting in a much lower visual presence than that associated with drill rig operation.

The use of CPTU should not be planned for sites with shallow bedrock, or extensive boulder, cobble and coarse gravel deposits. Practical depths of penetration are typically limited by the reaction eight of the truck carrying the equipment. Twenty ton dead weight systems can be expected to have sufficient thrust to penetrate as deep as 150 to 230 feet (45 to 70 m) at many sites.

Penetrometer. The penetrometer soil mechanical load sensors consist of a conical tip and cylindrical sleeve. The conical tip has a 60 degree apex angle and a projected cross sectional area of 15 square centimeters; the cylindrical sleeve has a surface area of 200 square centimeters. Elements with other sizes are also in common use.

The interior of the penetrometer consists of two strain gauge load cells that allow simultaneous measurement of cone tip and sleeve loads during penetration. Continuous electrical signals from the downhole load cells are transmitted by an electrical cable strung through the hollow sounding rods to the field computer inside the CPTU truck. The technician monitors a real time display of subsurface soil resistance, pore pressure response, and penetrometer deviation from vertical, for evaluation of test performance.

Piezometer. A miniature diaphragm type pressure transducer is mounted inside the conical tip of the penetrometer. This transducer is coupled to the soil through a fluid filled porous filter, and is used to measure soil pore pressure response as a function of depth during penetration. The dissipation of excess pore pressures can be recorded as a function of time by stopping the penetration process at any particular depth. By allowing sufficient time to pass, a measurement can be obtained of the equilibrium hydraulic head at that depth.

Signal Conditioning and Recording. Data are digitally recorded using a 16 bit A/D (1 part in 32,728) data logger and field computer. Data is displayed in real time on the computer screen during testing, allowing for immediate evaluation of test performance. Preliminary hard copy is provided at the end of a test. Additional quality assurance procedures and report ready data presentation processing are performed in-house after completion of field work. Measurement accuracy and data processing are greatly enhanced using this high resolution digital system.

A schematic of the CPTU equipment is presented in Figure 1. Further details of instrumentation and other sensors that can be used in conjunction with CPTU are presented in Strutynsky and others (1985).

Data Reduction

Measured data consist of depth, time, cone end bearing and friction sleeve resistances, total load on penetrometer, pore pressure response, and penetrometer inclination. Data are recorded and plotted at a 1 Hz frequency, or at about 0.7-inch (2 cm) intervals. The following parameters are computed at each depth increment to enhance test interpretation:

Friction ratio, FR, in percent

$$FR = fs/qc \times 100 \qquad \text{(Eq. 1)}$$

Pore pressure ratio, Bq:

$$Bq = (u-uh)/(qc-Sv) \qquad \text{(Eq. 2)}$$

where:

fs is the measured sleeve resistance, in TSF (tons per square foot);

qc is the measured cone resistance, in TSF;

u is the measured generated pore pressure response, in TSF;

uh is the measured or estimated equilibrium hydraulic head, in TSF; and

Sv is the estimated total soil overburden pressure, in TSF.

Data Interpretation

Sounding Log. The continuous plot of CPTU data versus depth (sounding log) provides direct information on subsurface conditions. Layering is readily apparent, along with relative soil strength and consistency. Inspection of a series of continuous CPTU sounding logs helps to define site stratigraphy with greater ease and more accuracy than most borehole or geophysical techniques. Stratigraphic correlations are most easily made by comparing and overlaying consecutive CPTU soundings on a light table. Characteristic data signatures are visually matched, resulting in tracing of layer continuity across the site.

CPTU Soil Classification. CPTU classifications are based on at least 30 years of observational criteria from great numbers of side by side penetrometer soundings and drilled and sampled boreholes. In general, soils that exhibit high cone resistance and low friction ratio are sands while layers with low end bearing and high friction ratio are clays. Mixed soils, such as clayey sands and silts, exhibit intermediate trends. A detailed description of the use of CPT (no pore pressure measurement) data for soil classification is presented in Douglas and Olsen (1981). An example CPT classification chart is presented in Figure 2. An extension of these classification techniques to include results of CPTU (CPT with pore pressure measurements) is presented in Robertson and others (1986); an example CPTU classification chart is presented in Figure 3.

Cone End Bearing Resistance (qc). A measurement of a soil's bearing capacity is provided by the output of the load cell connected to the conical tip of the penetrometer. Soil bearing capacity depends primarily on grain size, and on the effects of grain size on permeability and compressibility.

Bearing capacity increases exponentially with grain size. Clays have low bearing capacity, while silt bearing capacity is typically somewhat higher. Sands have very high bearing capacity - the bearing capacity of a sand is from one to two orders of magnitude greater than that of a clay. Thus, the cone end bearing resistance is extremely sensitive to sand content.

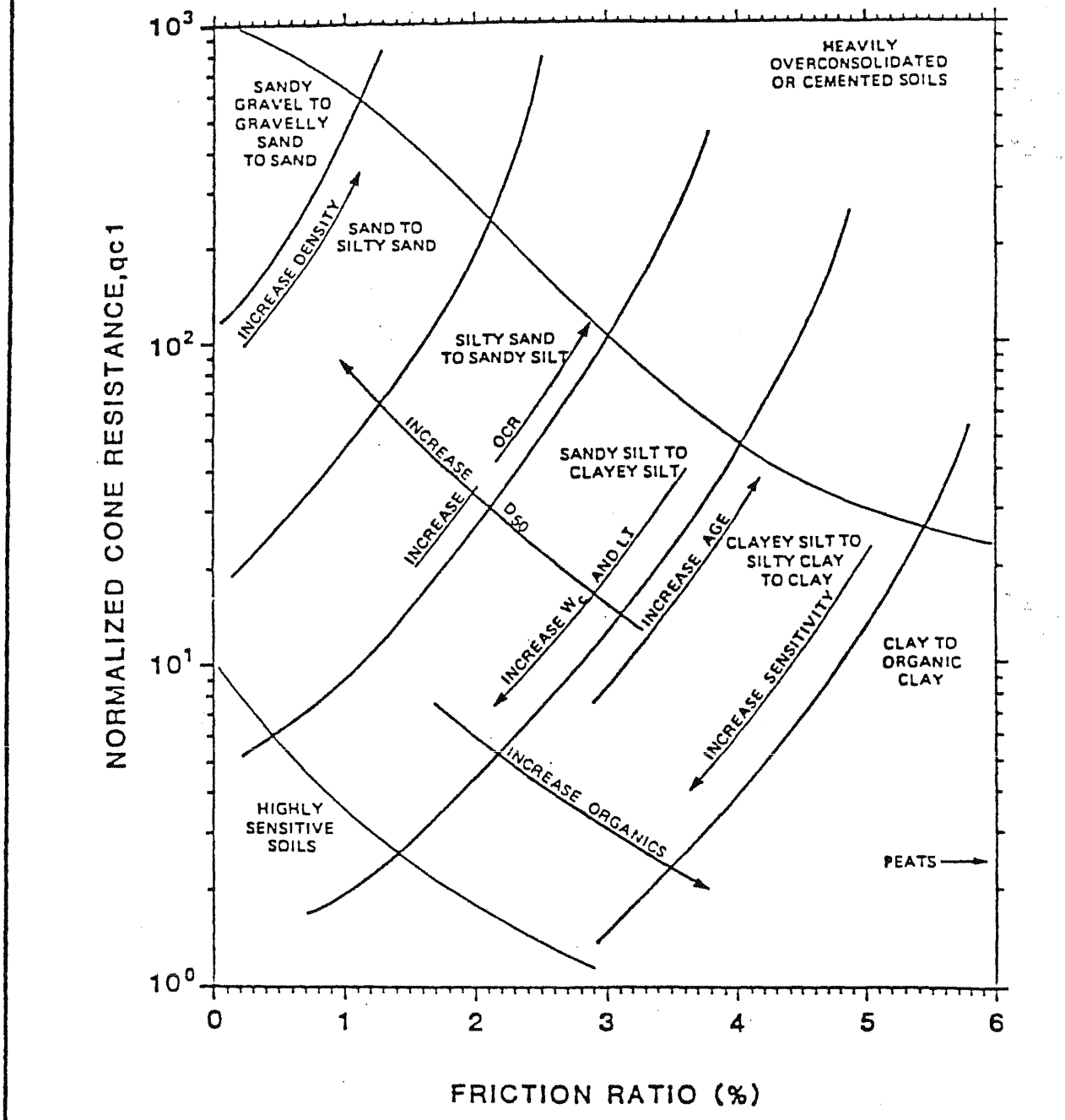
Typical cone end bearing measurements are:

1) 2 - 12 TSF (0.2 - 1.2 MN) in Holocene clays, depending on depth;

2) 20 - 40 TSF (2 - 4 MN) in desiccated clays, and in preloaded Pleistocene and older clays;

3) 5 - 50 TSF (0.5 - 5 MN) in clayey silts to sandy silts;

4) 30 - 60 TSF (3 - 5 MN) in loose fine sands;

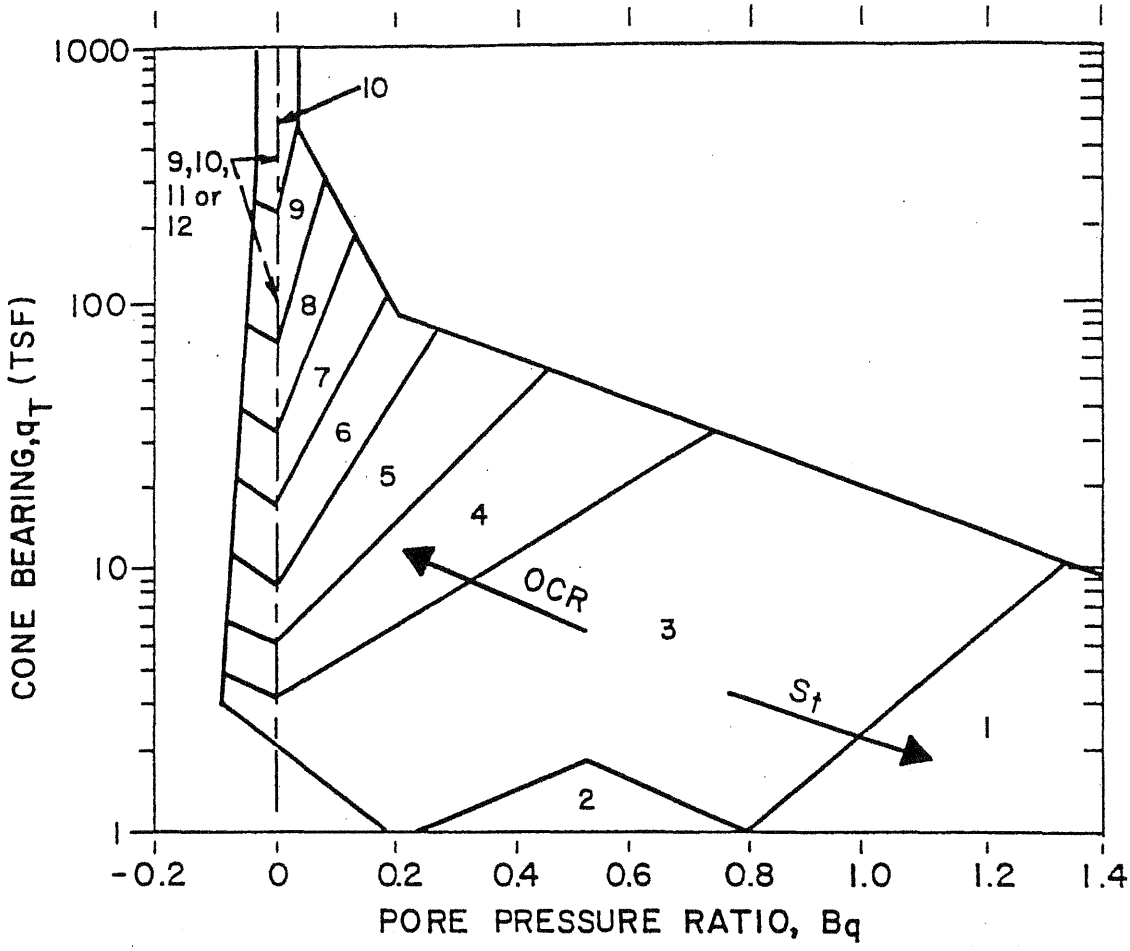



SOIL BEHAVIOR TYPE CLASSIFICATION CHART

After Douglas and Olsen (1981)

STRATIGRAPHICS

FIGURE 2 — CPT SOIL BEHAVIOR TYPE CLASSIFICATION CHART




| ZONE | SOIL BEHAVIOUR TYPE |
|---|---|
| 1 | SENSITIVE FINE GRAINED |
| 2 | ORGANIC MATERIAL |
| 3 | CLAY |
| 4 | SILTY CLAY TO CLAY |
| 5 | CLAYEY SILT TO SILTY CLAY |
| 6 | SANDY SILT TO CLAYEY SILT |
| 7 | SILTY SAND TO SANDY SILT |
| 8 | SAND TO SILTY SAND |
| 9 | SAND |
| 10 | GRAVELLY SAND TO SAND |
| 11 | VERY STIFF FINE GRAINED (*) |
| 12 | SAND TO CLAYEY SAND (*) |
| (*) | OVERCONSOLIDATED OR CEMENTED |

SOURCE: ROBERTSON & OTHERS (1986)

**FIGURE 3 — PROPOSED SOIL BEHAVIOR TYPE CLASSIFICATION SYSTEM FROM CPTU DATA**

5) 150 - 400 TSF (15 - 40 MN ) in dense sands; and

6) 200 - 800 TSF (20 - 80 MN) in gravelly sands and gravels.

Friction Sleeve Resistance (fs). The friction sleeve resistance of a soil varies approximately as a linear function of grain size and is inversely proportional to porosity. This measurement does not vary as dramatically as the cone end bearing resistance in stratified deposits. The friction sleeve resistance reflects soil large strain (disturbed) properties, as the sleeve interacts with soil that has already undergone bearing capacity failure, induced by the cone tip.

Friction Ratio (FR). The friction ratio is calculated by dividing the friction sleeve resistance by the cone end bearing resistance, expressed as a percentage (Equation 2). The friction ratio is low (0.5 - 2 percent) in sands due to the very high cone end bearing in sand. The friction ratio is high in clays (3 - 8 percent), and intermediate (1 - 5 percent) in mixed soils such as clayey silts and sandy clays.

Generated Pore Pressure (u). The soil water pressure response to penetrometer insertion depends on soil saturation, permeability and compressibility. The pore pressure response in unsaturated soils is zero. No pore pressures in excess of equilibrium are generated, or the dissipation of generated excess pressures occurs much more rapidly than the 1 second response time of the CPTU piezometer-data acquisition system in high or medium permeability (k greater than about $1.0 \times 10^{-4}$ cm/sec) soils. Thus in saturated, permeable, clean sands the CPTU pore pressure response provides a direct measurement of the hydraulic head at that depth.

As soil permeability decreases below about $1.0 \times 10^{-4}$ cm/sec, soil volumetric distortion due to penetrometer advance results in excess pore pressure generation. These generated excess pressures dissipate much more slowly than the response time of the piezometer system. Generated pore pressures in saturated low to very low permeability soils reflect both permeability and compressibility effects. High generated pore pressures are measured in both low compressibility dirty sands or high compressibility clays.

Pore Pressure Ratio (Bq). The pore pressure ratio is calculated as the generated pore pressure (in excess of equilibrium) divided by the cone end bearing resistance (Equation 2). This normalized parameter is useful in discrimination of soil compressibility and permeability effects. Due to the high cone end bearing in low compressibility, dirty sands, the pore pressure ratio typically ranges from about 0.05 to 0.20 in these soils. In saturated, high compressibility clays, the pore pressure ratio typically ranges from about 0.4 to over 1.0. Thus, the CPTU pore pressure ratio is useful, along with cone end bearing and friction ratio, in classifying lower permeability soils.

Pore Pressure Dissipations. By stopping the penetration process and monitoring the decay of generated pore pressure versus time, an in situ measurement is obtained of the equilibrium hydraulic head at that particular depth. The dissipation rate also reveals information on soil compressibility and permeability. Thus, another discrimination between dirty sands and clays can be based on the amount of time required to dissipate generated excess pore pressures. Long dissipation times are associated with clays, while short times indicate sands.

## EXAMPLES OF THE USE OF PIEZOMETRIC CONE PENETRATION TESTING IN HYDROGEOLOGICAL INVESTIGATIONS

### Stratigraphy

At a landfill in northeastern Illinois, CPTU soundings were used to investigate the hydrogeological conditions at proposed monitoring well locations. CPTU data were used to predetermine well design without expensive drilled continuous sampling. Stratigraphic continuity was quickly evaluated at the site by doing a series of CPTU soundings. The depths to the uppermost aquifer, extent of aquitards and locations of discontinuous sand lenses were readily identified on cross-sections developed from the CPTU sounding logs. Permanent monitoring wells were later constructed with hollow stem augers in the uppermost aquifer at the depths indicated by the CPTU soundings.

The CPTU soundings clearly defined the site stratigraphy - clay till overlying a sandy silt to silty sand aquifer. A plot of the cone resistance and friction ratio versus depth is shown in Figure 4 for CPTU Sounding D-6. Note the abrupt decrease in the friction ratio and large increase in the cone end bearing resistance at a depth of 76 feet indicating a sharp clay to sand transition. This sand unit was identified as the uppermost aquifer at the site.

The contrast between the clay till and sand is also very clear on the plot of the pore pressure ratio, Bq, versus cone end bearing resistance for the same sounding (Figure 5). The pore pressure ratio, Bq, is high in saturated clays and low in sands. Above 76 feet, the high pore pressure ratio and low cone end bearing resistance indicate a saturated clay, while the sand unit below 76 feet exhibits a low pore pressure ratio and high cone end bearing resistance.

### Position of the Water Table or Capillary Fringe

CPTU soundings can be used to determine the position of the water table or zone of saturation. Figure 6 shows the water table in a thick sand unit as interpreted from the generated pore pressure plot of Sounding P-17 at JFK Airport, New York, New York. A CPTU sounding log in a clay till is presented in Figure 7. The position of the top of the fully saturated zone in the clay was about 7 feet below the ground surface at this location.

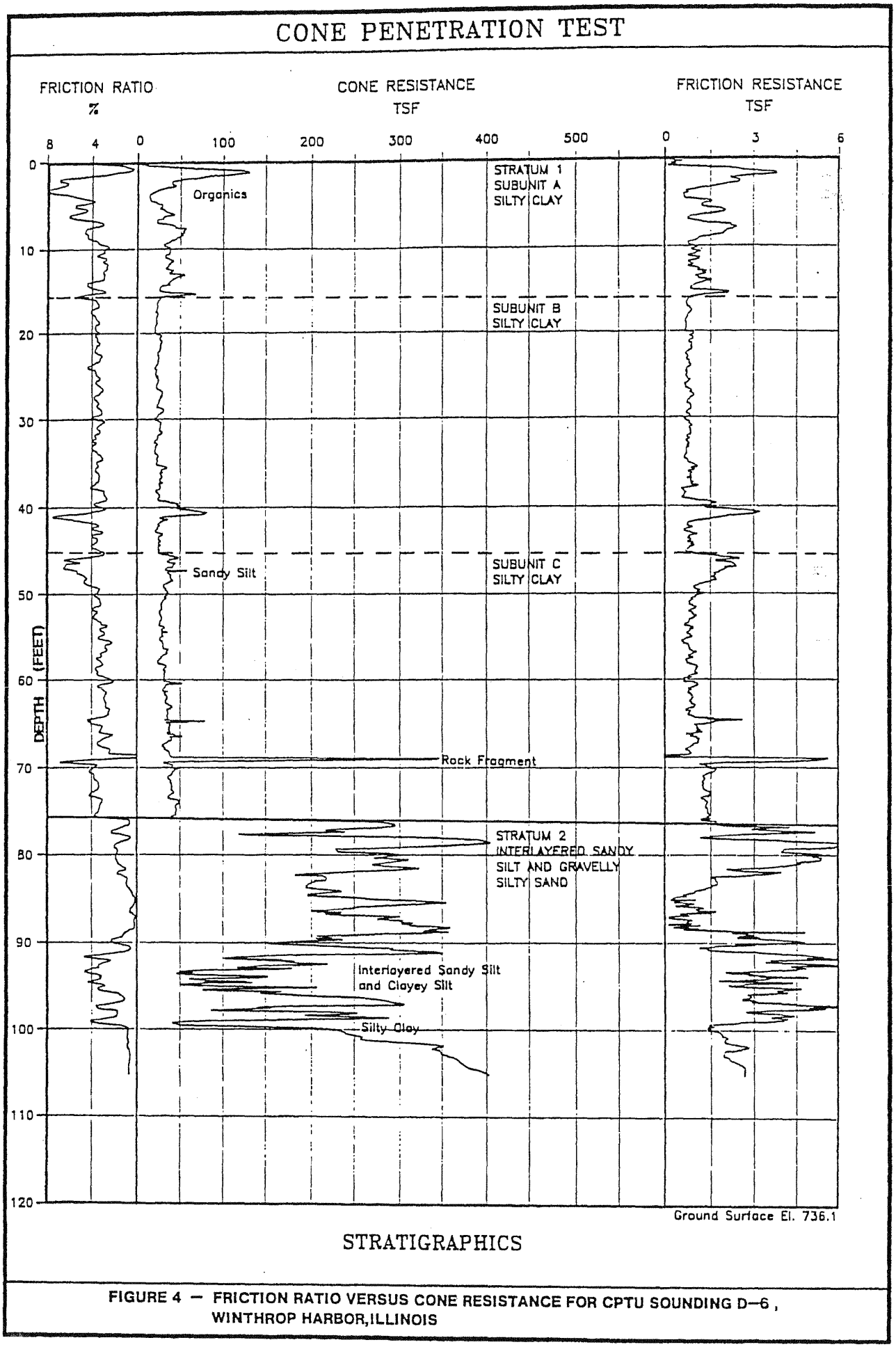



**FIGURE 4 — FRICTION RATIO VERSUS CONE RESISTANCE FOR CPTU SOUNDING D–6 , WINTHROP HARBOR,ILLINOIS**

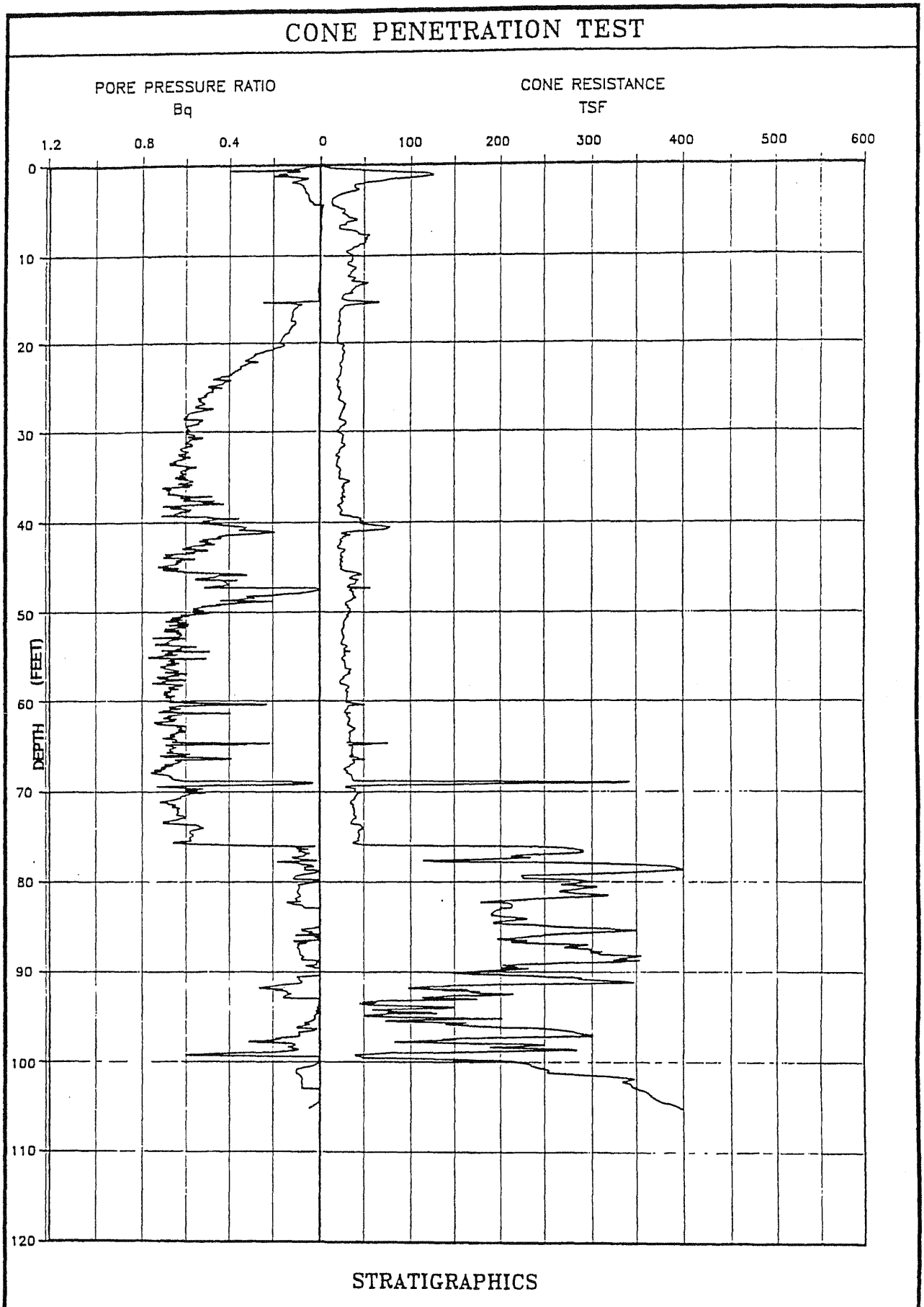



FIGURE 5 – PORE PRESSURE RATIO VERSUS CONE RESISTANCE FOR CPTU SOUNDING D–6, WINTHROP HARBOR, ILLINOIS

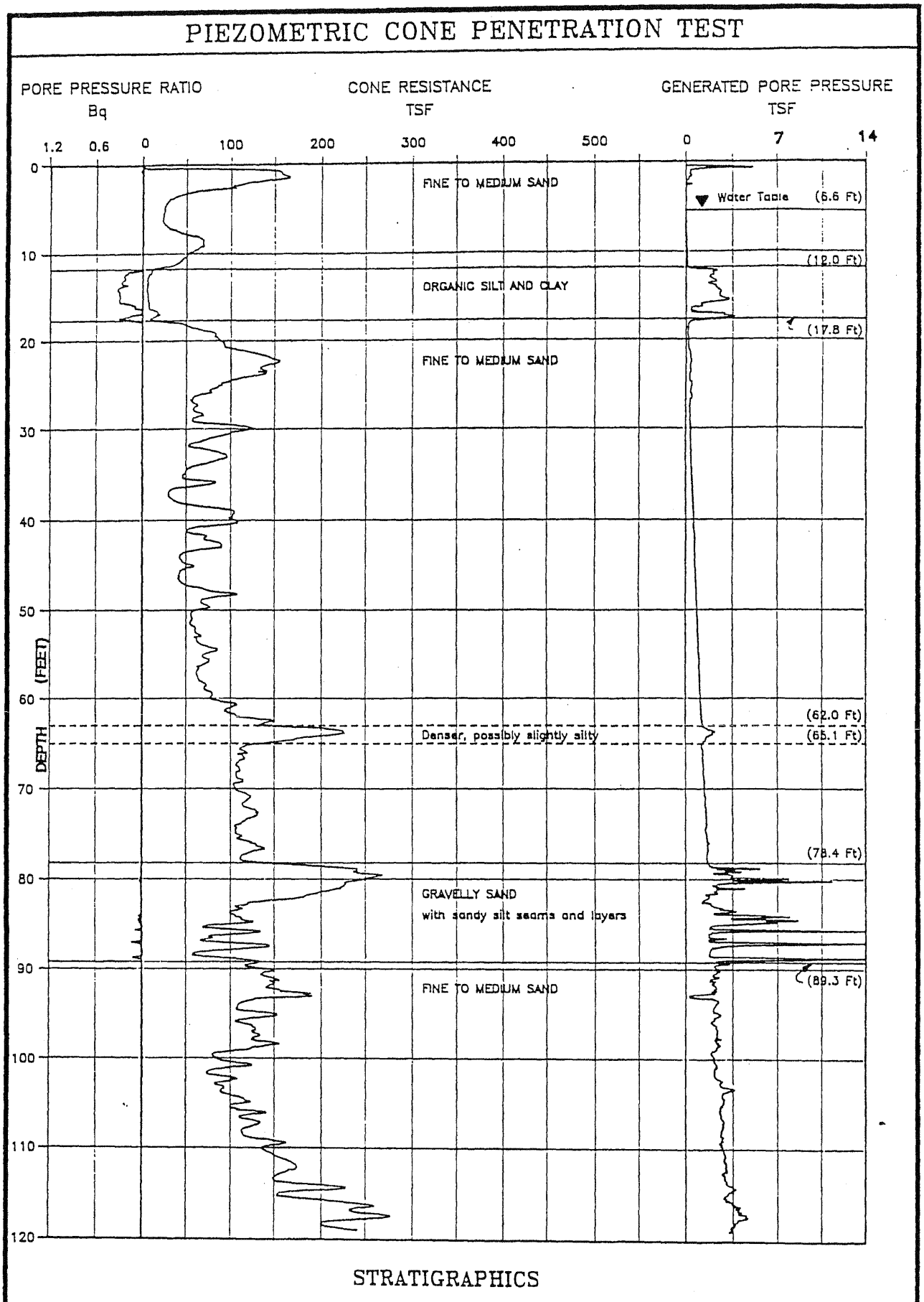



**FIGURE 6 — PORE PRESSURE RATIO VERSUS CONE RESISTANCE AND GENERATED PORE PRESSURE FOR CPTU SOUNDING P—17 , NEW YORK CITY**

# CONE PENETRATION TEST

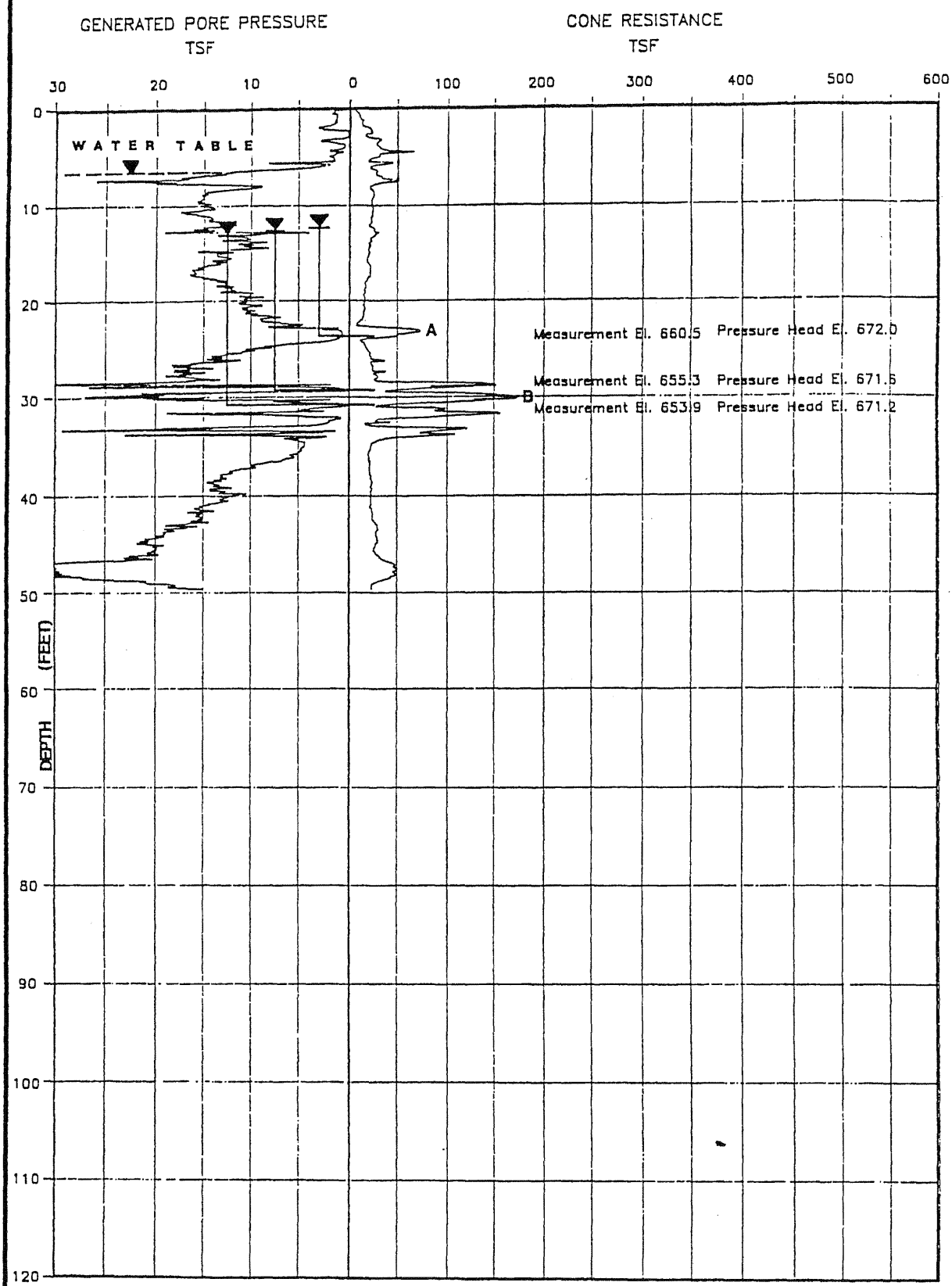



**FIGURE 7 – GENERATED PORE PRESSURE VERSUS CONE RESISTANCE FOR CPTU SOUNDING D–1, WINTHROP HARBOR, ILLINOIS**

Change of Hydraulic Head with Depth

By pausing in the penetration process and allowing generated pore pressures to dissipate to equilibrium conditions, the potentiometric surface (as would be measured in a fixed piezometer) is obtained at any particular depth. Therefore, vertical gradients and hydraulic head relationships can be investigated in one CPTU sounding without the significant time and cost expenditure associated with a cluster of fixed piezometers.

At the landfill in northeastern Illinois, it was important to determine if the uppermost aquifer discharged to a nearby swamp. CPTU Sounding D-1 indicated that the hydraulic head in a discontinuous sand unit (indicated by "A" in Figure 7) above the aquifer, was lower than the surface elevation of the overlying swamp. Also, the head in this unit was 0.5 feet greater than the hydraulic head in the aquifer (indicated by "B" in Figure 7) itself. These data indicate a downward gradient, showing that the swampy area of Sounding D-1 was a recharge area for the aquifer, rather than being a discharge area from the aquifer to the swamp.

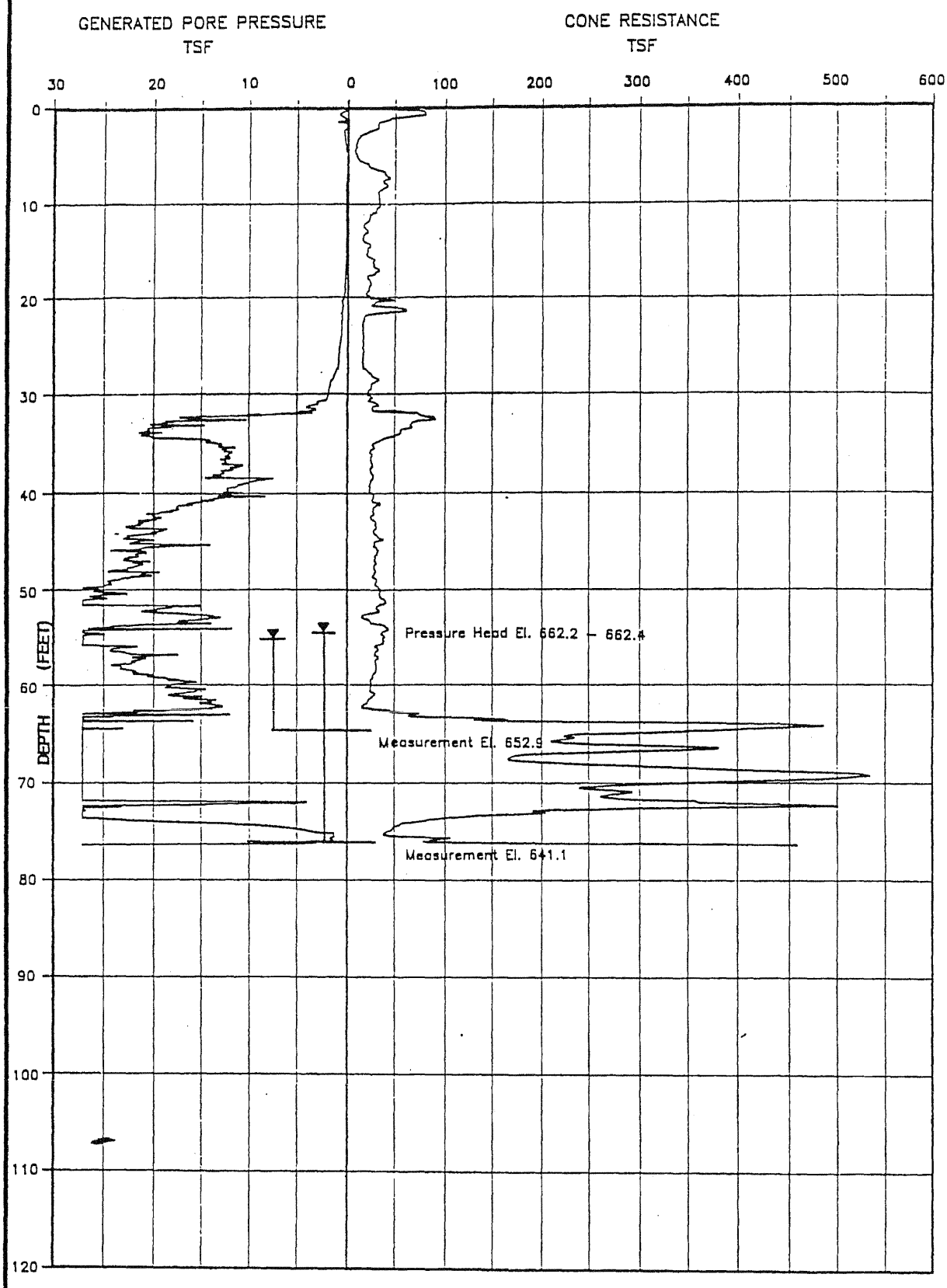
The determination of lateral flow is also important in that it identifies the sand unit as a continuous aquifer with lateral extent. Areas of lateral flow are indicated by constant hydraulic heads with depth. In CPTU Sounding D-4 (Figure 8) at the landfill in northeastern Illinois, the hydraulic head measured at different depths in the uppermost aquifer was approximately the same, indicating a region of predominantly lateral flow.

The CPTU piezometric sounding is useful not only in locating the aquifers but in determining the head in confined aquifers before installing wells. The pore pressure in Sounding D-6 indicated that the head in the aquifer was just above the top of the unit (Figure 9). This low head was confirmed by the drilled monitoring well which was installed based on the CPTU-defined stratigraphy.

Direction of Groundwater Flow and Gradient

The United States Environmental Protection Agency generally requires a minimum of one up-gradient well and three down-gradient wells to monitor a landfill. In many cases the direction of groundwater flow is not known and must be determined before the monitoring well system can be designed and developed. Usually, several drilled test wells or piezometers are installed and surveyed to obtain this information. Groundwater levels are measured after the wells/piezometers have stabilized. This process can take days or weeks, depending upon site conditions. If the terrain is suitable and the water table is within the depth capability of the equipment, use of CPTU can result in a more detailed characterization and at less cost than a drilled investigation. A map of the water table or potentiometric surface can be rapidly made from the CPTU data utilizing surveyed ground surface elevations of the sounding locations.

# CONE PENETRATION TEST




STRATIGRAPHICS

**F I G U R E 8 — GENERATED PORE PRESSURE VERSUS CONE RESISTANCE FOR CPTU SOUNDING D–4, WINTHROP HARBOR, ILLINOIS**

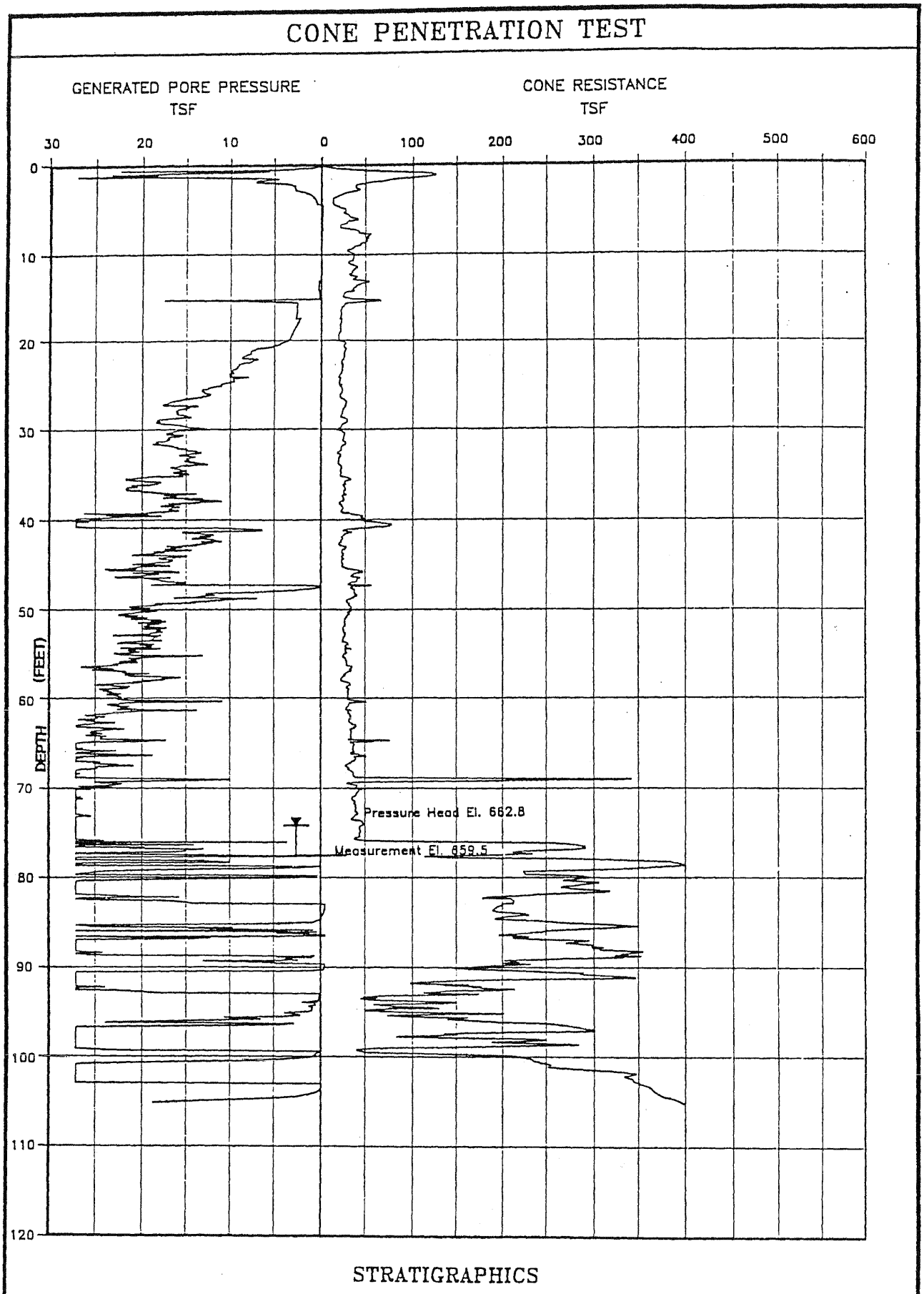



FIGURE 9 — GENERATED PORE PRESSURE VERSUS CONE RESISTANCE FOR CPTU SOUNDING D—6, WINTHROP HARBOR, ILLINOIS

The gradient of the water table or potentiometric surface is related to the transmissivity. Other factors being equal, areas of flatter gradient are generally more transmissive (Table 1). The areas of flatter gradient are evident from the water table or potentiometric map. The gradient can be calculated by dividing the head loss by the distance across which the head is lost. Along with the other hydrogeological information the gradients derived from the CPTU data may be used in groundwater exploration before test drilling, as there is a direct relationship between transmissivity and water supply potential (well yield).

Aquifer Coefficients

Permeability and Transmissivity Estimates. An estimate of the permeability can be made from the CPTU classification of the soil encountered. For example, in CPTU Sounding D-6 (Figure 4) at the northeastern Illinois landfill, a silty sand aquifer was identified below 76 feet. According to Tables 2 and 3, the permeability of silty sands is in the range of $1.0 \times 10^{-3}$ to $1.0 \times 10^{-5}$ cm/sec. A slug test conducted subsequently in a drilled monitoring well constructed at the D-6 location, indicated a permeability of $1.8 \times 10^{-4}$ cm/sec, which was within the estimated range.

By using permeability values estimated from CPTU soil classifications, and multiplying by the thickness of the unit as determined by the CPTU sounding, an approximate value of transmissivity can be obtained before drilling and pump testing. This estimate of transmissivity can be an important factor in deciding whether or not to drill a test well at the sounding location during a groundwater exploration investigation.

Pore Pressure Dissipation Permeability Values. By pausing during the penetration process, and allowing the pore pressures generated by penetrometer insertion to dissipate with time, a horizontal permeability value at the depth of the penetrometer can be obtained based on the measured time rate of dissipation. Computed permeabilities from CPTU pore pressure dissipations are representative of the disturbed soil immediately in contact with the CPTU piezometric filter. This zone has a vertical extent of only 1/4 to 1 inch (0.6 - 2.5 cm). An assumption of soil compressibility is also required to compute permeability from CPTU data.

Examples of measured dissipation curves are provided in Figure 10. The evaluation of horizontal permeability is performed using normalized dissipation plots, as shown in Figure 11, and procedures detailed in Baligh and Levandoux (1980) or Robertson et al (1986). The normalized dissipation data (Figure 11) from 20.5 and 50.0 feet were obtained in the silty clay tills in CPTU Sounding D-1 at the landfill in northeastern Illinois. These data indicate horizontal permeabilities of about $1.0 \times 10^{-6}$ cm/sec in the silty clay till. This value is in good agreement with slug test results in monitoring wells finished in the same stratum.

## TABLE 1

## AQUIFER HORIZONTAL GRADIENTS

| | |
|---|---|
| .0005 - .002 | good aquifers |
| about .01 | poor aquifers |
| >.05 | aquitards |

Source: Mandel and Shiftan (1981, p. 172).

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## TABLE 2

## ESTIMATED HYDRAULIC CONDUCTIVITY OF TYPICAL GEOLOGIC MATERIALS IN ILLINOIS

| Geologic material | cm/sec | gpd/ft$^2$ | Comments |
|---|---|---|---|
| Clean sand and gravel | $>1 \times 10^{-3}$ | >20 | May be highly permeable |
| Fine sand and silty sand | $1 \times 10^{-5}$ to $1 \times 10^{-3}$ | 0.2 to 20 | — |
| Silt (loess, colluvium, etc.) | $1 \times 10^{-6}$ to $1 \times 10^{-4}$ | $1 \times 10^{-1}$ to 2 | — |
| Gravelly till, less than 10% clay | $1 \times 10^{-7}$ to $1 \times 10^{-5}$ | $2 \times 10^{-3}$ to $2 \times 10^{-1}$ | Often contains gravel/sand lenses or zones |
| Till, less than 25% clay | $1 \times 10^{-8}$ to $1 \times 10^{-6}$ | $2 \times 10^{-4}$ to $2 \times 10^{-3}$ | Often contains gravel/sand lenses or zones |
| Clayey tills, greater than 25% clay | $1 \times 10^{-9}$ to $1 \times 10^{-7}$ | $2 \times 10^{-5}$ to $2 \times 10^{-3}$ | Often contains gravel/sand lenses or zones |
| Sandstone | $>1 \times 10^{-4}$ | >2 | — |
| Cemented fine sandstone | $1 \times 10^{-7}$ to $1 \times 10^{-4}$ | $2 \times 10^{-3}$ to 2 | Frequently fractured |
| Fractured rock | $>1 \times 10^{-4}$ | >2 | May have extremely high hydraulic conductivity |
| Shale | $1 \times 10^{-11}$ to $1 \times 10^{-7}$ | $2 \times 10^{-7}$ to $2 \times 10^{-3}$ | Often fractured |
| Dense limestone/dolomite (unfractured) | $1 \times 10^{-11}$ to $1 \times 10^{-8}$ | $2 \times 10^{-7}$ to $2 \times 10^{-4}$ | — |

Source: Berg and Others (1984)

TABLE 3

RELATIVE VALUES OF PERMEABILITY

| Relative Permeability | Values of k (cm/sec) | Typical Soil |
|---|---|---|
| Very permeable | Over $1 \times 10^{-1}$ | Coarse gravel |
| Medium permeability | $1 \times 10^{-1}$ to $1 \times 10^{-3}$ | Sand, fine sand |
| Low permeability | $1 \times 10^{-3}$ to $1 \times 10^{-5}$ | Silty sand, dirty sand |
| Very Low permeability | $1 \times 10^{-5}$ to $1 \times 10^{-7}$ | Clay |
| Impervious | Less than $1 \times 10^{-7}$ | Clay |

Source: Sowers and Sowers (1970, p.93)

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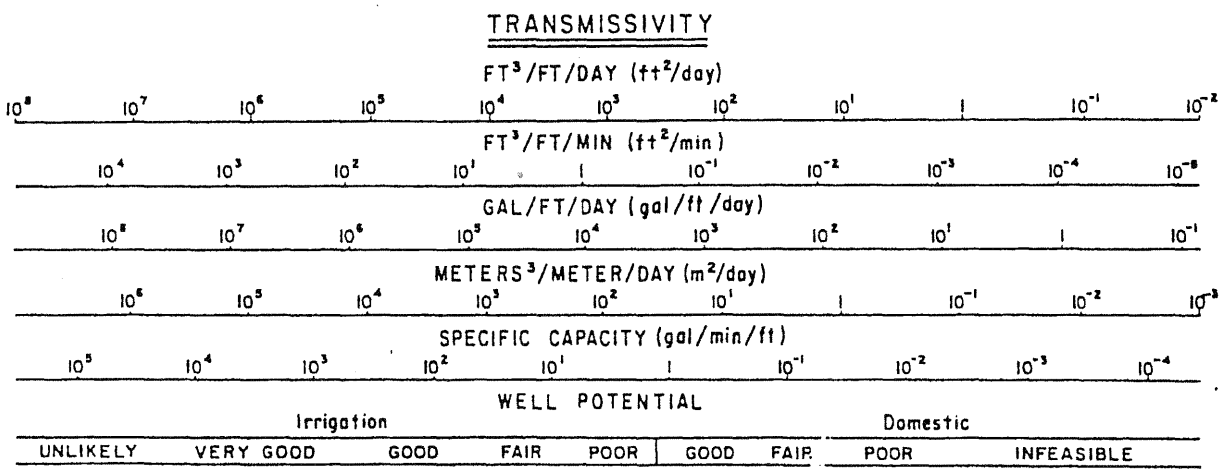
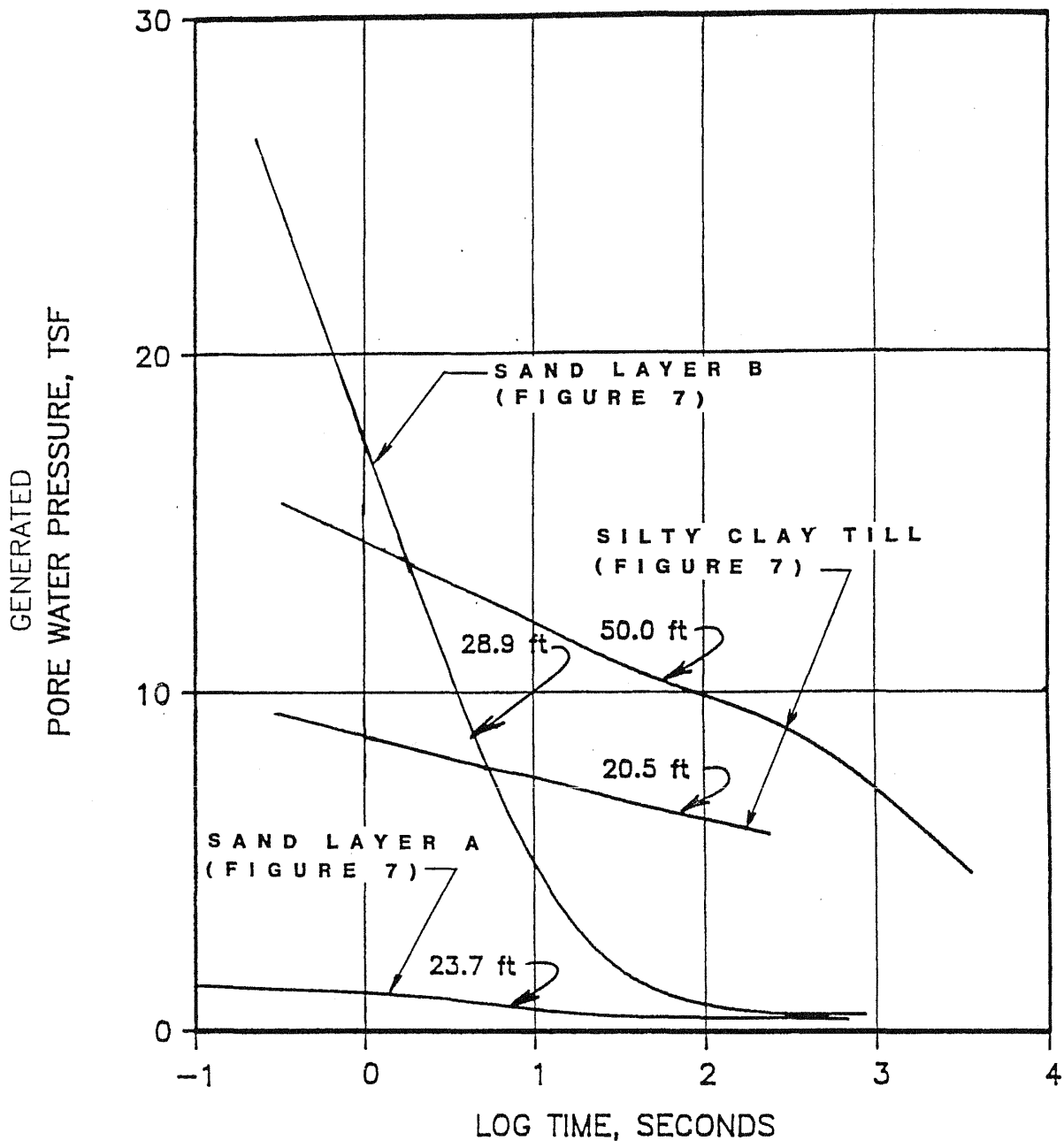
TABLE 4

COMPARISON OF TRANSMISSIVITY, SPECIFIC CAPACITY, AND WELL POTENTIAL




NOTES: Transmissivity (T) = KM where
K = Permeability
M = Saturated thickness of the aquifer
Specific capacity values based on pumping period of approximately 8-hours but are otherwise generalized.

Source: U.S. Bureau of Reclamation (1977, Figure 2-4)




CPT SOUNDING D−1

| STRATIGRAPHICS |
| --- |
| CPT DISSIPATION DATA |
| LAKE COUNTY, IL |

FIGURE 10 — GENERATED PORE WATER PRESSURE, CPTU SOUNDING D−1, WINTHROP HARBOR, ILLINOIS

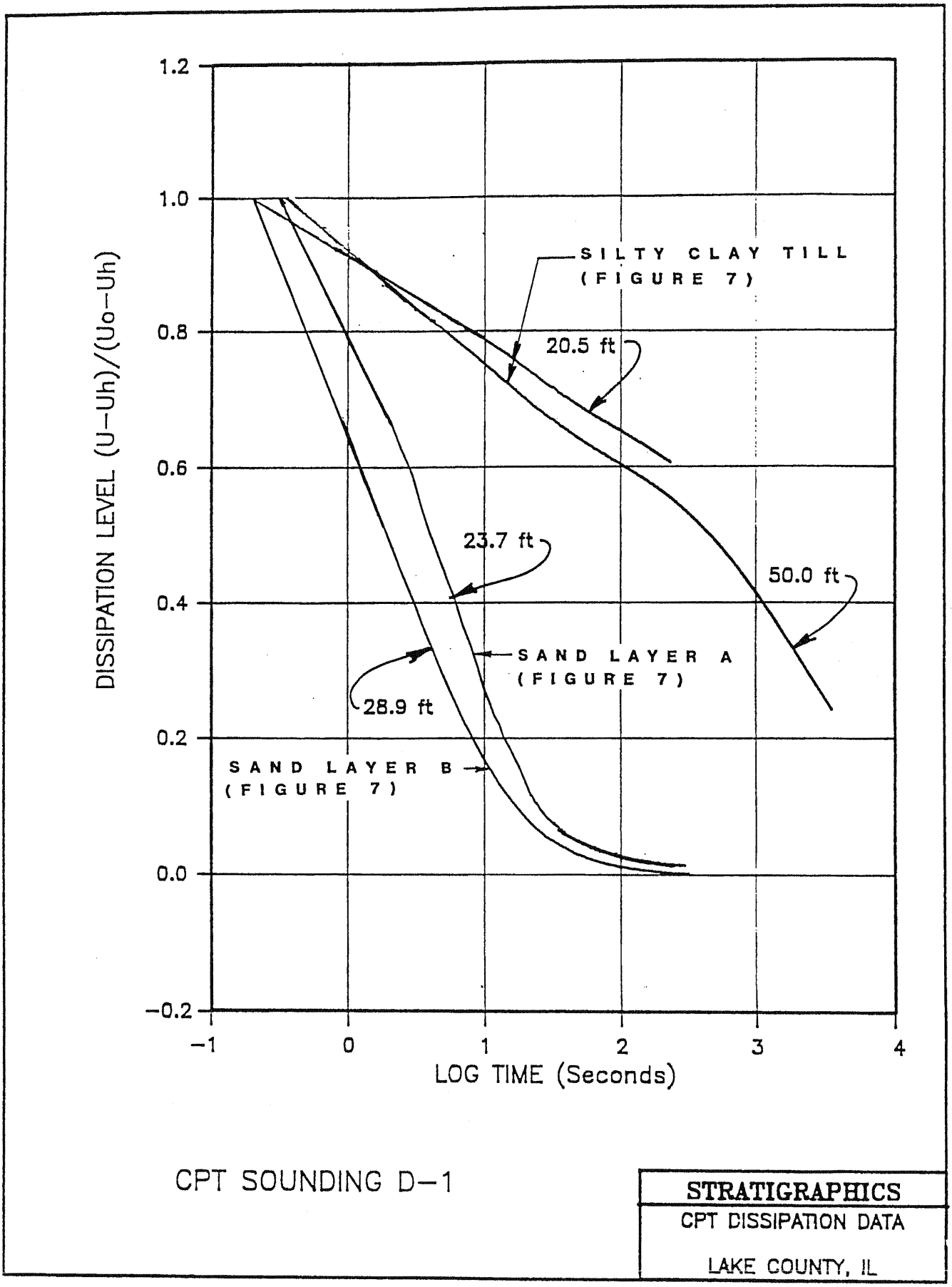



FIGURE 11 – PORE WATER PRESSURE DISSIPATION LEVEL , CPTU SOUNDING D–1, WINTHROP HARBOR, ILLINOIS

The other dissipation data in Figure 11 were obtained in a discontinuous silty sand layer in CPTU Sounding D-1, at 23.8 feet, and in the silty sand uppermost aquifer at 28.9 feet. These horizontal permeabilities are indicated by the CPTU dissipation data to range from about 1.5 x $10^{-5}$ to 7.0 x $10^{-5}$ cm/sec. A slug test in the uppermost aquifer in a monitoring well drilled at location D-1 indicated a permeability of about 2.0 x $10^{-5}$ cm/sec, in the lower range of values determined from CPTU. The monitoring well screen, at a depth of 27 to 35 feet, was set opposite interbedded silty sand and silty clay layers.

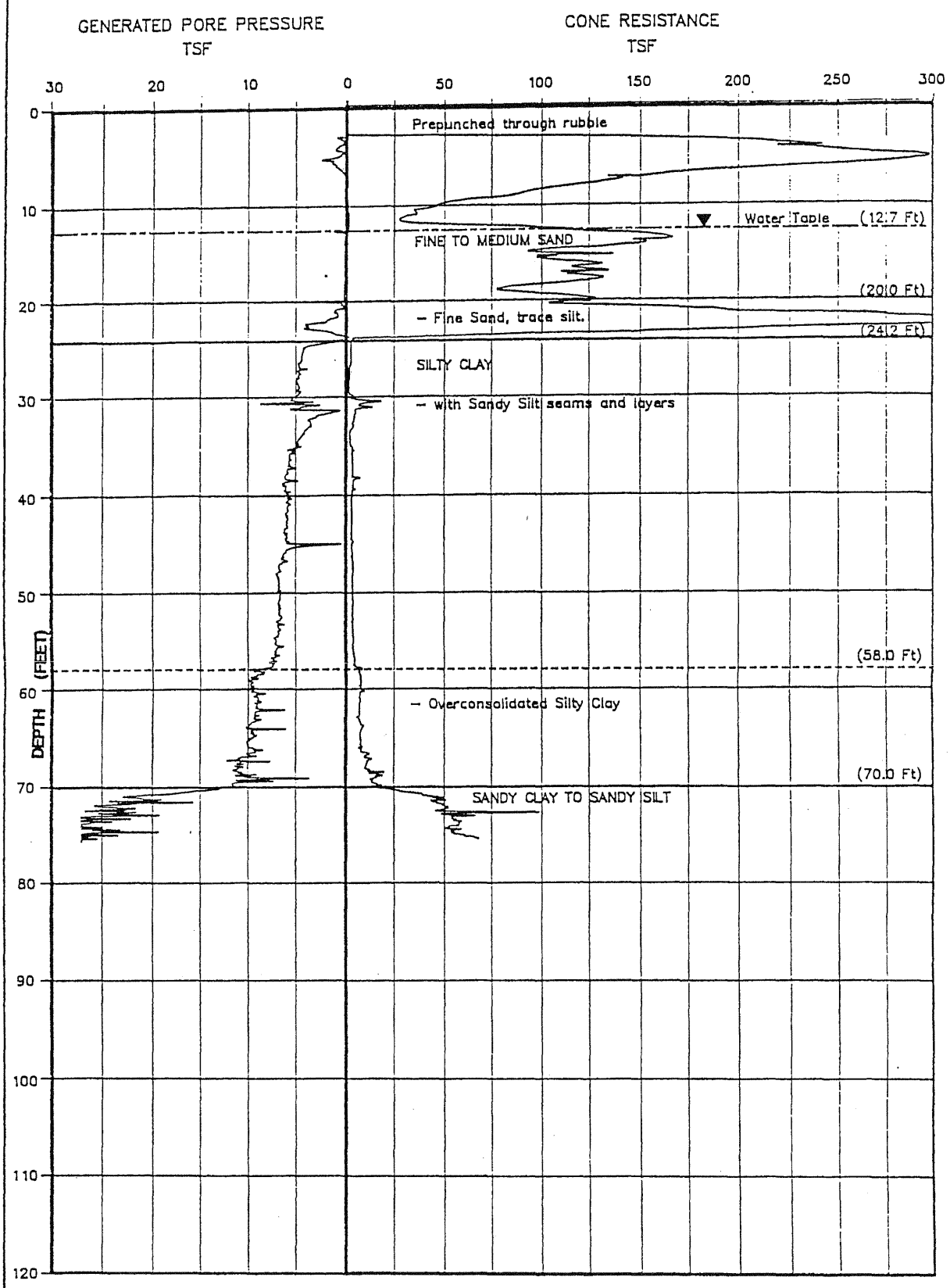
Example of Estimation of Potential Well Yield From CPTU Sounding Data

A potential well yield of at least 2.0 gpm (0.13 liters/sec) was estimated from CPTU data in a thin water table sand in Evanston, Illinois. Interpretation of the CPTU Sounding NW-1 (Figure 12) indicated a saturated, clean, fine to medium sand from 12.7 to 20 feet below the surface. Based on Tables 2 and 3, the permeability of this zone was estimated as about 5.0 x $10^{-3}$ cm/sec. Multiplying the saturated thickness by the permeability gives a transmissivity (T) of 10 square meters/day or 800 gpd/ft. According to Table 4, this T is in the range of good aquifers for domestic supplies, but not for irrigation supplies. The specific capacity is estimated from Figure 13. Using a water table coefficient of storage of 0.2 and a T of 800 gpd/ft, the specific capacity was estimated as 0.8 gpm/ft of drawdown.

The lower third of a water table aquifer is screened in typical installations. A better design in this thin aquifer would be installing a 5-foot screen with a pump set one foot above the bottom. Allowing one foot for the pump and 3 feet to cover the pump, the remaining available drawdown is only 2.5 feet. Multiplying by the specific capacity of 0.8 gpm/ft indicates an estimated yield of 2.0 gpm.

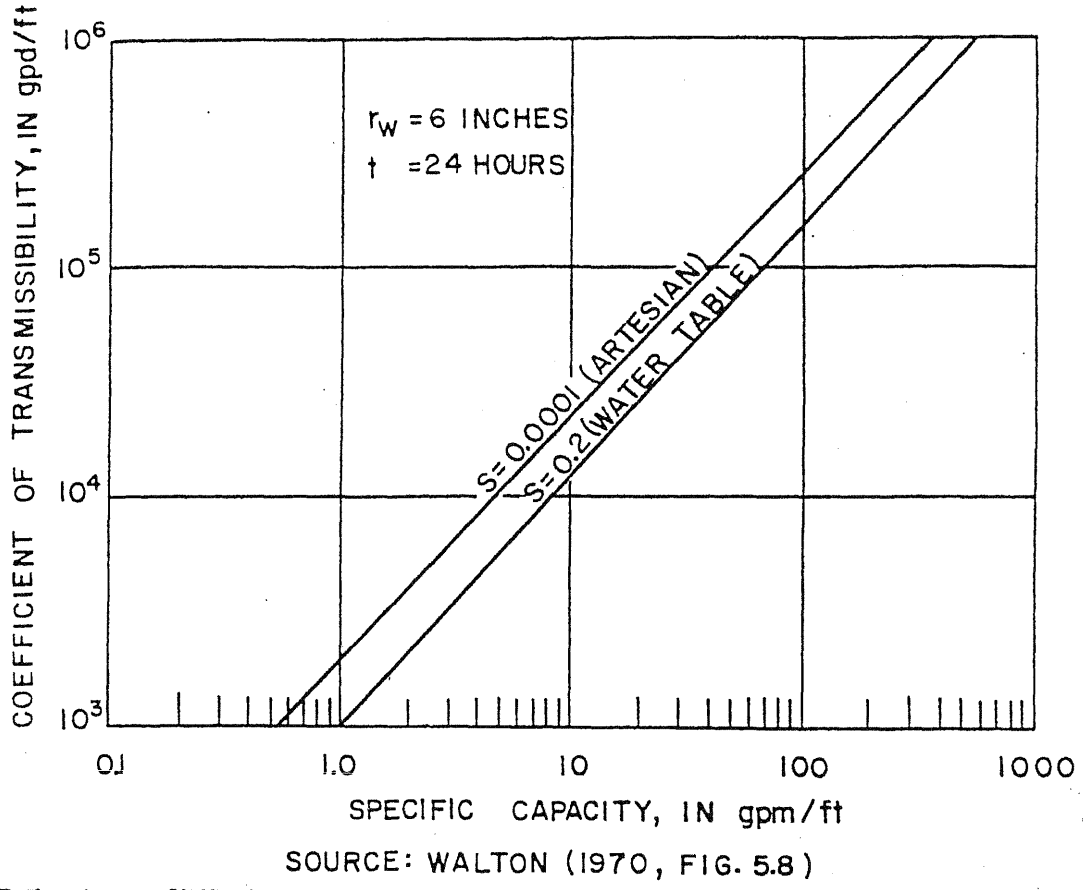
Examination of the CPTU Sounding NW-1 (Figure 12) indicates 4 feet of fine sand and silt below the aquifer which could also contribute to the well yield. Therefore, the estimate is considered conservative. By prior estimation of potential well yields using CPTU data, decisions regarding the locations of expensive test wells and pumping tests can be more intelligently made.

# PIEZOMETRIC CONE PENETRATION TEST




STRATIGRAPHICS

**FIGURE 12 – GENERATED PORE PRESSURE VERSUS CONE RESISTANCE FOR CPTU SOUNDING NW–1, EVANSTON, ILLINOIS**




SOURCE: WALTON (1970, FIG. 5.8)

FIGURE 13 — GRAPH OF SPECIFIC CAPACITY VERSUS TRANSMISSIVITY AFTER 24 HOURS OF PUMPING

Installation of Piezometers in CPTU Sounding Holes

Small diameter, standpipe piezometers may be installed in CPTU sounding holes, in many places, at a significant savings of time and money compared to drilling methods. Four installation methods are available for placing standpipe piezometers using CPTU equipment. These four methods are: 1) pushed 1 1/4-inch (nominal) steel well point, 2) PVC riser in temporarily cased hole, 3) PVC riser in open hole, and 4) pushed 2-inch (nominal) steel well point.

Of the four methods, the 1 1/4-inch (nominal) steel well point is most preferred. The advantages of this installation technique are: 1) depth of installation nearly equal to the depth of a CPTU sounding; 2) rapid installation with minimal personnel contact with possibly contaminated soils; 3) exceptional sealing of risers to formation, with excellent isolation of well screen; and 4) low labor cost due to rapid installation with moderate material cost. One disadvantage of this technique is that no sand or gravel pack can be used as a well screen filter other than that which may naturally occur at the screened interval. Another is the diameter, which is too small for a submersible pump.

The second CPTU standpipe piezometer installation technique consists of the following steps: a small diameter hole is punched to the desired depth, either during CPTU, or by using an uninstrumented conical tip. A 2-inch (nominal) steel casing is then pushed down the pre-punched hole to the required depth. The end of this casing is closed with a slip-on cap, which remains in the soil after casing withdrawal. Three-quarter inch (nominal) PVC well screen and risers are lowered to the bottom of the casing. Sand pack is poured down the annulus, tamped with a long thin steel rod around the well screen, as the casing is slowly withdrawn, leaving the riser down-hole. A bentonite seal is placed above the sand pack to isolate the well point. The advantages of this technique are: 1) low cost for PVC well materials; 2) moderate labor time during installation; and 3) hole kept open by temporary casing. A disadvantage of this technique is that the completion depth is limited due to the use of the relatively large diameter 2-inch casing. The maximum depth of installation depends on site stratigraphy, but is certainly much less than the depth that can be achieved with the CPTU sounding itself. Also the small diameter riser (0.83-inch ID) makes the well difficult to develop if the water level is deeper than the lift of a suction pump. It must then be developed and sampled with a bailer.

The third technique, PVC riser in open hole, is the least expensive, both in installation time and materials, but is potentially also the least reliable. A 3/4-inch or 1-inch (nominal) PVC well screen and riser is lowered into the open hole left by the penetrometer. In squeezing soils, the hole may be enlarged using a 2-inch uninstrumented cone tip. After the PVC is lowered, sand pack is poured down the annulus and tamped around the screen, followed by a bentonite seal.

Advantages to this technique are: 1) low labor cost; 2) very low material cost; and 3) rapid installation. The disadvantage of this technique is that installation in an open hole is less reliable than in a cased hole. Caving sands or squeezing clays can affect both sand pack and grout seal. Caving sands and squeezing clays can also preclude deep installations. Again the small diameter of the riser pipe is a disadvantage.

The fourth technique of setting fixed piezometers with CPTU equipment involves pushing a 2-inch (nominal) steel pipe and well screen to the required depth. An enlarged hole is pre-punched with a 2-inch uninstrumented cone tip to facilitate well riser insertion. Advantages to this method are that the inner diameter of the riser is greater than 2 inches, and moderate labor and material costs. The diameter allows use of a submersible pump for development and water sampling. The disadvantage to this technique is limited depth capacity due to the relatively large diameter of the riser.

The ability to install fixed piezometers or small diameter wells in CPTU sounding holes gives the CPTU method a powerful versatility. In many environmental and geotechnical projects, shallow piezometers can be located at the proper depth and installed with the CPTU rig, without bringing in a drilling rig. In groundwater supply projects for domestic and rural village water supplies, sand aquifers can be located, estimates of potential well yield can be made, and steel well points installed quickly by using CPTU equipment alone, without drilling rigs.

Testing and Sampling. Standpipe piezometer installations with 2-inch (5 cm) risers can be developed and sampled and pump tested with a submersible pump. Standpipe piezometer installations with risers at least one inch (2.54 cm) in inside diameter are readily developed, tested, and sampled with a bailer. After development, a bailer or slug test may be conducted to determine the permeability of the material opposite the screen. Water samples may be bailed from the well for chemical analysis. The 0.83-inch ID (3/4-inch nominal) PVC riser can also be bailed with a specially made slim bailer. Small diameter piezometers may be pumped if the water level is shallow enough, and the intake pipe of a suction pump can fit inside the riser. Water levels, of course, can readily be obtained in all of these standpipe piezometers.

## COST COMPARISON BETWEEN CPTU AND DRILLING AND SAMPLING

CPTU can be an efficient tool to obtain critical geotechnical and hydrogeological information. The key element is that the CPTU sounding provides a continuous log of the subsurface soil conditions and properties. To obtain a continuous log of subsurface conditions using traditional drilling techniques is costly and time consuming. For example, 100 feet of data using CPTU or drilling and sampling may cost approximately:

A) $1,000-$1,400 for CPTU, with interpretation, pore pressure dissipation, and hole grouting

B) $8,000-$10,200 for continuously sampled boring/analysis (including laboratory testing)

C) $1,850-$3,900 for conventional boring/analysis (non-continuous sampling/testing at 5-foot intervals)

The drilling/boring costs do not include a field technician which may add $500 to $750 to the cost of Alternatives B and C. Thus, CPTU may result in a cost savings of about 85 percent as compared to continuous boring/sampling/analysis and about 35 to 65 percent when compared to the cost of conventional boring/sampling/analysis.

Use of CPTU saved an estimated $4,000 (U.S.) in the monitoring well installation program for the landfill project in northeastern Illinois. By having the continuous CPTU sounding logs defining site stratigraphy, and knowing exactly at what depth the aquifer would be encountered, it was possible to install the monitoring wells using hollow stem augers, without expensive continuous sampling. Additionally, fewer geotechnical laboratory tests on the samples were required. and less geological supervision and logging time was necessary to complete the well installations.

CPTU standpipe piezometer installations are also less expensive than drilled piezometers. Both CPTU and drilled borehole techniques were used at another site in northern Illinois to provide data for site characterization and for shallow piezometer installations. The total cost for the drilled portion of the investigation was about $6,900; the cost for about the same amount of work based on CPTU methods was only $3,300, or less than half of the drilled cost. The drilling cost did not include the cost of the geologist who supervised the drilling and logged the samples. No geological supervision was required with the CPTU method, resulting in additional savings.

## CONCLUSIONS

Piezometric Cone Penetration Testing (CPTU) provides a cost effective, accurate, and rapid means to determine hydrogeologic properties at suitable sites, including stratigraphy, saturation, hydraulic head, lateral gradient, vertical gradient, position of the water table, position of the potentiometric surface, slope of the water table, direction of groundwater movement, and permeability and transmissivity. This information is readily defined in a short period of time using computerized data acquisition techniques. Data are objective, and analysis is straight forward as CPTU test results directly reflect soil characteristics of grain size, void ratio and permeability. Costs of CPTU can be as much as 85 percent less than costs associated with a drilled borehole with continuous sampling and laboratory testing.

Small diameter, standpipe piezometers can also be installed using CPTU equipment after completion of a sounding. At contaminated sites, lessened personnel exposure and greatly decreased generation of cuttings and drilling fluids characterize CPTU exploration techniques.

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BIOGRAPHICAL SKETCHES

Marvin (Nick) Saines is Senior Hydrogeologist and Scientific Services Discipline Manager at Donohue & Associates, Chicago Office. Dr. Saines has over 20 years of consulting experience in the fields of hydrogeology and engineering geology. He has worked on groundwater supply projects in the U.S., Guyana, Malaysia, and the Sultanate of Oman; and has worked on damsite and reservoir hydrogeology and engineering geology projects in the U.S., Iran, Afghanistan and Jordan. Currently he is working mainly on environmental projects dealing with solid and hazardous waste landfills in the U.S. He has published or presented over 20 papers, and taught hydrogeology as an adjunct professor at the University of Illinois (Chicago).

Andrew I. Strutynsky is the Technical Director of STRATIGRAPHICS, responsible for all in situ testing, field operations, and data interpretation. He designs custom in situ test equipment and performs research and development of new test techniques. He was recently a speaker at the First International Symposium on Penetration Testing (ISOPT-1), and conducted CPTU workshops at the Third National Outdoor Conference on Aquifer Restoration, Ground-Water Monitoring and Geophysical Methods (1989), sponsored by the NWWA. He has over ten years of exploration expertise, gathered on both domestic and international projects, onshore, offshore and off of the Arctic ice cap. He was formerly responsible for all in situ test projects at the Earth Technology Corporation. He developed CPTU testing procedures and analytic routines, and performed research for both the USGS and the National Science Foundation. He has authored various papers on CPT equipment and interpretation of CPT data. He has both B.S. and M.S. degrees from the University of Illinois.

George R. Lytwynyshyn is a geologist/engineer with over 14 years of experience. His areas of specialty include waste management related geological/hydrogeological investigations, remedial investigations/ feasibility studies (RI/FS), remedial action design studies, geotechnical/geological investigations, and project administration/ management. He serves as the department head for the Environmental Services Department at Donohue's Chicago, Illinois office. The Environment Services Department provides scientific and engineering services on solid and hazardous waste projects. His responsibilities include development, planning and management of projects in the Chicago office. Mr. Lytwynyshyn earned a B.S. degree in geological sciences and an M.S. degree in Civil Engineering, both from Northwestern University in Evanston, Illinois. He has published and presented several papers dealing with hydrogeology, waste management and rock mechanics.

# SEISMIC REFRACTION SURVEY REPORT

# SEISMIC REFRACTION SURVEY
# AT THE SAEP SITE
# STRATFORD, CONNECTICUT

**For**

**Harding Lawson Associates**

**November, 1999**

Northeast Geophysical Services
Division of NGS, Inc.
4 Union Street, Suite 3
Bangor, Maine 04401

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# SEISMIC REFRACTION SURVEY
# AT THE SAEP SITE
# STRATFORD, CONNECTICUT

## INTRODUCTION

At the request of Harding Lawson Associates a seismic refraction survey was completed at the Stratford Army Engine Plant (SAEP) site located in Stratford, Connecticut. The objective of this survey was to determine the bedrock depth and configuration beneath the survey area. This information will be used to guide the location of subsequent subsurface investigations. The field survey was undertaken on September 28 to October 1, 1999. Seven seismic lines totaling 5,593 lineal feet were surveyed. Preliminary profiles were faxed to HLA on October 2 and October 21, 1999.

This report describes the equipment and methods used and the results of the survey, and includes tabulated data and profiles for each of the interpreted seismic lines. Each profile is presented at a scale of 1-inch equals 120 feet on the horizontal scale and 1 inch equals 60 feet on the vertical scale.

## LOCATION AND SITE CONDITIONS

The survey area is located on the property of the inactive Stratford Army Engine Plant in Stratford, Connecticut. The locations of the survey lines are shown on the Seismic Line Location Map (Figure 1). The locations shown on Figure 1 are approximate. Surface conditions for Lines 3-7 were mainly asphalt or concrete pavements. Lines 1 and 2 were located in mud along the shoreline.

The site was seismically noisy which made the collection of clear seismic records challenging. Although the SAEP site is inactive there is still some maintenance machinery and equipment in operation that often created a high background of noise. In addition to these on-site noise sources there was additional noise contributed by the nearby airport and off-site vehicular traffic.

## SUMMARY OF RESULTS

The seismic refraction results are presented in the appendix as profiles of each line showing the seismically interpreted bedrock depths and configurations. Tabulated results for each line are also appended. The seismically calculated bedrock depths range from about 49 feet to184 feet deep over the survey area. Bedrock is deepest to the northwest along Line 7 and the west end of Line 2 and shallowest to the southeast, along Lines 3 and 5 and the east end of Line 2.

## SEISMIC METHODS AND INSTRUMENTATION

The seismic refraction method relies on travel times of sound waves, measured in milliseconds, traveling through and refracting from subsurface layers with contrasting densities. The seismic refraction lines were surveyed using a Geometrics ES-2401, 24-channel seismograph.

Each line consisted of 1 to 3 segments with each segment containing 24 geophones. Geophones were nominally spaced at 20 feet apart. Each segment was tested with 5 to 6 shots. The general shot configuration consisted of one shot at either end of the segment, one off each end about 200 to 300 feet, and one or two shots within the segment. The energy source consisted of a small explosive charge buried about 3 feet.

Individual shot point and geophone elevations were surveyed using a Trimble GPS instrument operated by Foster Wheeler Environmental Corporation personnel. Surface elevations shown are approximate.

The seismic data were processed and interpreted using the RIMRock Geophysics SIPT-2 (formerly U.S.G.S. SIPT-2) seismic interpretation program. This program calculates seismic velocities by regression and by the Hobson-Overton method, and solves for layer thicknesses using the delay-time method and iterative ray tracing modeling.

## SEISMIC SURVEY RESULTS

The seismic refraction results are presented in the appendix as profiles of each line showing the seismically interpreted bedrock depths and configurations. Tabulated results for each line are also appended.

The survey identified three velocity layers in the subsurface at the site. The average Layer 1 velocity for Lines 3-7 was approximately 1,500 feet per second (fps) and is interpreted to represent unsaturated overburden. On Lines 1 and 2 the Layer 1 velocity was higher at about 2,100 fps. This layer is interpreted to represent saturated organic muds. The average Layer 2 velocity for the survey was 5,455 fps and is interpreted to represent saturated overburden. The average Layer 3 velocity for the survey was about 18,000 fps and is interpreted to represent bedrock.

A three-velocity layer model was used for interpretation using the measured velocities of each line. The velocities used in the seismic interpretation for each segment are shown on the profiles.

The seismic survey results indicate that the bedrock depths range from approximately 49 feet to184 feet over the survey area. The area of lowest calculated bedrock elevations (-140 to -177 ft msl) are in the northwest part of the survey area along Line 7 and the west end of Line 2. The highest calculated bedrock elevations (-42 to -50 ft. msl) are at the southeast part of the survey area along Lines 3 and 5 and the east end of Line 2.

Profile of Line 1 (708 lineal feet) Line 1 trends from southwest to northeast along a jetty that extends out into the Housatonic River. The seismically calculated depth to layer 2 along this profile averaged 22 feet. The seismically calculated bedrock depths along this profile range from about 70 feet at the south end of the profile to 121 feet deep at 535 feet north.

Profile of Line 2 (1,630 lineal feet) Line 2 trends from northwest to southeast along the shoreline of the Housatonic River, which forms the northerly boundary of the SAEP site. The seismically calculated depth to Layer 2 along this profile averaged *50* feet. The seismically calculated bedrock depths along this profile range from about 50 to 60 feet deep at the southeast end of the profile to a depth of 158 feet at the northeast end of the line at 200 feet northeast.

Profile of Line 3 (630 lineal feet) Line 3 trends from southwest to northeast and is located in a paved area between buildings B-3 and B-10 within the SAEP facility. The seismically calculated depth to layer 2 along this profile averaged 17 feet. The seismically calculated bedrock depths along this profile range from about 100 feet at the southwest end of the survey line to a depth of about 50 feet near the northwest end of the survey line at 490 feet north. The data quality on this line was not good. Thus the interpretation of Line 3 is more uncertain than the other seismic lines.

Profile of Line 4 (690 lineal feet) Line 4 trends from northwest to southeast and is located in a paved area between buildings B-2 and B-12 &10. The line begins near the northeast end of Line 7 and ends near the southwest end of Line 3. Seismic data was too poor to make an interpretation of this line.

Profile of Line 5 (930 lineal feet) Line 5 trends from southwest to northeast and is located in the South Parking Lot and along Sniffens Lane along the southeast side of the site. The seismically calculated depth to layer 2 along this profile averaged 11 feet. The seismically calculated bedrock depths along this profile range from about 69 feet at the southwest end of the profile to about 52 feet at 230 feet north and from about 52 to 60 feet deep at the northeast end of the line.

Profile of Line 6 (502 lineal feet) Line 6 trends from southwest to northeast and is located in the West Parking Lot on the southwest side of the site. The seismically calculated depth to layer 2 along this profile averaged 17 feet. The seismically calculated bedrock depths along this profile range from about 80 feet at the northeast end of the profile to about 125 feet near the southwest end of the line at station 120 feet north.

Profile of Line 7 (503 lineal feet) Line 7 trends from southwest to northeast and is located within the Building number 2. Line 7 had the greatest bedrock depths of the lines surveyed. The seismically calculated depth to layer 2 along this profile averaged 19 feet. The seismically calculated bedrock depths along this profile range from about 130 feet at the northeast end of the line to about 185 feet at the southwest end of the line.

## DISCUSSION OF SEISMIC RESULTS

In order for the seismic refraction method to accurately estimate velocity layer depths, certain natural conditions should exist:

a.) Layers should increase in velocity and in thickness with depth. A typical example would be ten feet of unsaturated soil at 1,500 fps overlying 50 feet of saturated soil at 5,000 fps that overlies bedrock at 16,000 fps.

b.) There should be a sufficient velocity contrast between different layers. Ideally, each velocity layer would be 2 to 3 times faster than the overlying layer.

c.) The velocity within a layer should be relatively constant throughout that layer (lateral homogeneity).

In addition to these conditions, it is also important that there be a low level of background noise at the site. It is also very helpful if there is some ground truth data, such as borehole data, to compare and calibrate the seismic model.

Under favorable conditions seismic refraction results can be fairly precise, within +/- 10 percent. The conditions at the SAEP Site were difficult for seismic refraction. High noise levels affected the quality of the seismic data. The use of explosive charges as a sound source enabled the collection of interpretable data for all of the lines except for Line 4. On Line 4 high noise levels and subsurface utilities located beneath the seismic line resulted in unclear, unreliable data. For this reason an interpretation of Line 4 was not included in this report. Interpretable data was collected on the other survey lines with the best data coming from Line 2, which was along the shoreline and the noisier data from the lines within the facility, Lines 3 and 7.

There are two conditions that may exist over parts of the survey area that could affect the accuracy of the survey. The first is the possibility that hidden velocity layers exist. A velocity layer can be undetectable by seismic refraction if it is too thin or if it has a lower velocity than the layers above it. The effect of a hidden layer can be to under or over-estimate the depth to bedrock. An example of a too thin layer is a 10-foot thick till unit that underlies 40 feet of saturated sand. Although the till has a higher velocity than the sand it cannot be detected because the refracted sound energy from the bedrock arrives at the surface ahead of the refracted energy from the till layer. In areas where the till is relatively thick the seismic interpretation of bedrock depth will be underestimated.

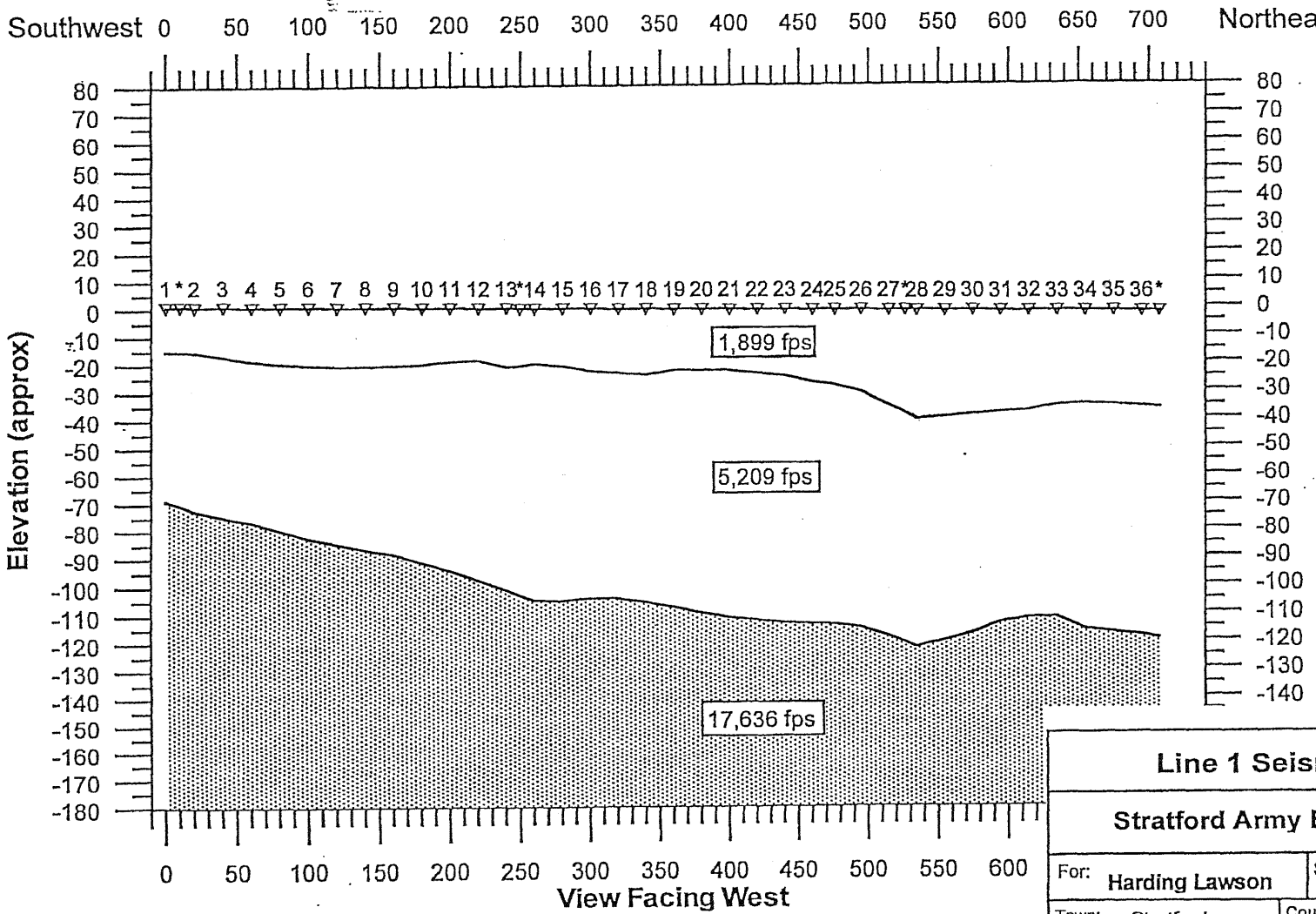
A second factor that may affect the accuracy of the seismic interpretation is that lateral variations in the seismic velocity of the soil and bedrock may exist. For interpretation of the seismic data each layer is assumed to have a constant, homogeneous, velocity. The effect of lateral velocity variations can be to under or over-estimate the depth to bedrock. For example: If a zone of 1,000 fps material existed within a layer whose overall velocity was 1,400 fps, the seismically calculated depths in this slow zone would be deeper than they actually were. There are likely lateral velocity

inhomogenieties in some parts of the survey area. The bedrock depth estimates in these areas would be less precise.

On the other hand, if a slow velocity layer exists beneath a faster layer the effect on the seismic interpretation will be to overestimate the bedrock depth. Such a situation does not generally occur in nature but an example would be a perched water table with saturated (higher velocity) material overlying unsaturated (lower velocity) material. In both of these situations the accuracy of the seismic interpretation can be improved if the depth to bedrock is known (by borings) in a few locations. Based on the available information, it appears that the seismic survey fairly accurately depicts the bedrock configuration.

# APPENDIX - SEISMIC REFRACTION PROFILES AND TABULATED RESULTS

PRELIMINARY




## Line 1 Seismic Profile

**Stratford Army Engine Plant Site**

| | | |
|---|---|---|
| For: Harding Lawson | Survey Date: 9/28/99 | |
| Town: Stratford | County: Fairfield | State: CT |
| Scale: Horizontal: 1 in = 120 ft<br>Vertical: 1 in = 60 ft | Instrument: Geometrics 2401 | |

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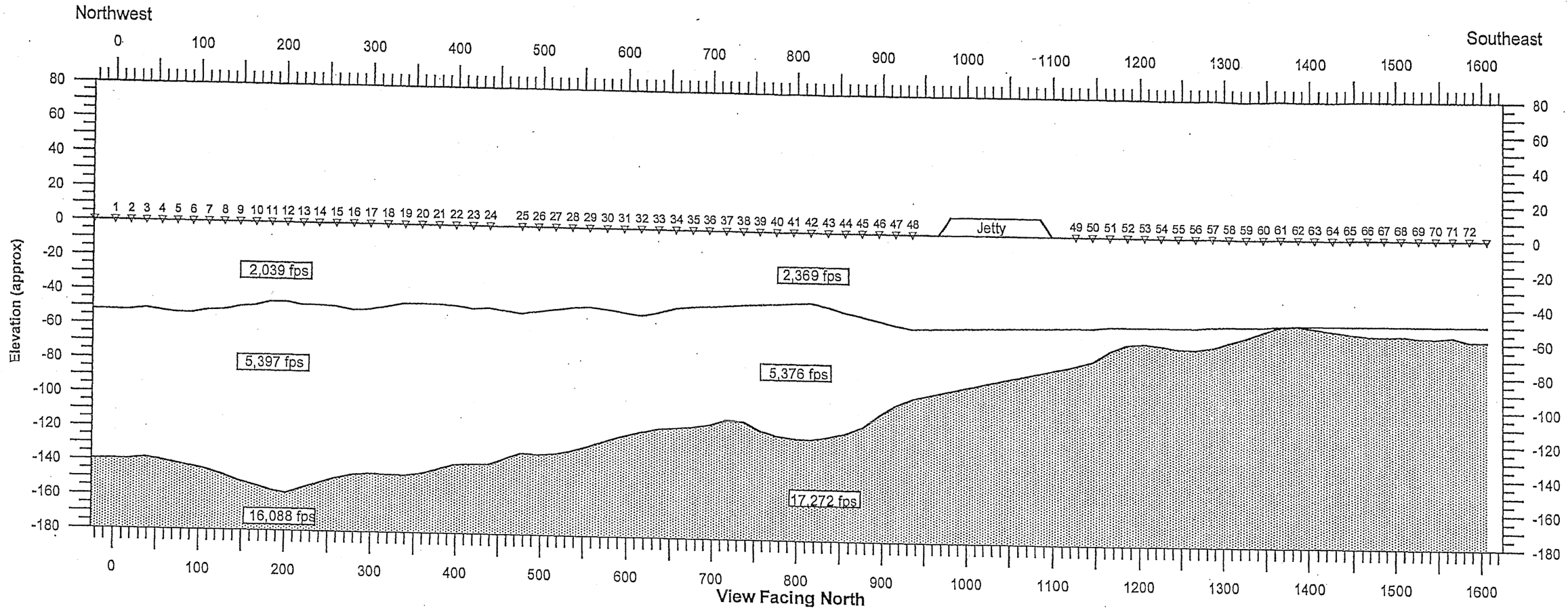
Bangor, Maine

# PRELIMINARY




| Line 2 Seismic Profile | | |
|---|---|---|
| Stratford Army Engine Plant Site | | |
| For: Harding Lawson | Survey Date: 9/29/99 | |
| Town: Stratford | County: Fairfield | State: CT |
| Scale: Horizontal: 1 in = 120 ft<br>Vertical: 1 in = 60 ft | Instrument: Geometrics 2401 | |

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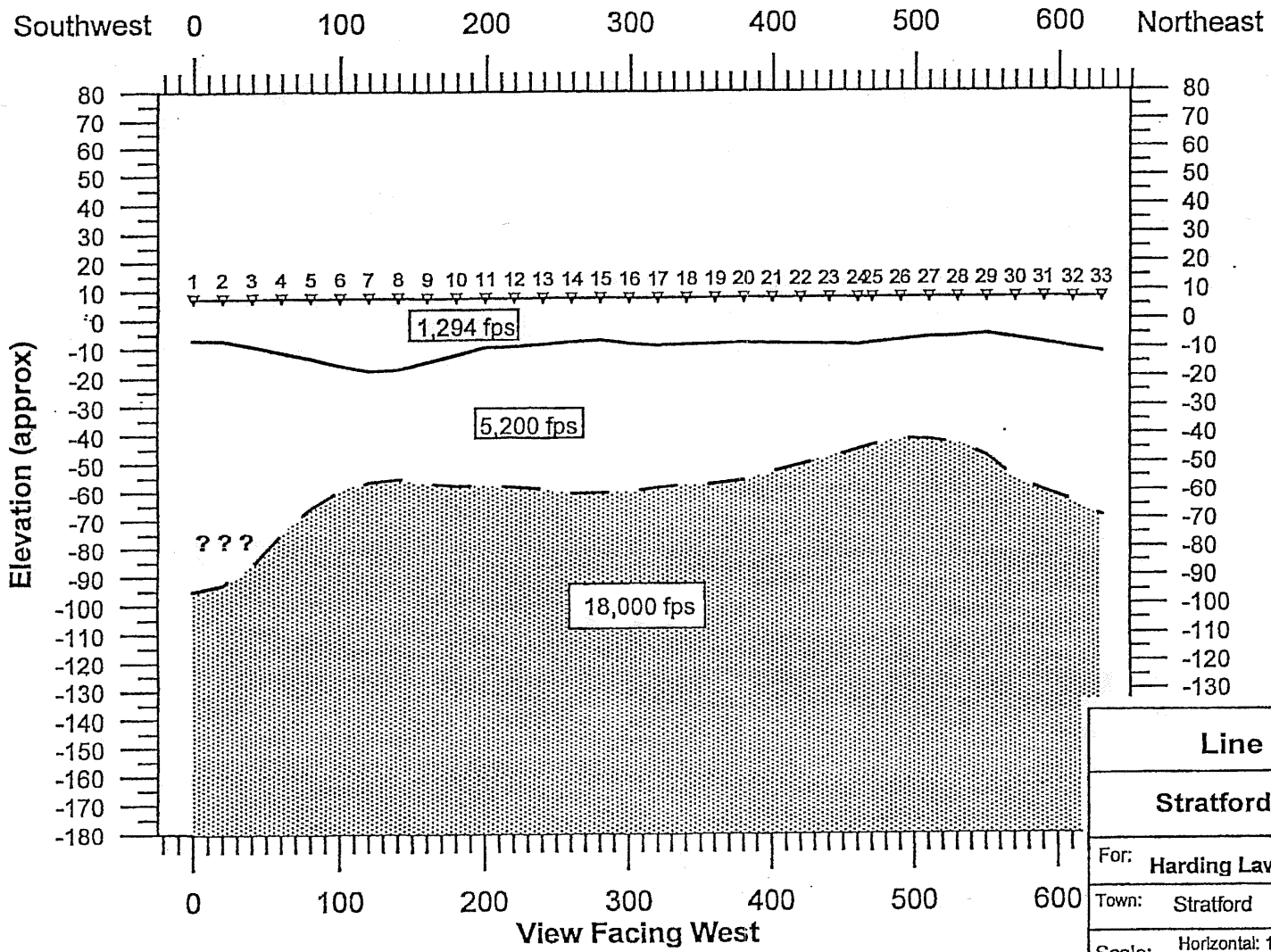
Bangor, Maine

# PRELIMINARY




## Line 3 Seismic Profile

**Stratford Army Engine Plant Site**

| | | |
|---|---|---|
| For: Harding Lawson | Survey Date: 9/28/99 | |
| Town: Stratford | County: Fairfield | State: CT |
| Scale: Horizontal: 1 in = 120 ft<br>Vertical: 1 in = 60 ft | Instrument: Geometrics 2401 | |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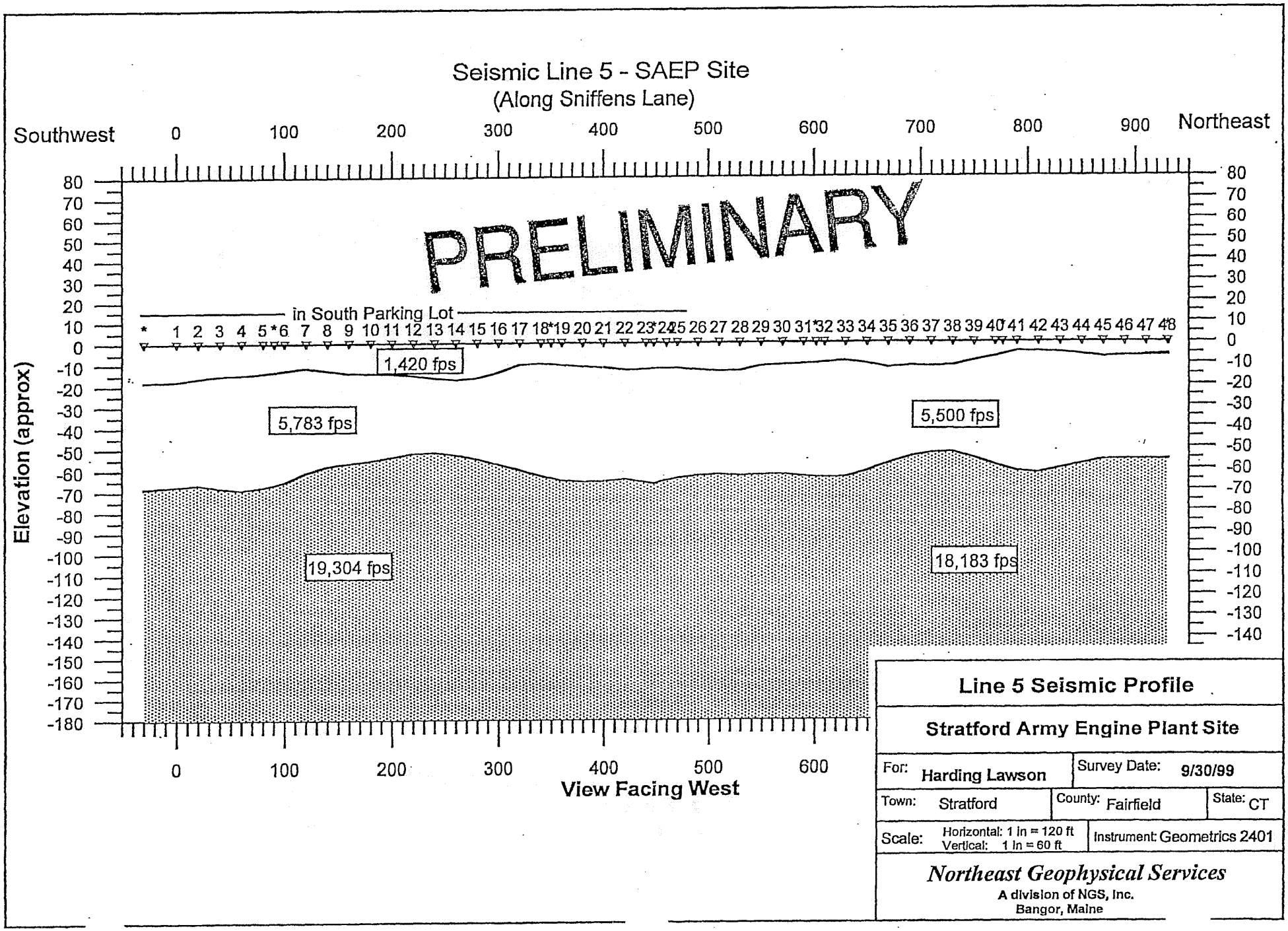
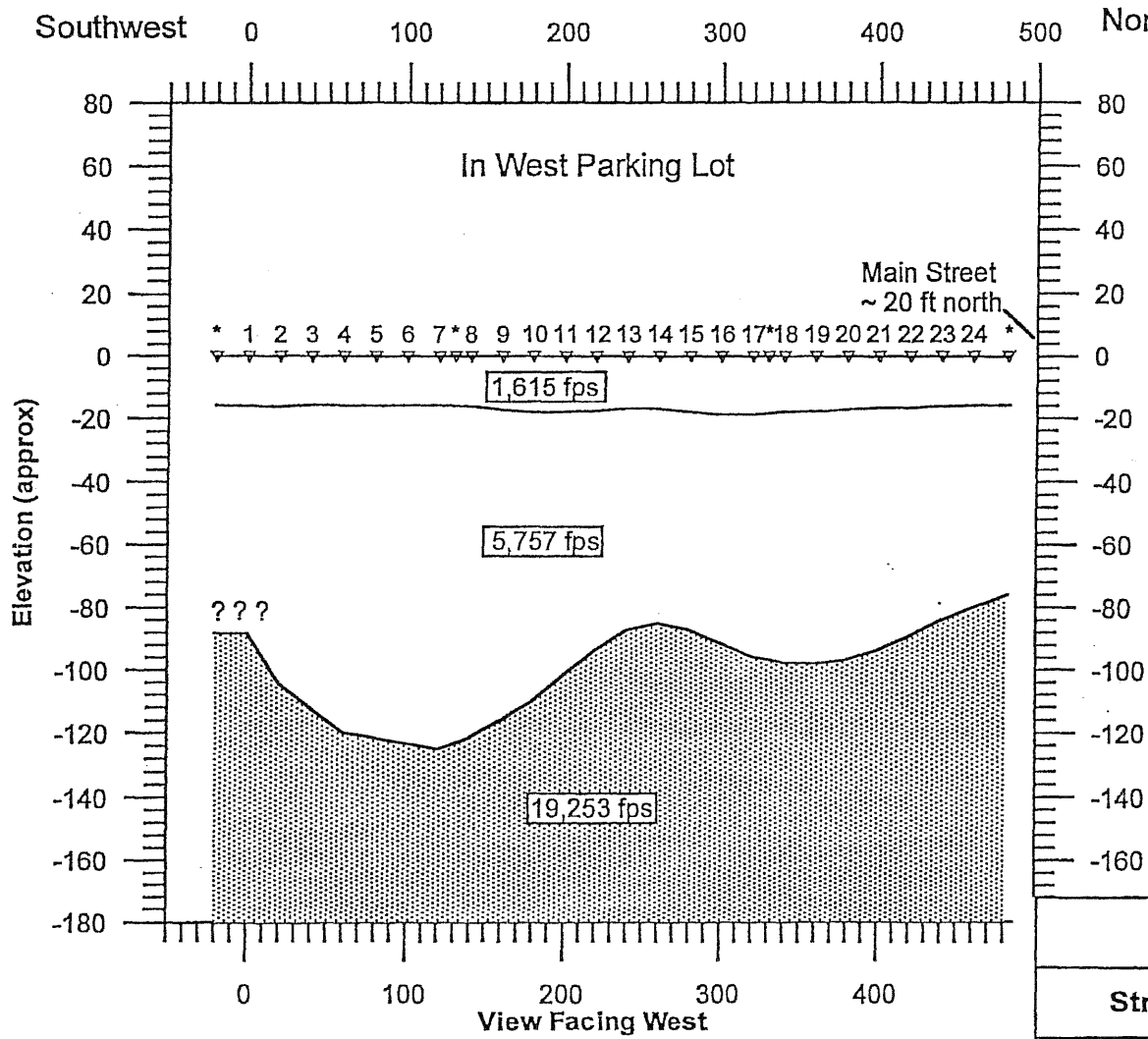

Seismic Line 5 - SAEP Site
(Along Sniffens Lane)
Southwest
Northeast
0 100 200 300 400 500 600 700 800 900
PRELIMINARY
in South Parking Lot
* 1 2 3 4 5 *6 7 8 9 10 11 12 13 14 15 16 17 18 *19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
1,420 fps
5,783 fps
5,500 fps
19,304 fps
18,183 fps
Elevation (approx)
80 70 60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180
0 100 200 300 400 500 600
View Facing West
Line 5 Seismic Profile
Stratford Army Engine Plant Site
For: Harding Lawson
Survey Date: 9/30/99
Town: Stratford
County: Fairfield
State: CT
Scale: Horizontal: 1 In = 120 ft
Vertical: 1 In = 60 ft
Instrument: Geometrics 2401
Northeast Geophysical Services
A division of NGS, Inc.
Bangor, Maine



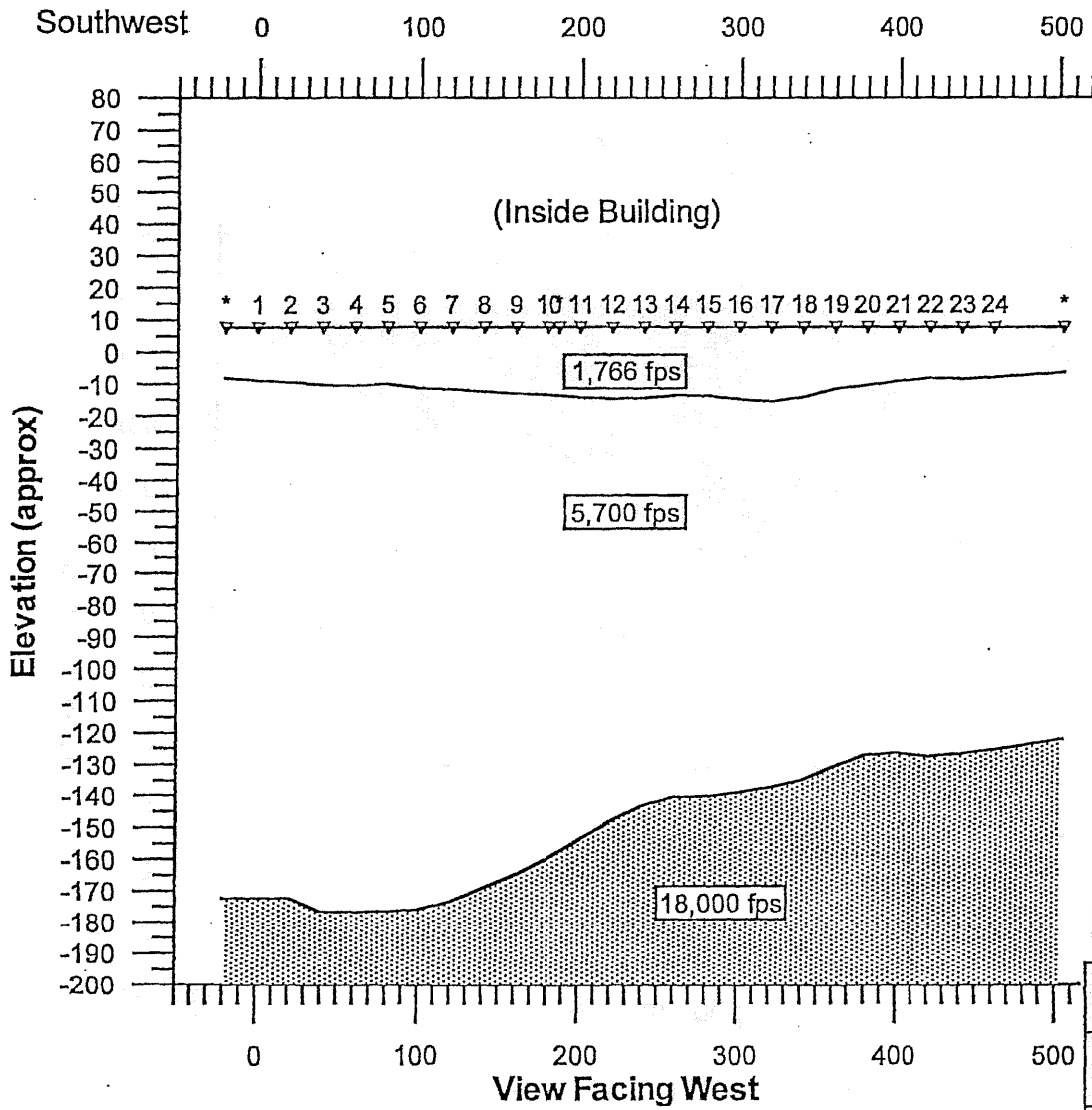

PRELIMINARY

## Line 6 Seismic Profile

### Stratford Army Engine Plant Site

| | | | |
|---|---|---|---|
| For: Harding Lawson | | Survey Date: 9/29/99 | |
| Town: Stratford | County: Fairfield | State: CT | |
| Scale: Horizontal: 1 in = 120 ft<br>Vertical: 1 in = 60 ft | | Instrument: Geometrics 2401 | |

*Northeast Geophysical Services*
A division of NGS, Inc.
Bangor, Maine




PRELIMINARY

## Line 7 Seismic Profile

### Stratford Army Engine Plant Site

| | | |
|---|---|---|
| For: Harding Lawson | Survey Date: 9/30/99 | |
| Town: Stratford | County: Fairfield | State: CT |
| Scale: Horizontal: 1 In = 120 ft<br>Vertical: 1 In = 60 ft | Instrument: Geometrics 2401 | |

*Northeast Geophysical Services*
A division of NGS, Inc.
Bangor, Maine

Northeast Geophysical Services

| Line 1 SAEP Site Stratford, CT<br>Seismically interpreted depths | | | | | | |
|---|---|---|---|---|---|---|
| Geophone | X dist (feet) | Surface Elev | Layer 2 Depth | Layer 2 Elev | Bedrock Depth | Bedrock Elev |
| 1 | 0 | 1.0 | 16.1 | -15 | 70 | -69 |
| * | 10 | 0.9 | 16 | -15 | 72 | -71 |
| 2 | 20 | 0.8 | 16 | -15 | 73 | -73 |
| 3 | 40 | 0.8 | 18 | -17 | 76 | -75 |
| 4 | 60 | 0.7 | 20 | -19 | 78 | -77 |
| 5 | 80 | 0.6 | 21 | -20 | 80 | -80 |
| 6 | 100 | 0.5 | 21 | -20 | 83 | -83 |
| 7 | 120 | 0.5 | 21 | -21 | 85 | -85 |
| 8 | 140 | 0.4 | 21 | -21 | 87 | -87 |
| 9 | 160 | 0.3 | 21 | -21 | 89 | -88 |
| 10 | 180 | 0.2 | 21 | -20 | 92 | -92 |
| 11 | 200 | 0.2 | 20 | -19 | 95 | -95 |
| 12 | 220 | 0.1 | 19 | -19 | 98 | -98 |
| 13 | 240 | 0.0 | 21 | -21 | 101 | -101 |
| * | 249.7 | -0.1 | 21 | -21 | 103 | -103 |
| 14 | 260 | -0.2 | 20 | -20 | 105 | -105 |
| 15 | 280 | -0.2 | 21 | -21 | 105 | -105 |
| 16 | 300 | -0.3 | 23 | -23 | 104 | -105 |
| 17 | 320 | -0.4 | 23 | -23 | 104 | -105 |
| 18 | 340 | -0.5 | 24 | -24 | 105 | -106 |
| 19 | 360 | -0.5 | 22 | -23 | 107 | -108 |
| 20 | 380 | -0.6 | 22 | -23 | 109 | -110 |
| 21 | 400 | -0.7 | 22 | -23 | 111 | -111 |
| 22 | 420 | -0.8 | 23 | -24 | 112 | -112 |
| 23 | 440 | -0.8 | 24 | -25 | 112 | -113 |
| 24 | 460 | -0.9 | 26 | -27 | 113 | -114 |
| 25 | 476 | -1.0 | 27 | -28 | 113 | -114 |
| 26 | 495 | -1.1 | 29 | -30 | 114 | -115 |
| 27 | 515 | -1.2 | 34 | -35 | 117 | -118 |
| * | 526.5 | -1.2 | 37 | -38 | 119 | -120 |
| 28 | 535 | -1.3 | 39 | -40 | 121 | -122 |
| 29 | 555 | -1.4 | 38 | -40 | 119 | -120 |
| 30 | 575 | -1.5 | 37 | -39 | 116 | -117 |
| 31 | 595 | -1.5 | 37 | -38 | 112 | -114 |
| 32 | 615 | -1.6 | 36 | -37 | 110 | -112 |
| 33 | 635 | -1.7 | 34 | -35 | 110 | -112 |
| 34 | 655 | -1.8 | 33 | -35 | 114 | -116 |
| 35 | 675 | -1.8 | 34 | -36 | 115 | -117 |
| 36 | 695 | -1.9 | 34 | -36 | 116 | -118 |
| * | 707.5 | -2.0 | 34 | -36 | 117 | -119 |

Northeast Geophysical Services

**Line 2 SAEP Site Stratford, CT**
Seismically interpreted depths

| Geophone | X dist (feet) | Surface Elev | Layer 2 Depth | Layer 2 Elev | Bedrock Depth | Bedrock Elev |
|---|---|---|---|---|---|---|
| * | -24 | 0 | 52 | -52 | 140 | -140 |
| 1 | 0 | 0 | 52 | -52 | 140 | -140 |
| 2 | 18.3 | 0 | 52 | -52 | 139 | -139 |
| 3 | 36.6 | 0 | 51 | -51 | 139 | -139 |
| 4 | 54.9 | 0 | 52 | -52 | 140 | -140 |
| 5 | 73.2 | 0 | 53 | -53 | 142 | -142 |
| 6 | 91.5 | 0 | 53 | -53 | 143 | -143 |
| 7 | 109.8 | 0 | 51 | -51 | 145 | -145 |
| 8 | 128.2 | 0 | 51 | -51 | 148 | -148 |
| 9 | 146.5 | 0 | 49 | -49 | 151 | -151 |
| 10 | 164.8 | 0 | 48 | -48 | 154 | -154 |
| 11 | 183.1 | 0 | 46 | -46 | 157 | -157 |
| 12 | 201.4 | 0 | 46 | -46 | 158 | -158 |
| 13 | 219.7 | 0 | 48 | -48 | 155 | -155 |
| 14 | 238 | 0 | 48 | -48 | 152 | -152 |
| 15 | 258 | 0 | 48 | -48 | 149 | -149 |
| 16 | 278 | 0 | 51 | -51 | 147 | -147 |
| 17 | 298 | 0 | 50 | -50 | 146 | -146 |
| 18 | 318 | 0 | 48 | -48 | 147 | -147 |
| 19 | 338 | 0 | 46 | -46 | 147 | -147 |
| 20 | 358 | 0 | 46 | -46 | 146 | -146 |
| 21 | 378 | 0 | 46 | -46 | 143 | -143 |
| 22 | 398 | 0 | 47 | -47 | 140 | -140 |
| 23 | 418 | 0 | 48 | -48 | 140 | -140 |
| 24 | 438 | 0 | 48 | -48 | 140 | -140 |
| 25 | 476 | 0 | 51 | -51 | 133 | -133 |
| 26 | 496 | 0 | 49 | -49 | 133 | -133 |
| 27 | 516 | 0 | 48 | -48 | 133 | -133 |
| 28 | 536 | 0 | 47 | -47 | 131 | -131 |
| 29 | 556 | 0 | 46 | -46 | 128 | -128 |
| 30 | 576 | 0 | 47 | -47 | 124 | -124 |
| 31 | 596 | 0 | 49 | -49 | 121 | -121 |
| 32 | 616 | 0 | 51 | -51 | 119 | -119 |
| 33 | 636 | 0 | 48 | -48 | 117 | -117 |
| 34 | 656 | 0 | 46 | -46 | 116 | -116 |
| 35 | 676 | 0 | 45 | -45 | 115 | -115 |
| 36 | 696 | 0 | 44 | -44 | 114 | -114 |
| 37 | 716 | 0 | 44 | -44 | 111 | -111 |
| 38 | 736 | 0 | 43 | -43 | 111 | -111 |
| 39 | 756 | 0 | 43 | -43 | 116 | -116 |
| 40 | 776 | 0 | 42 | -42 | 119 | -119 |
| 41 | 796 | 0 | 42 | -42 | 121 | -121 |
| 42 | 816 | 0 | 41 | -41 | 121 | -121 |
| 43 | 836 | 0 | 43 | -43 | 120 | -120 |
| 44 | 856 | 0 | 46 | -46 | 117 | -117 |
| 45 | 876 | 0 | 49 | -49 | 114 | -114 |
| 46 | 896 | 0 | 51 | -51 | 106 | -106 |
| 47 | 916 | 0 | 53 | -53 | 100 | -100 |
| 48 | 936 | 0 | 55 | -55 | 96 | -96 |
| 49 | 1126 | 0 | 53 | -53 | 75 | -75 |
| 50 | 1146 | 0 | 53 | -53 | 72 | -72 |
| 51 | 1166 | 0 | 52 | -52 | 66 | -66 |
| 52 | 1186 | 0 | 52 | -52 | 62 | -62 |
| 53 | 1206 | 0 | 52 | -52 | 62 | -62 |
| 54 | 1226 | 0 | 52 | -52 | 63 | -63 |
| 55 | 1246 | 0 | 52 | -52 | 64 | -64 |
| 56 | 1266 | 0 | 52 | -52 | 65 | -65 |
| 57 | 1286 | 0 | 52 | -52 | 64 | -64 |
| 58 | 1306 | 0 | 51 | -51 | 60 | -60 |
| 59 | 1326 | 0 | 51 | -51 | 58 | -58 |
| 60 | 1346 | 0 | 51 | -51 | 54 | -54 |
| 61 | 1366 | 0 | 51 | -51 | 51 | -51 |
| 62 | 1386 | 0 | 50 | -50 | 50 | -50 |
| 63 | 1406 | 0 | 50 | -50 | 52 | -52 |
| 64 | 1426 | 0 | 50 | -50 | 53 | -53 |
| 65 | 1446 | 0 | 50 | -50 | 55 | -55 |
| 66 | 1466 | 0 | 50 | -50 | 56 | -56 |
| 67 | 1486 | 0 | 50 | -50 | 56 | -56 |
| 68 | 1506 | 0 | 50 | -50 | 56 | -56 |
| 69 | 1526 | 0 | 50 | -50 | 57 | -57 |
| 70 | 1546 | 0 | 50 | -50 | 57 | -57 |
| 71 | 1566 | 0 | 50 | -50 | 56 | -56 |
| 72 | 1586 | 0 | 50 | -50 | 59 | -59 |
| * | 1606 | 0 | 50 | -50 | 59 | -59 |

| Line 3 SAEP Site Stratford, CT<br>Seismically interpreted depths | | | | | | |
|---|---|---|---|---|---|---|
| Geophone | X Dist feet | Surface Elev | Layer 2 Depth | Layer 2 Elev | Bedrock Depth | Bedrock Elev |
| 1 | 0 | 7.5 | 15 | -7 | 103 | -95 |
| 2 | 20 | 7.5 | 15 | -7 | 100 | -93 |
| 3 | 40 | 7.5 | 17 | -9 | 94 | -87 |
| 4 | 60 | 7.5 | 19 | -11 | 82 | -75 |
| 5 | 80 | 7.5 | 21 | -13 | 74 | -66 |
| 6 | 100 | 7.5 | 24 | -16 | 67 | -60 |
| 7 | 120 | 7.5 | 25 | -18 | 64 | -57 |
| 8 | 140 | 7.5 | 25 | -17 | 63 | -56 |
| 9 | 160 | 7.5 | 22 | -15 | 65 | -57 |
| 10 | 180 | 7.5 | 20 | -12 | 66 | -58 |
| 11 | 200 | 7.5 | 17 | -10 | 66 | -58 |
| 12 | 220 | 7.5 | 17 | -9 | 66 | -58 |
| 13 | 240 | 7.5 | 16 | -9 | 67 | -59 |
| 14 | 260 | 7.5 | 15 | -8 | 68 | -61 |
| 15 | 280 | 7.5 | 15 | -7 | 68 | -61 |
| 16 | 300 | 7.5 | 16 | -8 | 68 | -60 |
| 17 | 320 | 7.5 | 17 | -9 | 66 | -59 |
| 18 | 340 | 7.5 | 16 | -9 | 65 | -58 |
| 19 | 360 | 7.5 | 16 | -9 | 65 | -57 |
| 20 | 380 | 7.5 | 16 | -8 | 64 | -56 |
| 21 | 400 | 7.5 | 16 | -8 | 61 | -54 |
| 22 | 420 | 7.5 | 16 | -9 | 58 | -51 |
| 23 | 440 | 7.5 | 16 | -9 | 56 | -48 |
| 24 | 460 | 7.5 | 16 | -9 | 53 | -46 |
| 25 | 470 | 7.5 | 16 | -8 | 52 | -44 |
| 26 | 490 | 7.5 | 15 | -7 | 49 | -42 |
| 27 | 510 | 7.5 | 14 | -6 | 50 | -42 |
| 28 | 530 | 7.5 | 14 | -6 | 51 | -44 |
| 29 | 550 | 7.5 | 13 | -5 | 55 | -48 |
| 30 | 570 | 7.5 | 14 | -7 | 63 | -56 |
| 31 | 590 | 7.5 | 16 | -8 | 68 | -60 |
| 32 | 610 | 7.5 | 18 | -10 | 71 | -64 |
| 33 | 630 | 7.5 | 19 | -12 | 77 | -69 |

Northeast Geophysical Services

| Line 5 SAEP Site Stratford, CT<br>Seismically interpreted depths | | | | | | |
|---|---|---|---|---|---|---|
| Geophone | X dist (feet) | Surface Elev | Layer 2 Depth | Layer 2 Elev | Bedrock Depth | Bedrock Elev |
| * | -30 | 7.5 | 18 | -11 | 69 | -61 |
| 1 | 0 | 7.5 | 18 | -10 | 68 | -60 |
| 2 | 20 | 7.5 | 16 | -9 | 67 | -59 |
| 3 | 40 | 7.5 | 15 | -8 | 68 | -61 |
| 4 | 60 | 7.5 | 15 | -7 | 69 | -62 |
| 5 | 80 | 7.5 | 14 | -7 | 68 | -61 |
| * | 90.5 | 7.5 | 13 | -6 | 67 | -59 |
| 6 | 100 | 7.5 | 13 | -5 | 66 | -58 |
| 7 | 120 | 7.5 | 12 | -4 | 61 | -53 |
| 8 | 140 | 7.5 | 13 | -5 | 58 | -51 |
| 9 | 160 | 7.5 | 14 | -7 | 57 | -49 |
| 10 | 180 | 7.5 | 14 | -7 | 56 | -48 |
| 11 | 200 | 7.5 | 14 | -7 | 54 | -46 |
| 12 | 220 | 7.5 | 15 | -8 | 52 | -45 |
| 13 | 240 | 7.5 | 16 | -9 | 52 | -44 |
| 14 | 260 | 7.5 | 17 | -10 | 53 | -46 |
| 15 | 280 | 7.5 | 16 | -9 | 55 | -47 |
| 16 | 300 | 7.5 | 14 | -6 | 57 | -50 |
| 17 | 320 | 7.5 | 10 | -3 | 60 | -52 |
| 18 | 340 | 7.5 | 10 | -2 | 63 | -55 |
| * | 349.8 | 7.5 | 10 | -3 | 64 | -56 |
| 19 | 360 | 7.5 | 10 | -3 | 65 | -58 |
| 20 | 380 | 7.5 | 11 | -4 | 66 | -58 |
| 21 | 400 | 7.5 | 12 | -4 | 65 | -58 |
| 22 | 420 | 7.5 | 13 | -5 | 64 | -57 |
| 23 | 440 | 7.5 | 12 | -5 | 66 | -58 |
| * | 448 | 7.5 | 12 | -5 | 67 | -59 |
| 24 | 460 | 7.5 | 12 | -5 | 65 | -58 |
| 25 | 470 | 7.5 | 12 | -5 | 64 | -57 |
| 26 | 490 | 7.5 | 13 | -5 | 63 | -55 |
| 27 | 510 | 7.5 | 13 | -6 | 62 | -55 |
| 28 | 530 | 7.5 | 13 | -6 | 63 | -55 |
| 29 | 550 | 7.5 | 11 | -4 | 62 | -55 |
| 30 | 570 | 7.5 | 11 | -3 | 62 | -55 |
| 31 | 590 | 7.5 | 10 | -3 | 63 | -56 |
| * | 601.7 | 7.5 | 10 | -2 | 64 | -56 |
| 32 | 610 | 7.5 | 10 | -2 | 64 | -56 |
| 33 | 630 | 7.5 | 9 | -1 | 64 | -56 |
| 34 | 650 | 7.5 | 10 | -2 | 61 | -53 |
| 35 | 670 | 7.5 | 12 | -4 | 57 | -50 |
| 36 | 690 | 7.5 | 11 | -4 | 54 | -47 |
| 37 | 710 | 7.5 | 11 | -4 | 53 | -45 |
| 38 | 730 | 7.5 | 11 | -4 | 52 | -45 |
| 39 | 750 | 7.5 | 9 | -1 | 55 | -48 |
| 40 | 770 | 7.5 | 7 | 1 | 58 | -51 |
| * | 776.8 | 7.5 | 6 | 1 | 59 | -52 |
| 41 | 790 | 7.5 | 5 | 3 | 61 | -54 |
| 42 | 810 | 7.5 | 5 | 3 | 62 | -55 |
| 43 | 830 | 7.5 | 5 | 2 | 60 | -53 |
| 44 | 850 | 7.5 | 6 | 1 | 58 | -50 |
| 45 | 870 | 7.5 | 7 | 0 | 56 | -49 |
| 46 | 890 | 7.5 | 7 | 1 | 56 | -48 |
| * | 930.7 | 7.5 | 7 | 1 | 56 | -48 |
| 47 | 910 | 7.5 | 6 | 1 | 56 | -48 |
| 48 | 930 | 7.5 | 6 | 2 | 56 | -49 |

Northeast Geophysical Services

| Line 6 SAEP Site Stratford, CT<br>Seismically interpreted depths | | | | | | |
|---|---|---|---|---|---|---|
| Geophone | X dist (feet) | Surface Elev | Layer 2 Depth | Layer 2 Elev | Bedrock Depth | Bedrock Elev |
| * | -20 | 8 | 16 | -8 | 88 | -80 |
| 1 | 0 | 8 | 16 | -8 | 88 | -80 |
| 2 | 20 | 8 | 16 | -8 | 105 | -97 |
| 3 | 40 | 8 | 16 | -8 | 112 | -104 |
| 4 | 60 | 8 | 16 | -8 | 120 | -112 |
| 5 | 80 | 8 | 16 | -8 | 122 | -114 |
| 6 | 100 | 8 | 16 | -8 | 123 | -115 |
| 7 | 120 | 8 | 16 | -8 | 125 | -117 |
| * | 130 | 8 | 16 | -8 | 123 | -115 |
| 8 | 140 | 8 | 16 | -8 | 122 | -114 |
| 9 | 160 | 8 | 17 | -9 | 116 | -108 |
| 10 | 180 | 8 | 18 | -10 | 110 | -102 |
| 11 | 200 | 8 | 18 | -10 | 102 | -94 |
| 12 | 220 | 8 | 18 | -10 | 94 | -86 |
| 13 | 240 | 8 | 17 | -9 | 87 | -79 |
| 14 | 260 | 8 | 17 | -9 | 85 | -77 |
| 15 | 280 | 8 | 18 | -10 | 87 | -79 |
| 16 | 300 | 8 | 19 | -11 | 91 | -83 |
| 17 | 320 | 8 | 19 | -11 | 96 | -88 |
| * | 330 | 8 | 19 | -11 | 97 | -89 |
| 18 | 340 | 8 | 18 | -10 | 98 | -90 |
| 19 | 360 | 8 | 18 | -10 | 98 | -90 |
| 20 | 380 | 8 | 17 | -9 | 97 | -89 |
| 21 | 400 | 8 | 17 | -9 | 94 | -86 |
| 22 | 420 | 8 | 17 | -9 | 89 | -81 |
| 23 | 440 | 8 | 16 | -8 | 84 | -76 |
| 24 | 460 | 8 | 16 | -8 | 80 | -72 |
| * | 482 | 8 | 16 | -8 | 76 | -68 |

Northeast Geophysical Services

| Line 7 SAEP Site Stratford, CT<br>Seismically interpreted depths | | | | | | |
|---|---|---|---|---|---|---|
| Geophone | X dist (feet) | Surface Elev | Layer 2 Depth | Layer 2 Elev | Bedrock Depth | Bedrock Elev |
| * | -20 | 7.5 | 16 | -8 | 180 | -173 |
| 1 | 0 | 7.5 | 16 | -9 | 180 | -173 |
| 2 | 20 | 7.5 | 17 | -10 | 180 | -173 |
| 3 | 40 | 7.5 | 18 | -10 | 185 | -177 |
| 4 | 60 | 7.5 | 18 | -11 | 184 | -177 |
| 5 | 80 | 7.5 | 18 | -10 | 184 | -177 |
| 6 | 100 | 7.5 | 19 | -11 | 184 | -176 |
| 7 | 120 | 7.5 | 19 | -12 | 181 | -174 |
| 8 | 140 | 7.5 | 20 | -13 | 177 | -170 |
| 9 | 160 | 7.5 | 21 | -13 | 173 | -165 |
| 10 | 180 | 7.5 | 21 | -14 | 168 | -160 |
| * | 186.7 | 7.5 | 21 | -14 | 166 | -158 |
| 11 | 200 | 7.5 | 22 | -14 | 162 | -154 |
| 12 | 220 | 7.5 | 22 | -15 | 156 | -148 |
| 13 | 240 | 7.5 | 22 | -15 | 151 | -144 |
| 14 | 260 | 7.5 | 21 | -14 | 148 | -141 |
| 15 | 280 | 7.5 | 22 | -14 | 148 | -140 |
| 16 | 300 | 7.5 | 22 | -15 | 147 | -139 |
| 17 | 320 | 7.5 | 23 | -16 | 145 | -138 |
| 18 | 340 | 7.5 | 22 | -14 | 143 | -135 |
| 19 | 360 | 7.5 | 19 | -12 | 139 | -131 |
| 20 | 380 | 7.5 | 18 | -11 | 135 | -127 |
| 21 | 400 | 7.5 | 17 | -9 | 134 | -127 |
| 22 | 420 | 7.5 | 16 | -8 | 135 | -128 |
| 23 | 440 | 7.5 | 16 | -9 | 134 | -127 |
| 24 | 460 | 7.5 | 16 | -8 | 133 | -125 |
| * | 503.4 | 7.5 | 14 | -7 | 130 | -122 |

# AQUIFER TESTING REPORT

## OU 2 NCRA Pre-Design Investigations - Aquifer Testing

### Objectives

As part of the OU2 NCRA Pre-Design Field Investigations, stepped-rate and constant-rate discharge tests were performed on extraction well EW-99-01 in August and September 1999. The objectives of the stepped-rate test were to:

- assess immediate aquifer response to pumping,
- identify the approximate specific capacity of the pumping well, and,
- determine an appropriate pumping rate for a longer-term constant rate test.

The objectives of the constant-rate test were to:

- determine aquifer hydraulic parameters in the vicinity of the pumping well, including transmissivity (T), hydraulic conductivity (K), and specific yield ($S_y$).

Additional constant-rate test objectives were to provide observational data on the approximate zone of capture, evaluate the presence of aquifer boundary conditions, and determine the magnitude of tidal influence on groundwater elevations in the area of the test. The tests also provided information on groundwater quality near the areas of known hexavalent chromium and chlorinated VOC impact.

### Technical Approach

The location of extraction well EW-99-01 and nearby observation wells and piezometers is shown on Figure 4-6 of this OU2 Pre-Design Investigation Report. Details of the extraction well and observation wells is presented as Table 4-10 of the report.

The tests were performed using in-plant electric power, electronic pressure transducers, and battery powered automated data recorders. The data recorders and transducers were products of In-Situ Inc. of Laramie, Wyoming. Electronic data collection was supplemented by periodic hand-measured water levels. Extraction well EW-99-01 was fitted with a 3.5-inch diameter submersible electric pump (manufactured by Grundfos, Inc). The pump was placed near the bottom of the screened interval, approximately 40 feet below ground surface (bgs).

Water pumped from EW-99-01 was discharged through PVC hose to a 20,000 gallon roll-off (Frac) tank set outside the former Chromium Plating Facility, approximately 120 feet from the pumping well. The discharge end was placed near the top of the tank, approximately 10 feet above ground. The position of the discharge line was kept at a constant elevation during pumping, and the end of the line was never submerged below

the level of water in the tank. As the Frac tank filled, water was periodically removed to back-up holding tanks using a separate transfer pump and distribution hoses.

Two in-line flowmeters were used to measure discharge. An electronic digital flow meter (Flowmeter 1) measured totalized flow and instantaneous discharge rate. A second analog meter (Flowmeter 2) recorded totalized flow. The meters were placed approximately twenty feet from the extraction well and were read periodically throughout the course of the pumping tests.

**Background Measurements**

Water level data were collected prior to pumping to assess head variations or trends that could influence interpretation of well responses to pumping stress. Transducers were installed in five monitoring wells: PZ-99-08I, MWCR-99-02, PZ-99-01A, PZ-99-01B, and PZ-99-01C. A barometer within one of the data recorders, recorded atmospheric pressure coincident with the electronic water level measurements. Measurements were collected at 60-minute intervals beginning on 8/26/99 at 1902 hours and ending on 8/30/99 at 0902 hours. These antecedent water level and barometric measurements are shown on Table J-1. Water level measurements are recorded as feet below the top of each well casing rim (BTOW).

Water level data and barometric measurements from PZ-99-01B, PZ-99-08I, and MWCR-99-02 are shown on Figures J-1 to J-3. To aid in comparison, the barometric data has been shifted vertically on the figures to plot near the water level data. During this three and one-half day period, water levels declined initially and then cycled at various times in each well. Barometric pressure declined gradually (with some fluctuation) for approximately the first three days, and turned sharply higher for the remainder of the test. The plots suggest that there is no discernable effect from barometric change on head levels in these wells, since a falling barometer might be expected to produce a rising water level, and vice versa, which is the opposite of the trends observed. Therefore, no barometric correction was applied to water level measurements collected during the stepped- and constant-rate pumping tests.

Background measurements were also collected from PZ-16D, a piezometer located approximately 600 feet from the pumping well, and assumed to be beyond any anticipated measurable pumping effect. Measurements were collected at 10-minute intervals from 1000 hours on 8/27/99 to 1400 hours on 9/02/99, a period of over 5 days. Due to the size of this data file, tabulated measurements are not presented in this report. However, a plot of all data is shown on Figure J-4. On this figure, water levels are plotted above an arbitrary datum so that rising water levels plots in a positive (upward) direction. As seen on the plot, cyclical variation due to tidal influence is approximately 0.25 feet in this well. Water level trend, as represented by similar points within each tidal cycle is generally upward, with an apparent rise of less than 0.1 foot over the course of the 5-day measurement period.

## Stepped-Rate Discharge Test

A stepped-rate discharge test was initiated at 1000 AM on August 30, 1999 at EW-99-01. Three steps of increasing discharge rate were completed. Pumping interval durations were 120, 120 and 140 minutes, with corresponding discharge rates of 5, 10, and 17 gpm, respectively. Data were collected electronically from piezometers during the test, but were not considered usable due to the marginal observed drawdown response in observation piezometers. The pressure transducer used in EW-99-01 did not record initial water level decline due to installation deeper than its calibrated depth. Manual measurements, collected using a Slope Indicator water level meter, were used to assess drawdown response in the pumping well.

Figure J-5 is a plot of drawdown in the pumping well versus time since the start of pumping (Step 1). The plot indicates that drawdown in the pumping well quickly stabilized during each discharge step. Figure J-6 plots drawdown at the end of each pumping step versus the discharge rate for each corresponding step. This plot shows that drawdown is directly proportional to pumping rate for the range of discharge rates used during the step test. This linear relationship indicates that laminar flow conditions exist and that there are no significant head losses through the wellscreen, at least up to the maximum discharge rate of 17 gpm.

Specific capacity, defined as the well yield per unit of drawdown, is 1.1 gpm/ft for each of the three pumping rates. This result represents the upper bound of actual long-term well yield because specific capacity typically declines with time as water drains from the developing cone of depression, and as the cone of depression encounters changing formation conditions (e.g. recharge boundaries). Assuming a specific capacity of 1.1 gpm/ft, an approximation of transmissivity (T) is reached by the empirical equation: specific capacity = T/1500 (Driscoll, 1986). This yields a T of about 1650 gpd/ft (220 $ft^2$/day).

Flow rate measurements for the stepped-rate discharge test are shown on Table J-2. The two flowmeters show a disparity of totalized flow of approximately 9% at the end of the test. Based on visual observation of total discharge into the holding tanks (estimated at the end of the subsequent constant-rate pumping test), Flowmeter 1 is assumed to best reflect actual discharge rate and totalized flow.

The third discharge rate (Step 3) of 17 gpm represented the maximum achievable pumping rate produced by the pump under actual field conditions at the time of the test. The decision was made to pump at a slightly lower rate for the subsequent long-term constant discharge test, to allow for possible upward adjustments in discharge rate as a result of increasing head pressure.

## APPENDIX J

### Constant-Rate Discharge Test

A constant-rate discharge test was initiated at 0937 AM on August 31, 1999 and ended at 1237 PM on September 2, 1999, a pumping period of 51 hours (3060 minutes). A discharge rate of 15 gpm was chosen for the test and held constant throughout the pumping interval. Table J-3 lists measurements of discharge rate and totalized flow that were recorded from the two in-line meters during the test. Instantaneous measurements (Flowmeter 1) varied between 15.04 and 15.19 gpm, a difference of less than 1 percent. Based on these measurements the averaged discharge rate was 15.12 gpm. The slight variations in rate are not interpreted to have any significant effect on the shape of the observed drawdown curve of either the pumping well or any observation wells.

Electronic measurements of pressure head were collected in eight observation piezometers, extraction well EW-99-01, and the background piezometer (PZ-16D). These were supplemented by manual water level meter data throughout the course of the pumping test. Two additional transducers installed in PZ-99-02B and PZ-99-02C did not function properly due to faulty connections. Electronic data collection continued for several days past the end of the pumping interval to observe general head trends. Tables J-4 and J-5 present data collected during the pumping and post-pumping (recovery) intervals using the Hermit 3000 data recorder. Table J-6 presents data collected from a separate data recorder at piezometer PZ-99-02A. Note that the transducer in extraction well EW-99-01 did not begin recording head change until 34 seconds after the start of pumping. As discussed previously, the transducer did not begin recording data until head pressure fell to within its calibrated range. All subsequent data were accurately recorded and closely match manual measurements collected during the test.

Figure J-7 plots barometric measurements during the pumping interval. The testing interval was characterized generally by falling barometric pressure. As discussed previously, barometric changes did not produce observable effects on head levels in any of the test observation wells.

Figures J-8 to J-14 plot electronic pressure head data from seven of the observation piezometers over a period that includes the three-day (3060-minute) pumping interval and an equivalent recovery interval. Heads are recorded as feet below the top of each well rim (BOTW), so that a decline in head (decreasing water level) is seen in the positive (upward) direction on the y-axis. The relatively small drawdowns produced by pumping, coupled with the tidal cycle fluctuations and other characteristics of the aquifer, make analysis of the pumping test data by standard approaches difficult.

All of the piezometers show cyclical head variation due to tidal influence. Tidal oscillation observed in observation piezometers was generally about 0.03 feet between high and low tidal effects. Each plot also shows a fast rebound in head that occurred after the stop of pumping at 3060 minutes. The magnitude of this recovery is interpreted to reflect the approximate maximum drawdown due to pumping. This apparent drawdown

value was determined for each well by comparing pumping and recovery heads at similar times of a given tidal cycle (e.g., comparing low or high tidal heads). This is shown on each plot using trendlines plotted through equivalent tidal points on either side of 3060 minutes. The drawdowns determined via this method are presented in Table J-7. The table includes the approximate magnitude of tidal variation that can also be measured directly from the plots.

This comparative method reveals that drawdown due to pumping varied from 0.06 feet to 0.15 feet in all of the observation piezometers except the background piezometer (which is located closer to open water). This drawdown apparently occurred within the first few minutes of pumping (and subsequently, of recovery). This rapid response indicates that the observed drawdowns were a semi-confined response likely caused by geologic stratification. None of the wells showed obvious later trends in the drawdown curve that could be recognized as delayed yield. Tidal variation was significant when compared to the low magnitude of drawdown due to pumping. Attempts to filter the tidal effect out of the data sets were unsuccessful in producing a smoothed drawdown curve that could be compared to analytical methods requiring curve-matching techniques. Also, the apparent drawdowns were probably too small to calculate reliably accurate aquifer properties, even if no tidal oscillation was present. The data, however, can be manipulated to provide estimates of lower bounds for the aquifer transmissivity or hydraulic conductivity.

The constant-rate test produced a drawdown response of about 14.5 feet in the pumping well. Since this response is large when compared to potential background trends (i.e., tidal, barometric, and precipitation recharge trend), data from the pumping well proved to be the most useful for calculation of aquifer parameters.

Figures J-15 and J-16 plot electronic drawdown data from EW-99-01 versus time pumping at linear and logarithmic time scales, respectively. As discussed above, the transducer did not begin recording head change until about 34 seconds after the start of pumping. The plots indicate that most of the drawdown observed occurred in the first 10 minutes of pumping. A slight rebound in head level, beginning at about 700 minutes, does not appear to be a result of any decay in the discharge rate. Drawdown accelerated near the end of the three-day test at about 2800 minutes since initiation of test pumping. Pumping was extended beyond the planned 48-hour period to observe this renewed trend. After a brief decline, the rate of head change slowed. This late-time event possibly represents a recharge boundary (barrier) of some type, the position of which cannot be determined from test data.

Recovery data from the pumping well were evaluated first using the Theis Residual Drawdown Method. For this method, residual drawdown (s'), the observed drawdown during recovery, is plotted against a ratio of time since pumping began over time since pumping stopped (t/t'). Figure J-17 shows the resultant plot. Data used for the plot are included in Table J-8. This method yields a calculated T of 44 $ft^2$/day, which is too low to

be consistent with the observed well specific capacity. The fact that the straight-line portion of the plotted curve intercepts the x-axis at a high value of t/t' indicates that the aquifer received significant recharge during the test. This recharge limited drawdown in the pumping well and may have caused the rapid recovery that results in the calculation of a low T value using this method. The likely source of this recharge is from shallower layers within the unconfined zone. The small drawdown response in wells MWCR-99-01 and PZ-99-01I, located within 20 feet of the pumping well and screened at shallower intervals than the pumping well (see Table 4-10), suggests that these shallow layers are separated from the deeper pumping zone by lower vertical hydraulic conductivities.

Drawdown data from the pumping well were also analyzed using Neuman's Method (1975), which is a Theis-based curve-matching technique developed for analysis of unconfined aquifers. The drawdown data is plotted logarithmically (Figure J-18) and compared to published type curves representing theoretical solutions based on the method. A match of early time (1 to 10 minutes) data and the resulting solution for T are shown on the figure. The calculated T of 86 $ft^2$/day is again lower than that suggested by the observed specific capacity. The method was not used to evaluate late time data for specific yield, since data from the pumping well are not suitable for this purpose.

**Conclusions**

Aquifer testing provided insight on aquifer response to pumping that will be important in potential remedial design. The testing revealed that the pumping zone (20 to 40 feet bgs) has high specific capacity that indicates a relatively high aquifer transmissivity. The pumping well responded largely in an unconfined manner with a quick flattening of drawdown that can be associated with either delayed drainage from an unconfined aquifer or leakage through semi-confining overlying soils. Shallow piezometers close to the pumping well exhibited relatively small drawdown responses, indicating that geologic stratification is likely restricting the vertical propagation of pumping stresses. Similar small drawdowns at more distant piezometers screened in the same zone as extraction well EW-99-01 (e.g. PZ-99-01B), suggest that delayed drainage or leakage buffered pumping stresses such that they were not apparent over the course of the three day constant-rate discharge test.

Cyclical tidal influence limited the usefulness of data from any of the observation wells, particularly because the drawdown from pumping in all observation wells was relatively small. Tidal variation, while only about 0.03 feet in magnitude, was generally equal to 30 percent or more of the apparent drawdown.

The best estimate of aquifer transmissivity is derived from the pumping well specific capacity. Specific capacity was approximately one gpm per foot of drawdown at each of the four test pumping rates (step test and constant-rate test discharge rates). The T derived empirically from this specific capacity is 1500 gpd/ft (200 $ft^2$/day). Lower values of T, estimated using pumping well drawdown data and various Theis-based curve-

matching and straight-line techniques, appear to underestimate the T, probably as a result of relatively large amounts of recharge to the aquifer from leakage or delayed drainage. If these lower values were correct, it would be theoretically impossible to maintain the constant-rate test pumping rate of 15 gpm without de-watering the well.

Using this approximation of T of 200 $ft^2$/day and the observational evidence that anisotropy (stratification) limits the flow of water from the upper portion of the saturated zone, the aquifer thickness is best approximated at 20 feet, the length of the EW-99-01 wellscreen. Using this thickness produces an estimate of the horizontal hydraulic conductivity (K) for the pumping zone of 10 ft/day or $6.9x10^{-3}$ ft/min.

The aquifer storage coefficient could not be calculated from the drawdown data given the small drawdown responses at all observation wells.

FIGURES

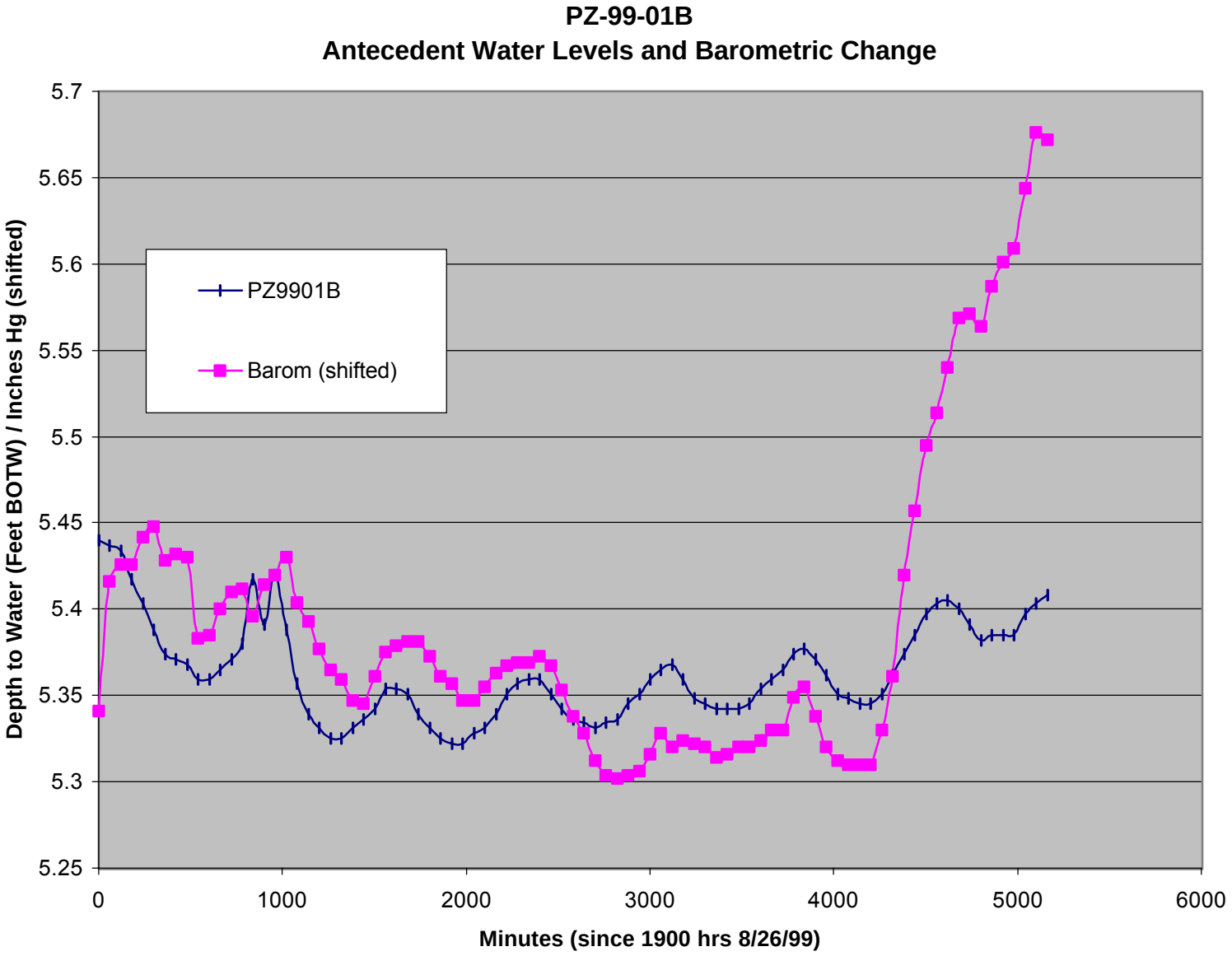



Figure J-1
OU2 Chromium Plating Area Aquifer Test

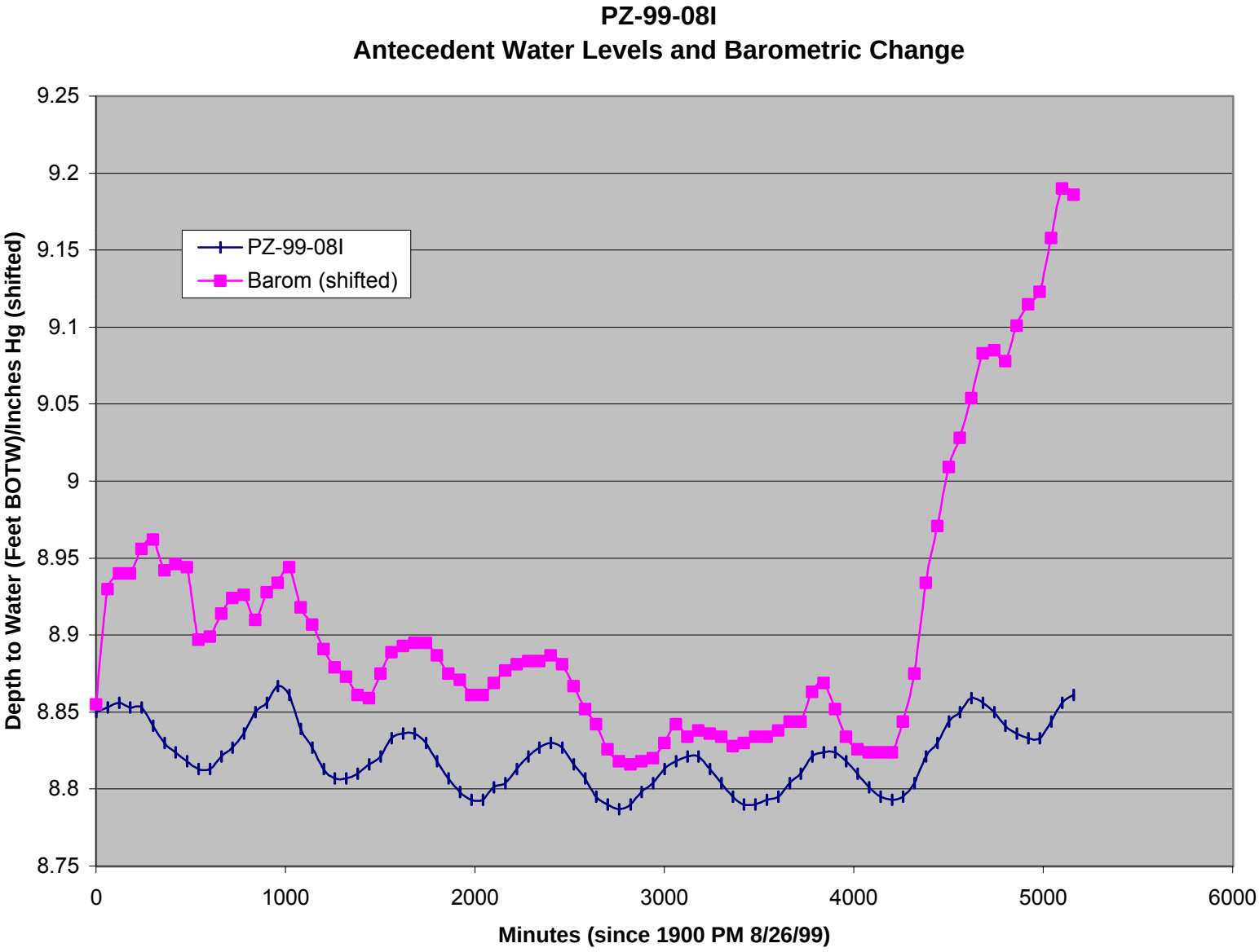



Figure J-2
OU2 Chromium Plating Area Aquifer Test

projects\SAEPpumptest\ant.xls 08IP

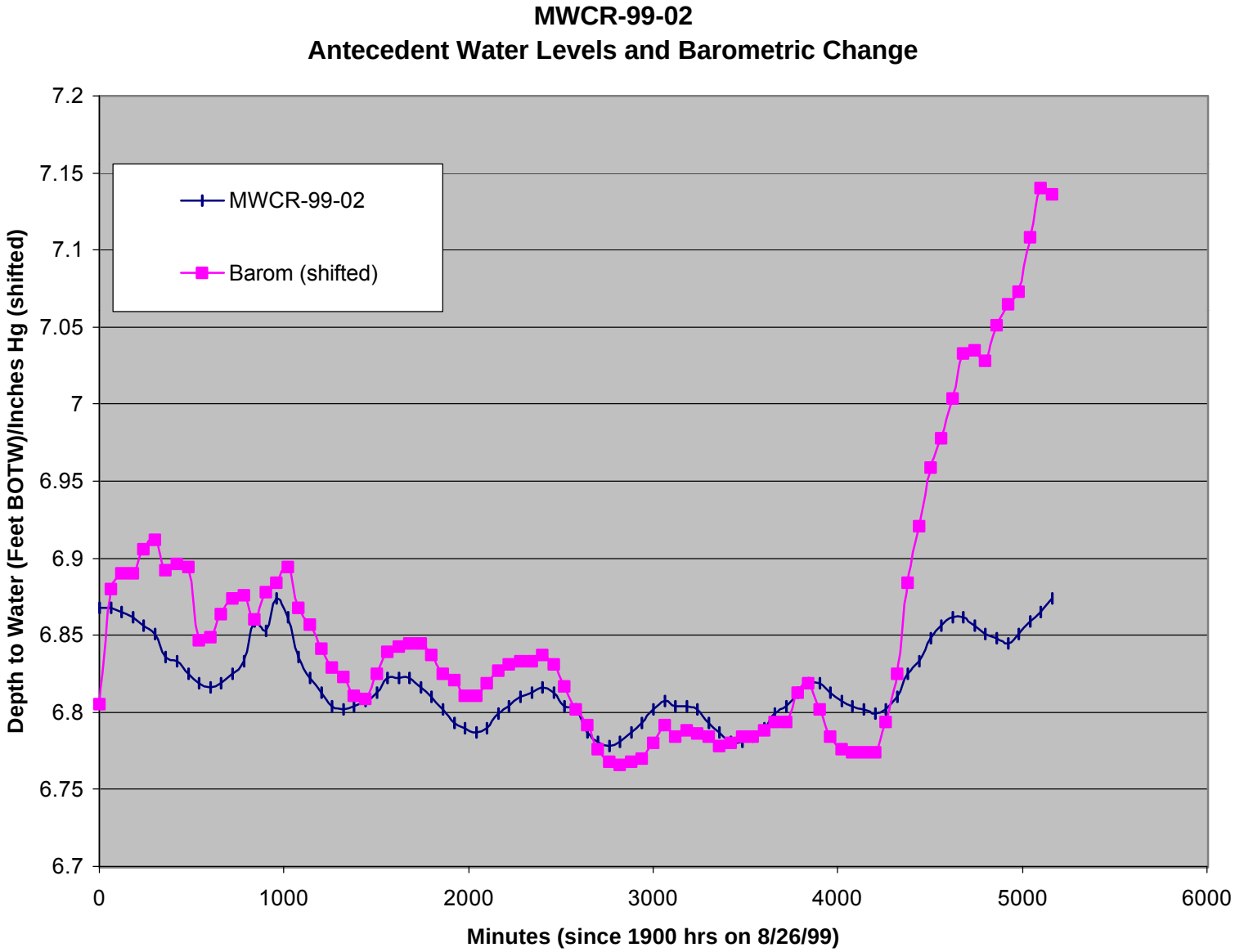



Figure J-3
OU2 Chromium Plating Area Aquifer Test

SAEPpumptest/ant.xls MWCR02P

**PZ-16D**
**Background Water Level Trend**

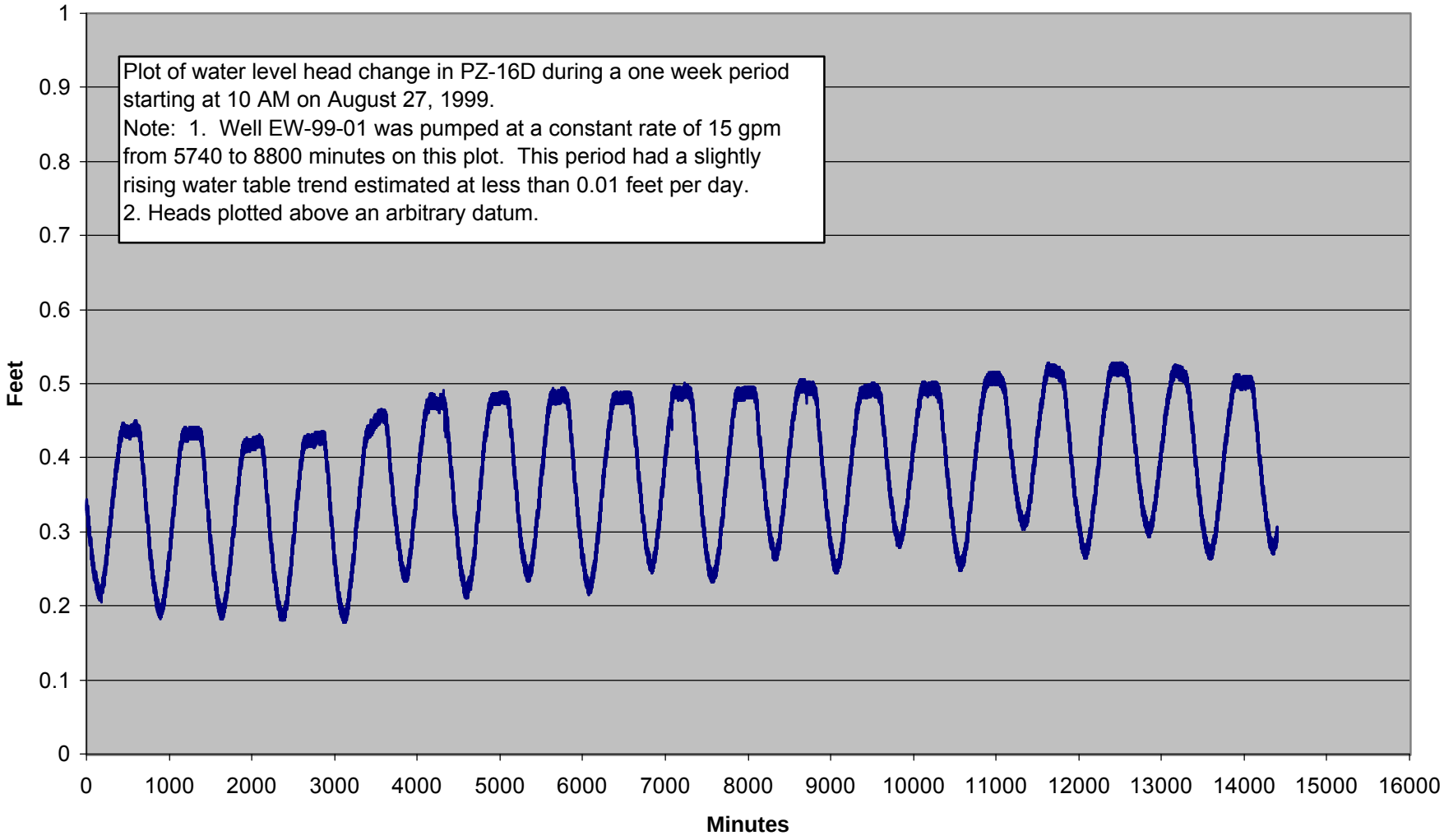



Figure J-4
OU2 Chromium Plating Area Aquifer Test

projects\SAEPpumptest\fultrol2.xls chart 1

## EW-99-01 Stepped Rate Discharge Test
## Drawdown Measurements Using Hand-held Water Level Meter

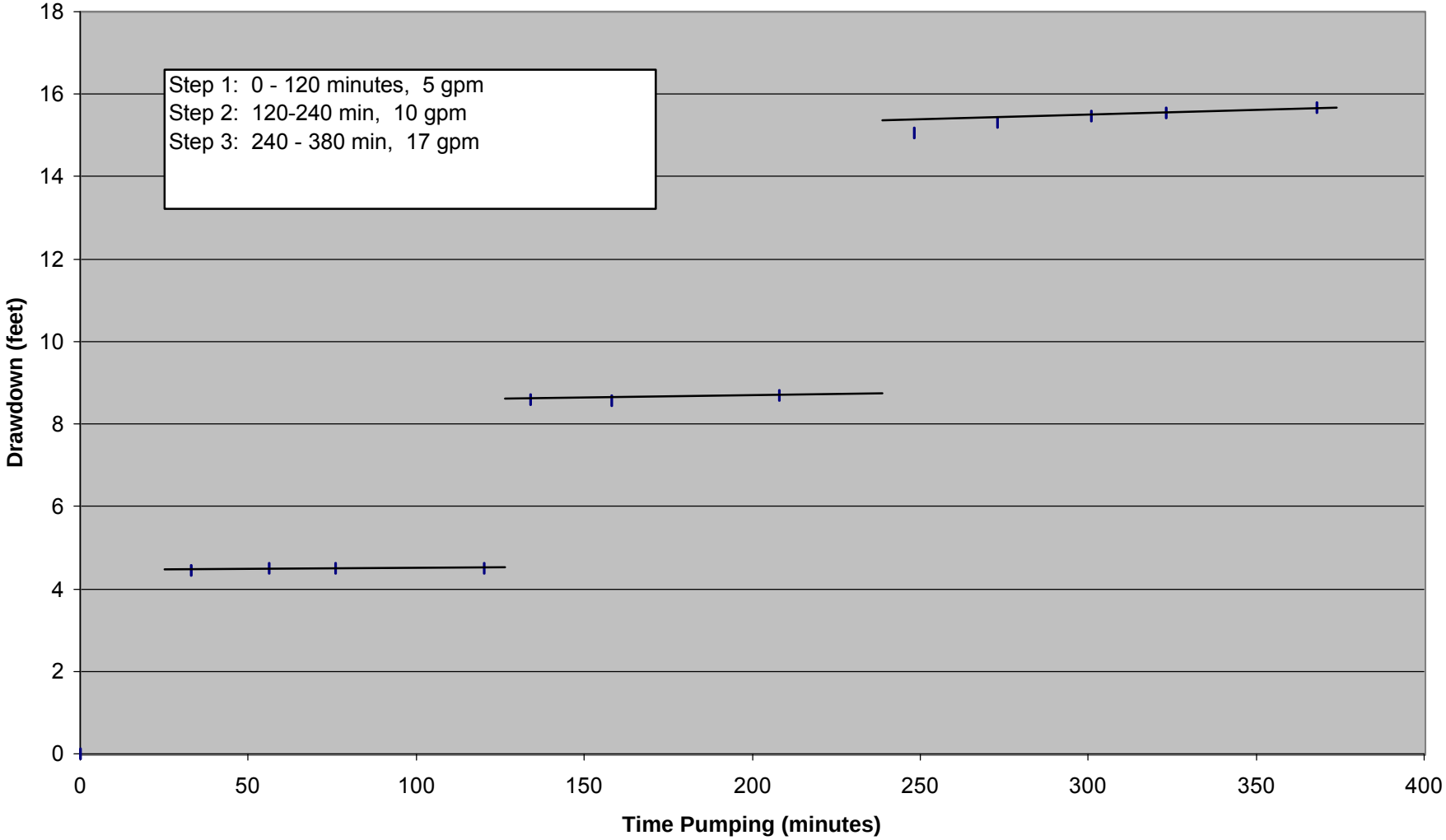



Figure J-5
OU2 Chromium Plating Area Aquifer Test

SAEPpumptest\stephand.xls time vs s

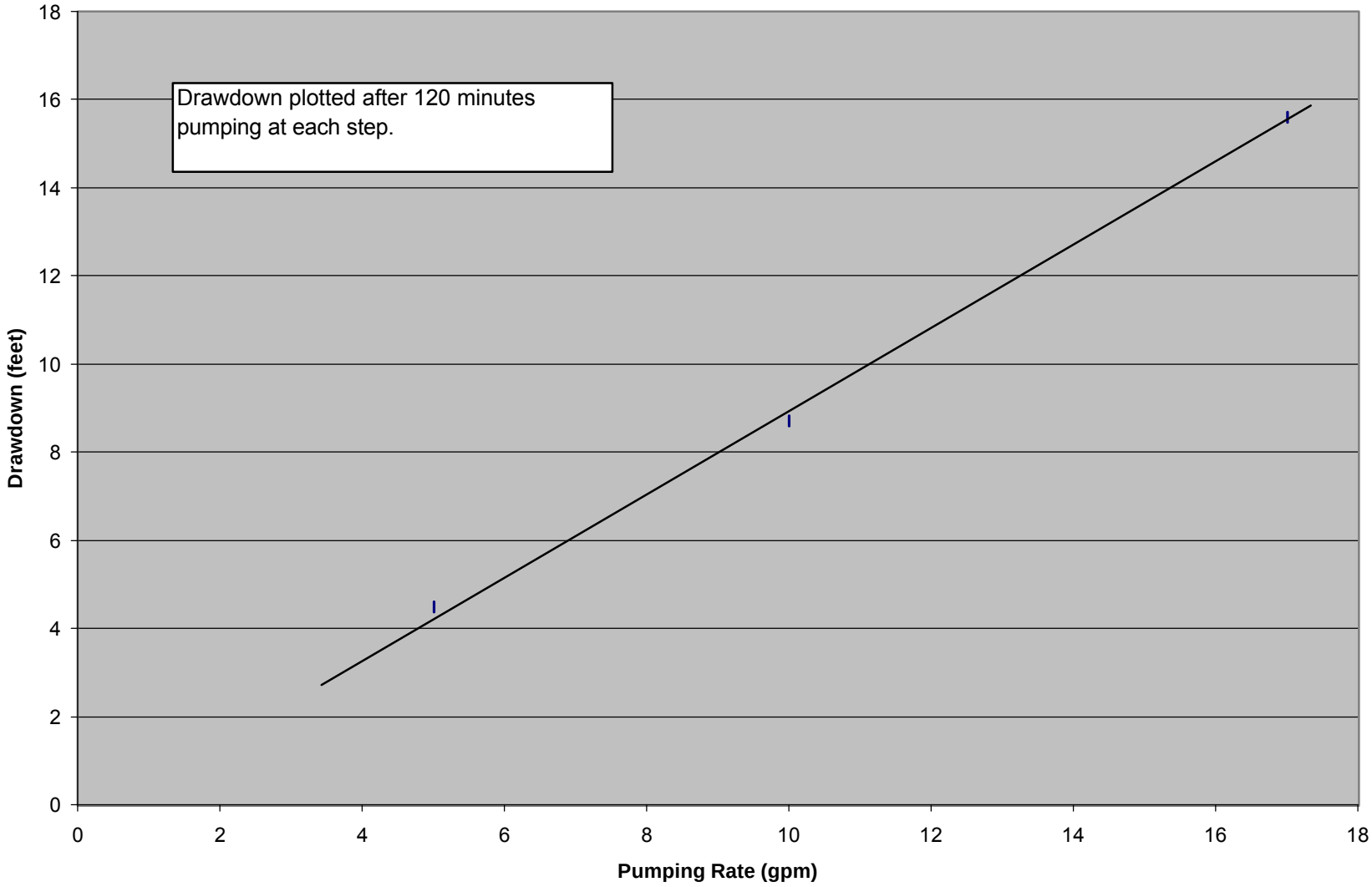



Figure J-6
OU2 Chromium Plating Area Aquifer Test

SAEPpumptest\stephand.xls rate vs s

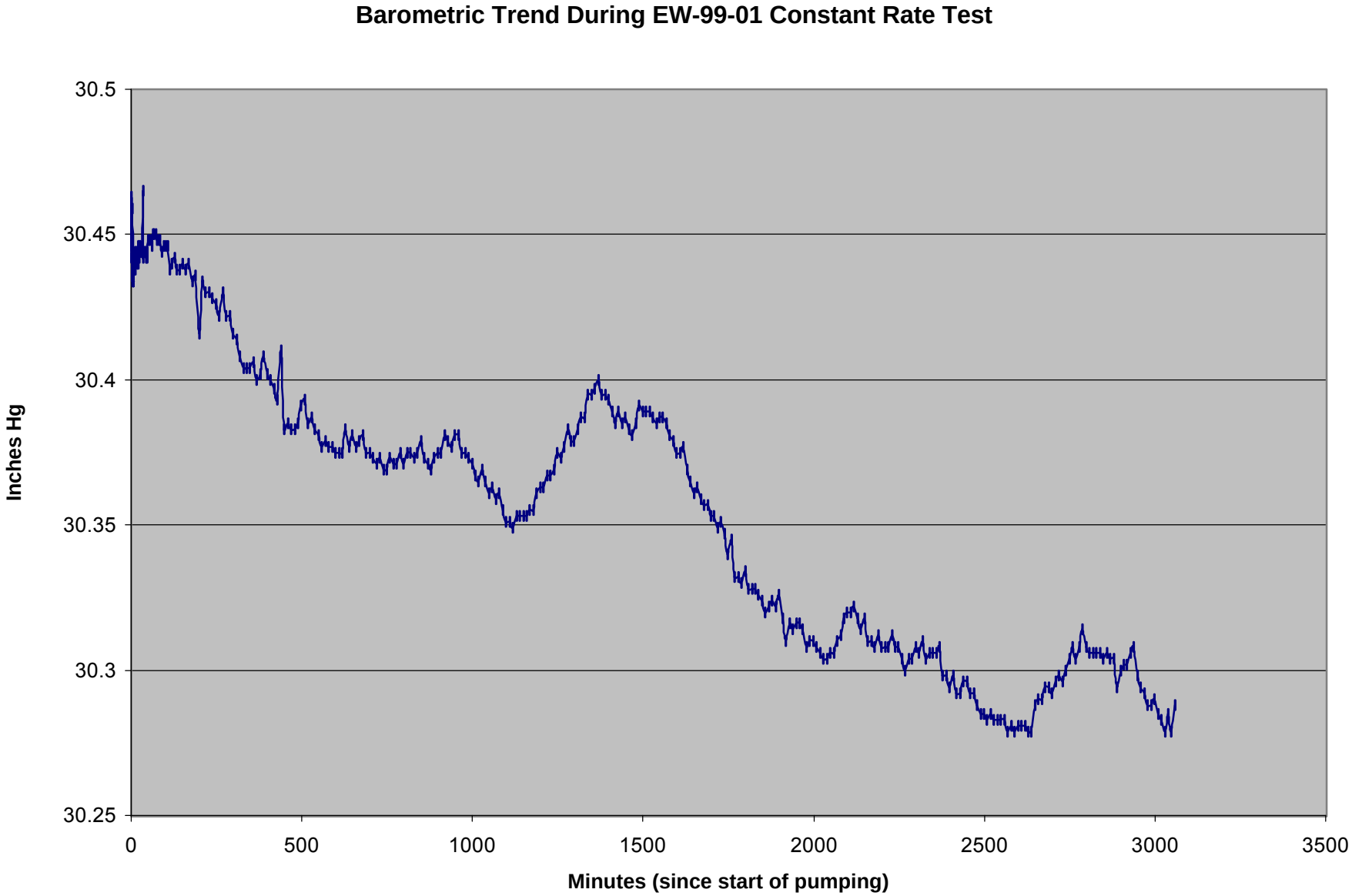



Figure J-7
OU2 Chromium Plating Area Aquifer Test

SAEPpumptest\3000p2.xls barometric plot

**MCR-99-01**
**Water Levels During Pumping and Recovery of EW-99-01**

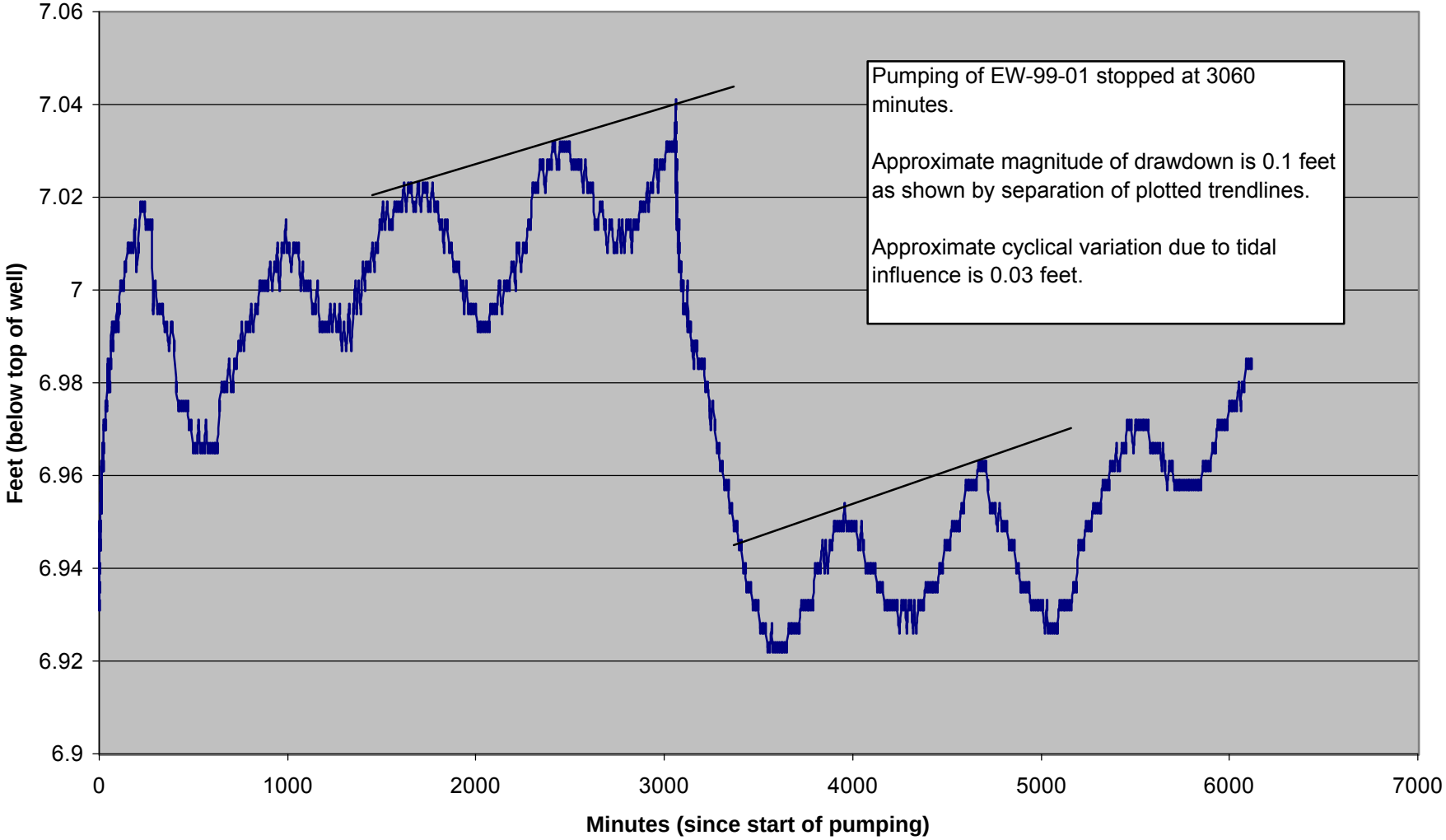



Figure J-8
OU2 Chromium Plating Area Aquifer Test

projects\SAEPpumptest\3000p2.xls mcr9901 P

**PZ-99-01I**
**Water Levels During Pumping and Recovery Test at EW-99-01**

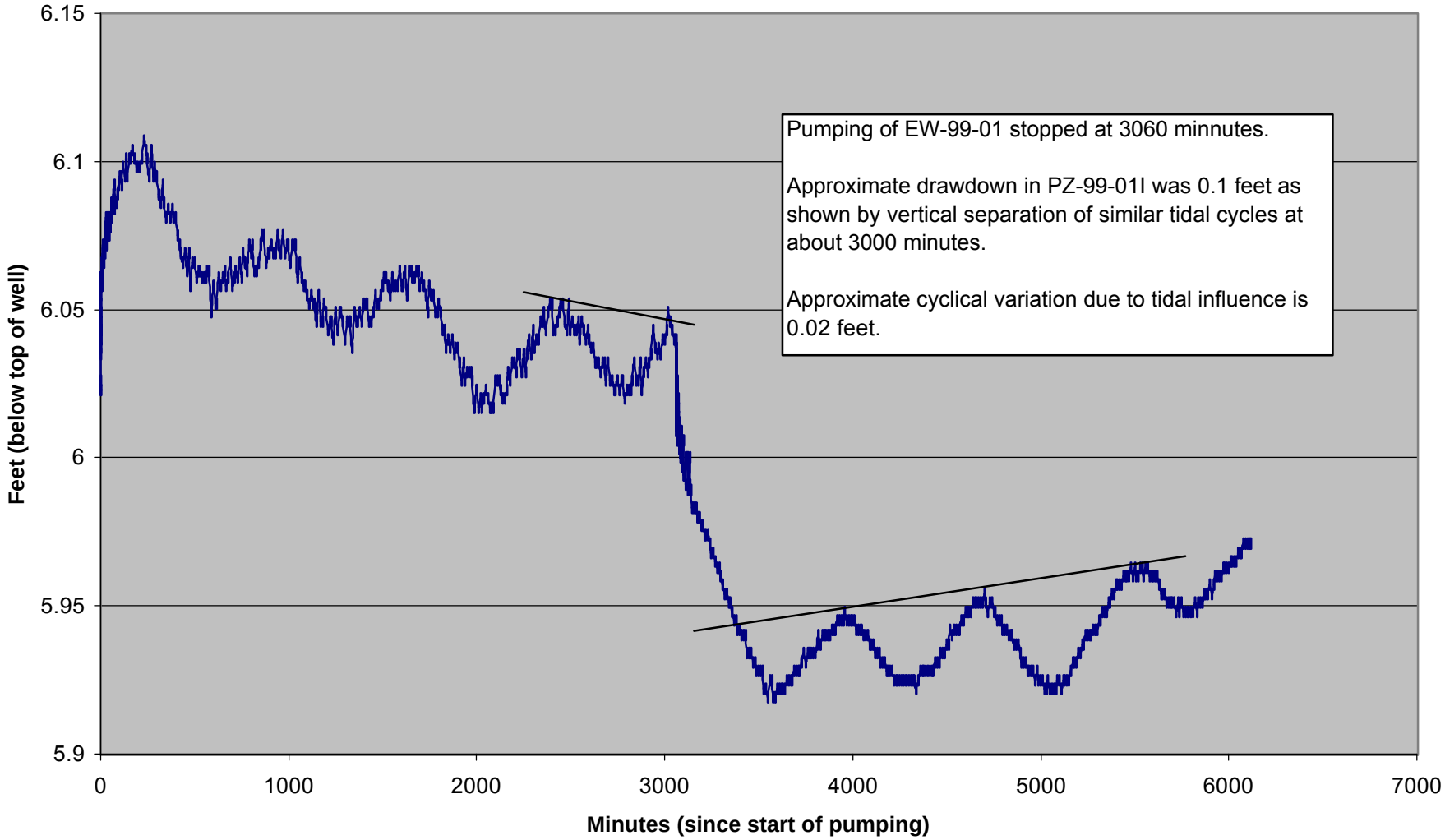
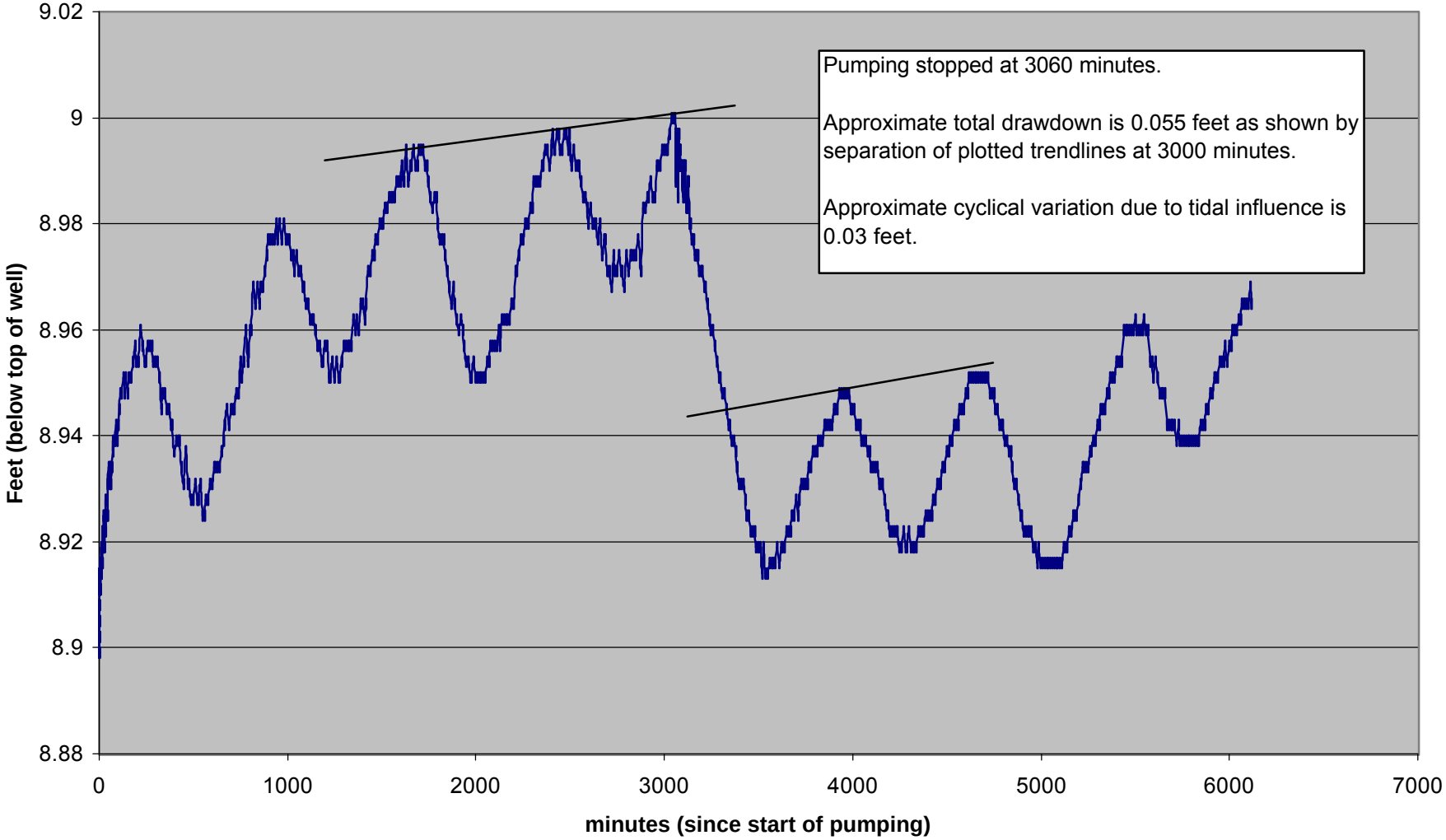



Figure J-9
OU2 Chromium Plating Area Aquifer Test

projects\SAEPpumptest\3000p2 9901I Plot

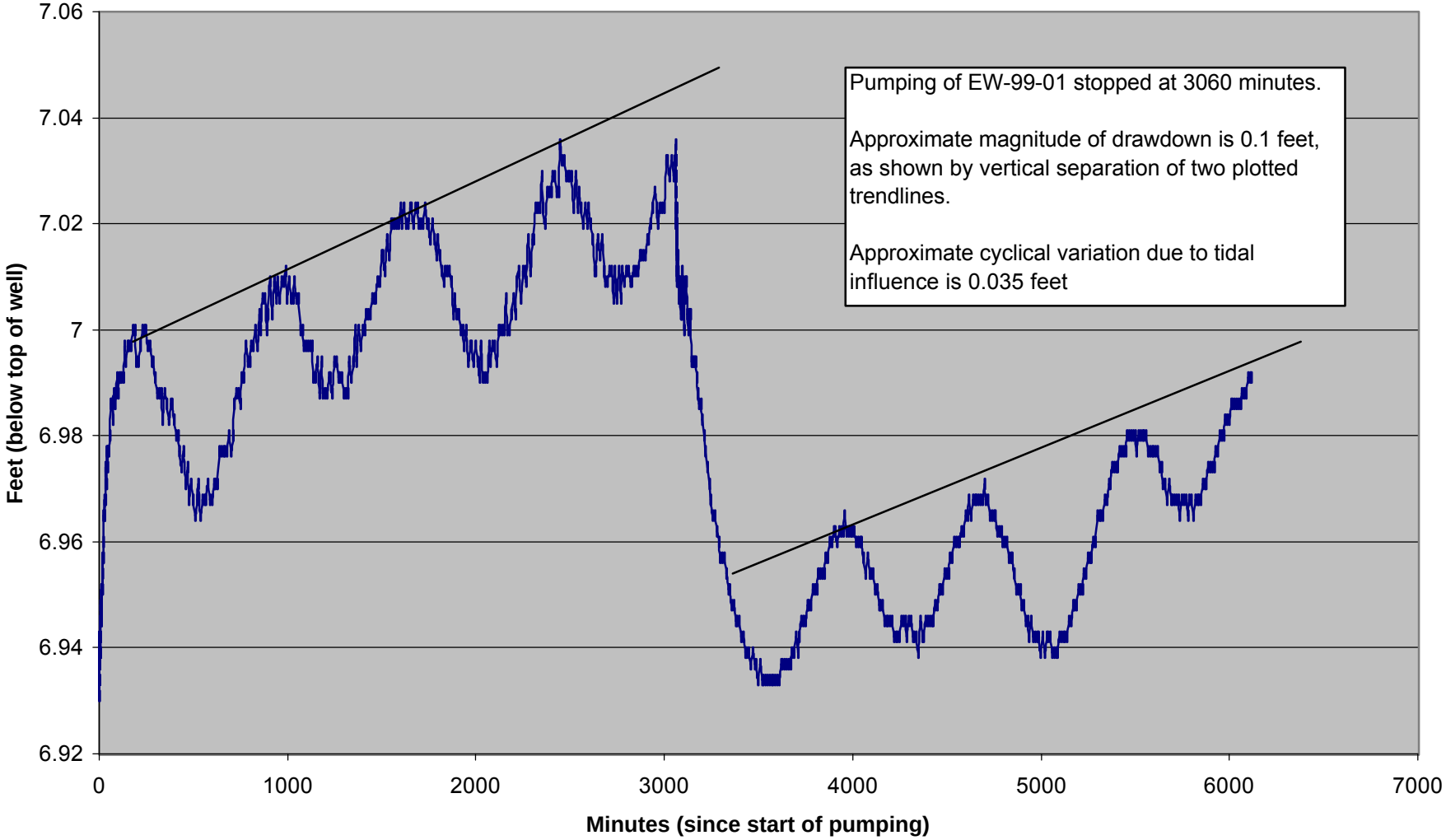
**PZ-99-08I**
**Water Levels During Pumping and Recovery Test of EW-99-01**




projects\SAEPpumptest\3000p2.xls 9908I Plot

Figure J-10
OU2 Chromium Plating Area Aquifer Test

**MWCR-99-02**
**Water Levels During Pumping and Recovery Test of EW-99-01**




projects\SAEPpumptest\3000p2.xls 9902 Plot

Figure J-11
OU2 Chromium Plating Area Aquifer Test

**PZ-99-01B**
**Water Levels During Pumping and Recovery Test of EW-99-01**

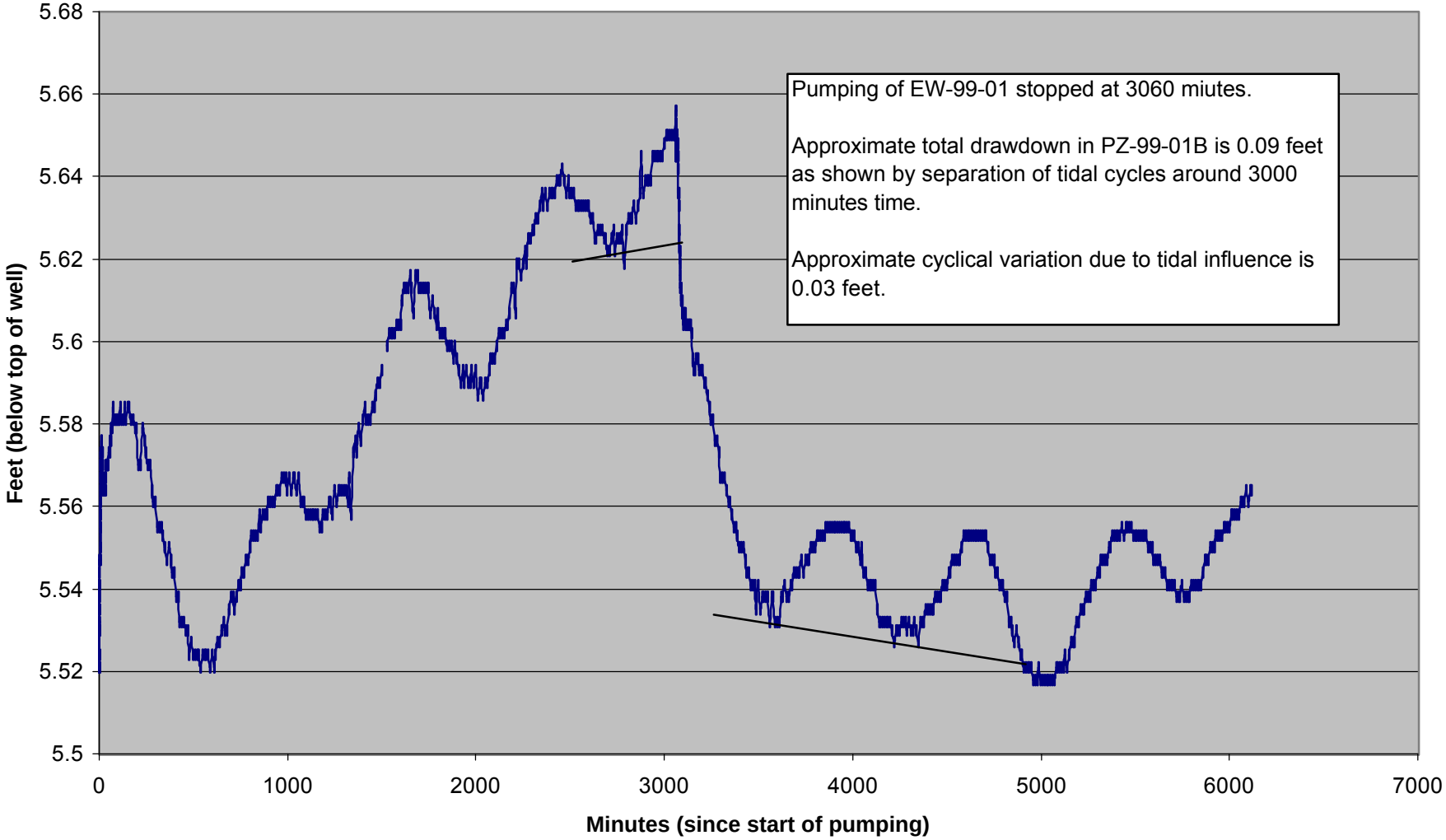



Figure J-12
OU2 Chromium Plating Area Aquifer Test

projects\SAEPpumptest\3000p2.xls 9901B Plot

**PZ-99-01C**
**Water Levels During Pumping and Recovery of EW-99-01**

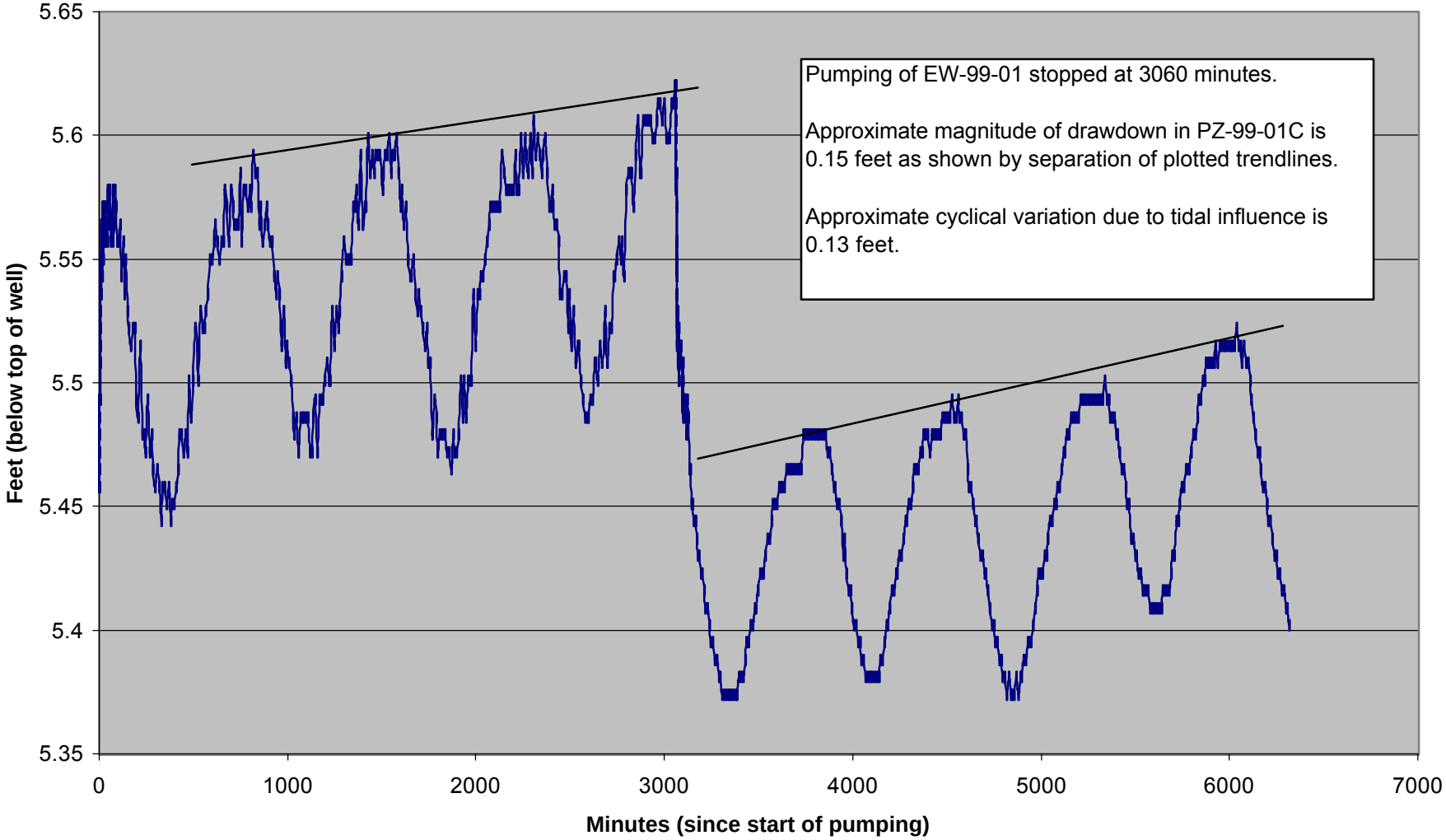



Figure J-13
OU2 Chromium Plating Area Aquifer Test

projects\SAEPpumptest\3000p2.xls PZ9901C P

**PZ-99-02A**
**Water Levels During Pumping and Recovery Test at EW-99-01**

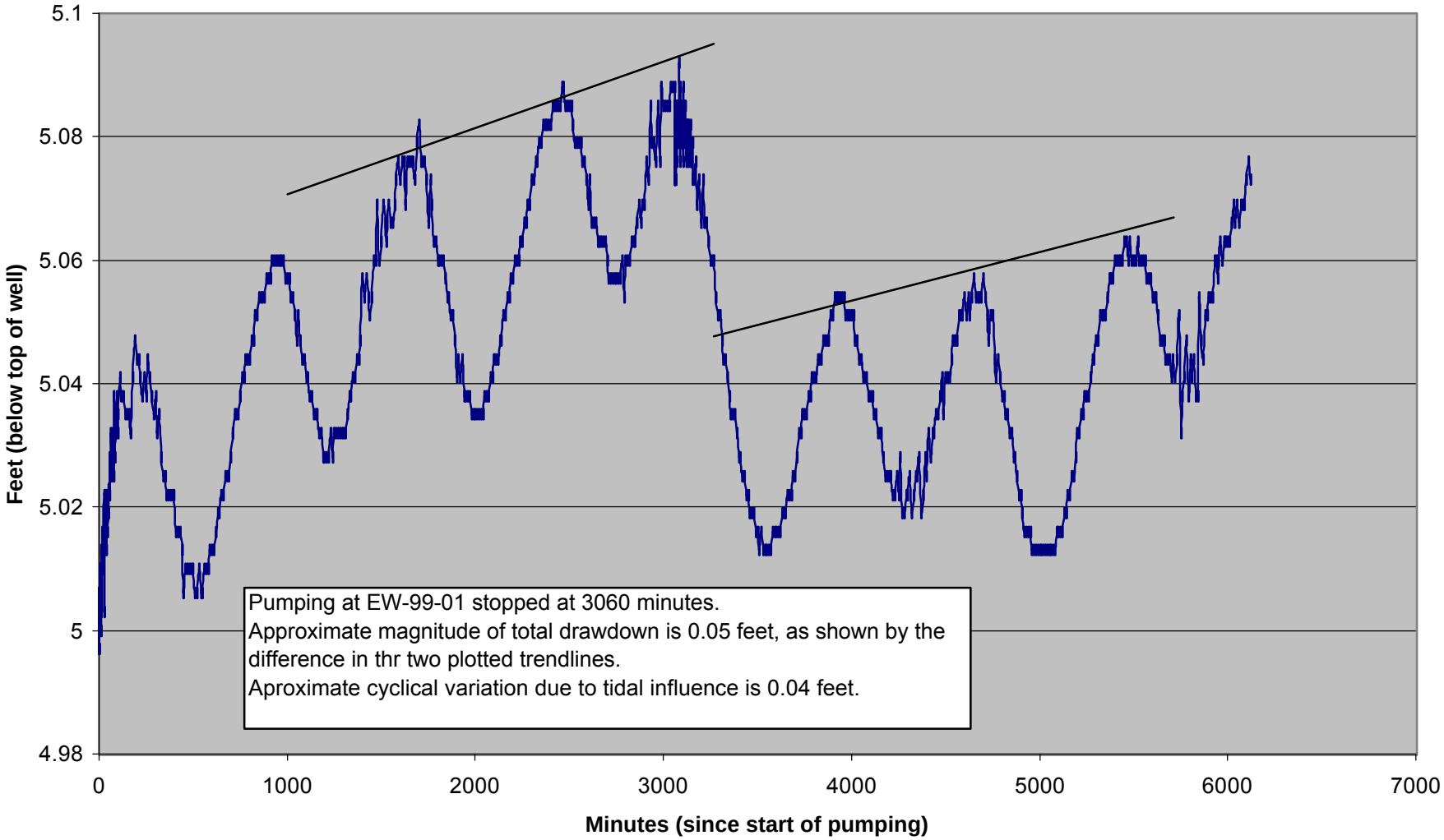
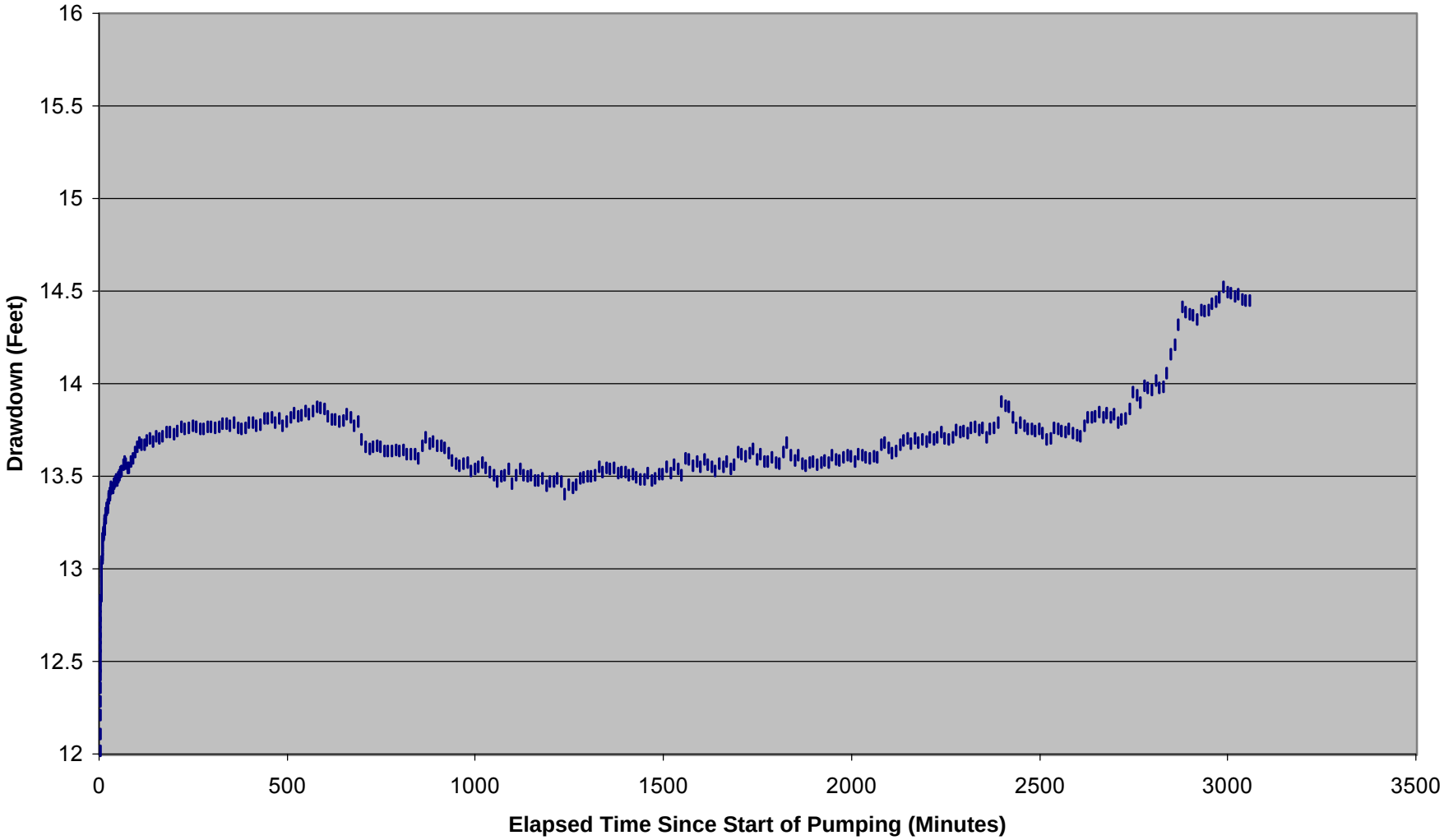



Figure J-14
OU2 Chromium Plating Area Aquifer Test

projects\SAEPpumptest\Cr2000p.xls 02A Plot (2)

## EW-99-01 Constant Rate Pumping Test
## Linear Plot of Drawdown During Pumping Interval




SAEPpumptest\cr3000.xls EW Linear

Figure J-15
OU2 Chromium Plating Area Aquifer Test

**EW-99-01 Constant Rate Pumping Test**
**Semi-Log Plot of Drawdown During Pumping Interval**

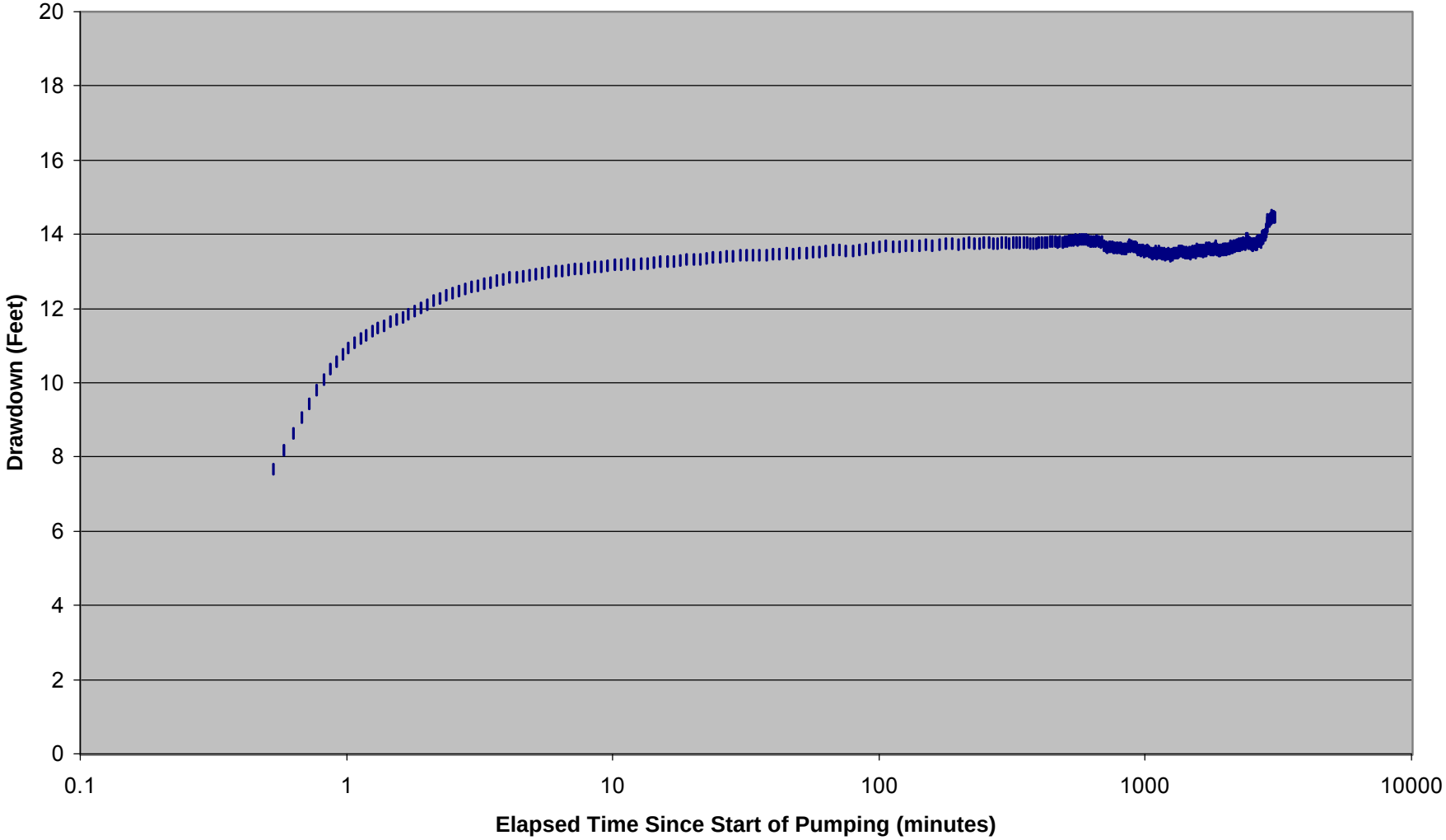



Figure J-16
OU2 Chromium Plating Area Aquifer Test

SAEPpumptest\cr3000.xls EW Semi-Log

**EW-99-01**
**Theis Recovery Method - Pumping Well Residual Drawdown Plot**

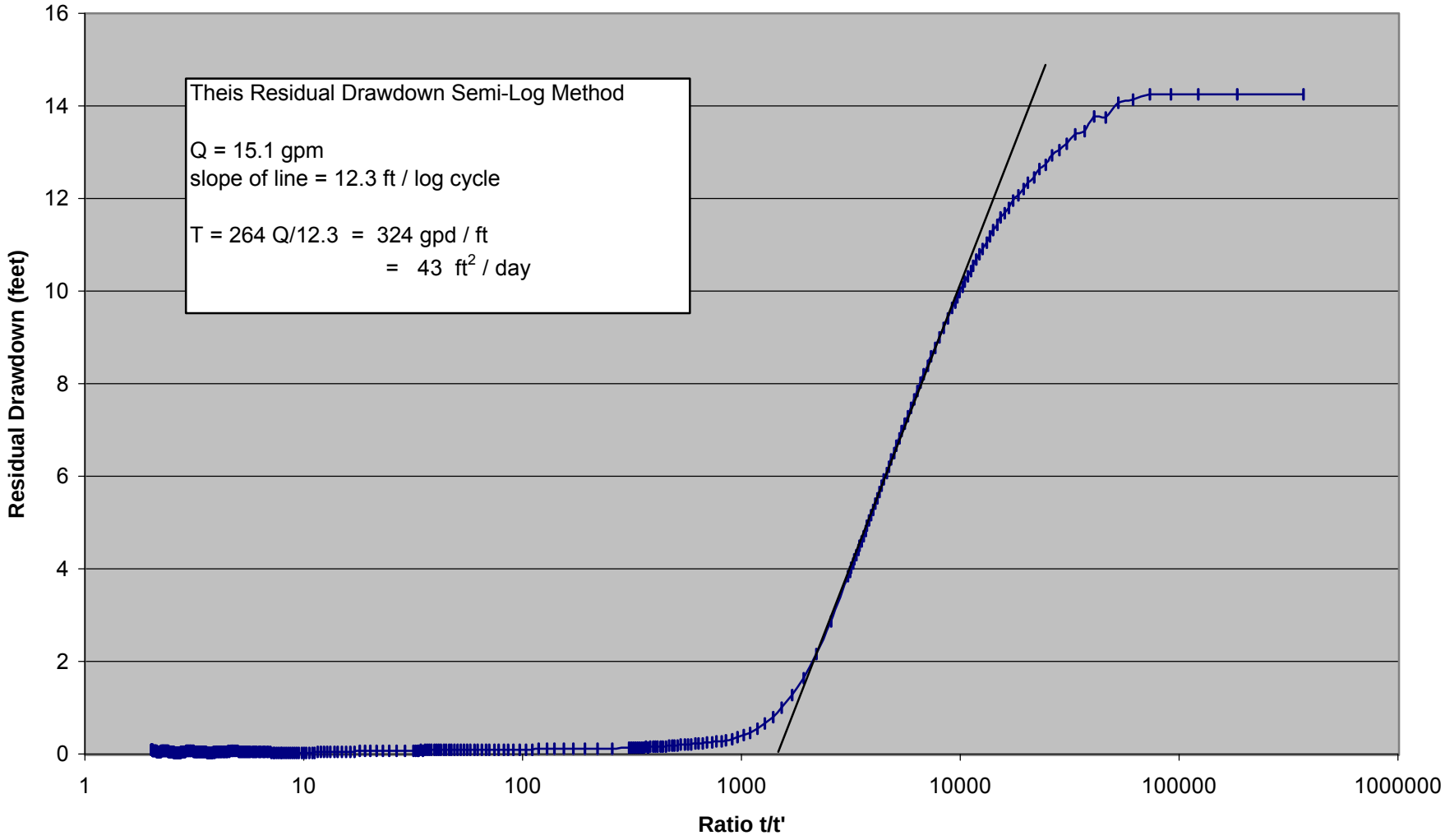



Figure J-17
OU2 Chromium Plating Area Aquifer Test

projects\SAEPpumptest\CR2000r.xls Semi-Log Resid DD

## EW-99-01 Constant Rate Pumping Test
## Log-Log Plot of Drawdown During Pumping Interval

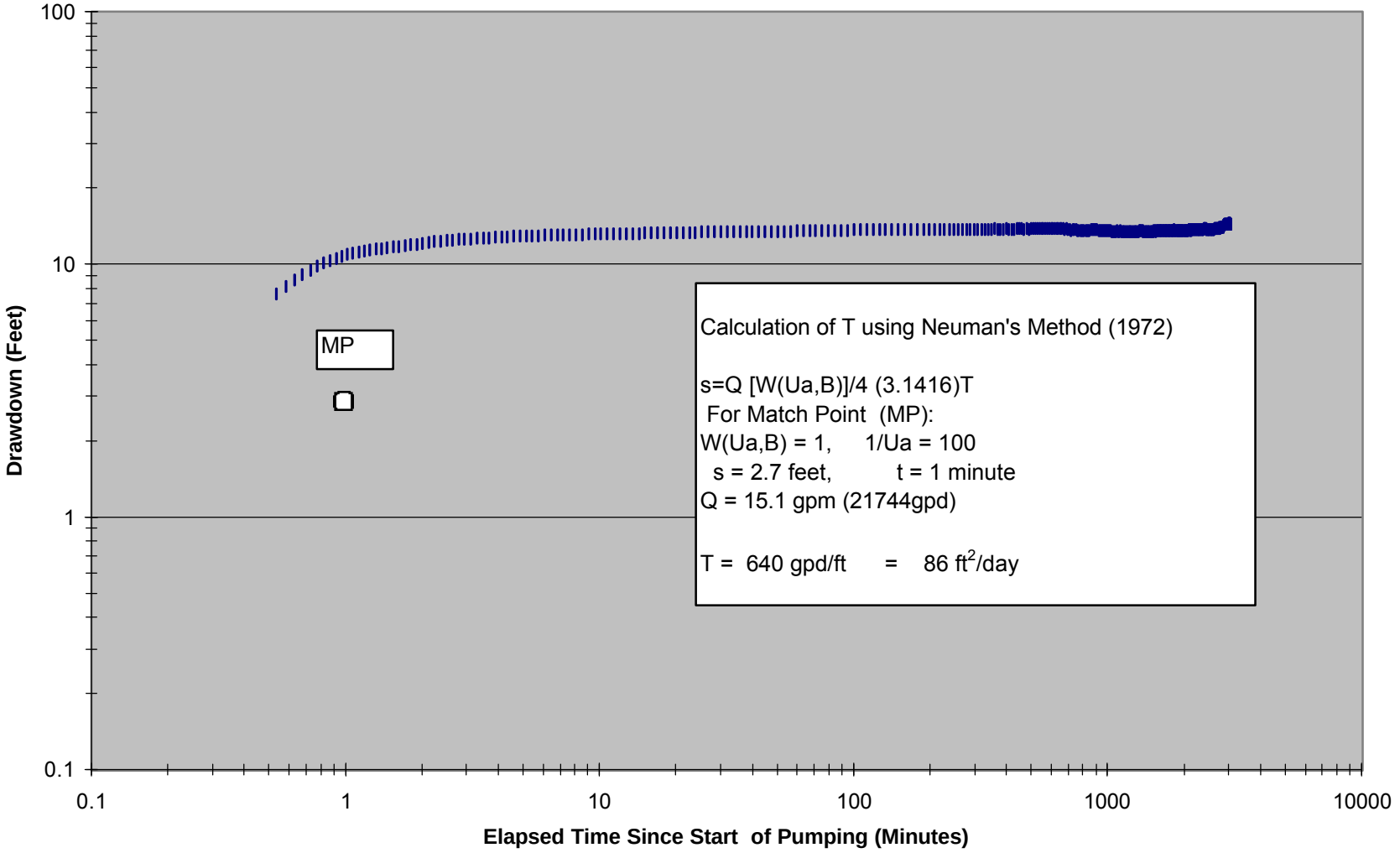



Figure J-18
OU2 Chromium Plating Area Aquifer Test

SAEPpumptest\cr3000.xls EW Log-Log

# TABLES

TABLE J-1

EW-99-01 Aquifer Testing
Antecendent Water Level Monitoring
Hermit 3000 Transducer Data

EW-99-01 Aquifer Testing
Antecedent Water Level Monitoring
Hermit 3000 Transducer Data

| Observation Point: | | | PZ-99-08I | MWCR-99-02 | PZ-99-01A | PZ-99-01B | PZ-99-01C | Barometer |
|---|---|---|---|---|---|---|---|---|
| | | | Chan[4] | Chan[5] | Chan[6] | Chan[7] | Chan[8] | Chan[0] |
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 8/26/99 | 19:02:25 | 0 | 8.85 | 6.868 | 5.37 | 5.44 | 5.4 | 30.005 |
| 8/26/99 | 20:02:25 | 60 | 8.853 | 6.868 | 5.381 | 5.437 | 5.386 | 30.08 |
| 8/26/99 | 21:02:25 | 120 | 8.856 | 6.865 | 5.384 | 5.434 | 5.358 | 30.09 |
| 8/26/99 | 22:02:25 | 180 | 8.853 | 6.862 | 5.384 | 5.417 | 5.323 | 30.09 |
| 8/26/99 | 23:02:25 | 240 | 8.853 | 6.856 | 5.384 | 5.403 | 5.294 | 30.106 |
| 8/27/99 | 0:02:25 | 300 | 8.841 | 6.851 | 5.376 | 5.388 | 5.28 | 30.112 |
| 8/27/99 | 1:02:25 | 360 | 8.83 | 6.836 | 5.376 | 5.374 | 5.28 | 30.092 |
| 8/27/99 | 2:02:25 | 420 | 8.824 | 6.833 | 5.376 | 5.371 | 5.301 | 30.096 |
| 8/27/99 | 3:02:25 | 480 | 8.818 | 6.825 | 5.37 | 5.368 | 5.323 | 30.094 |
| 8/27/99 | 4:02:25 | 540 | 8.813 | 6.819 | 5.364 | 5.359 | 5.337 | 30.047 |
| 8/27/99 | 5:02:25 | 600 | 8.813 | 6.816 | 5.364 | 5.359 | 5.351 | 30.049 |
| 8/27/99 | 6:02:25 | 660 | 8.821 | 6.819 | 5.373 | 5.365 | 5.358 | 30.064 |
| 8/27/99 | 7:02:25 | 720 | 8.827 | 6.825 | 5.376 | 5.371 | 5.365 | 30.074 |
| 8/27/99 | 8:02:25 | 780 | 8.836 | 6.833 | 5.387 | 5.38 | 5.372 | 30.076 |
| 8/27/99 | 9:02:25 | 840 | 8.85 | 6.859 | 5.41 | 5.417 | 5.456 | 30.06 |
| 8/27/99 | 10:02:25 | 900 | 8.856 | 6.853 | 5.413 | 5.391 | 5.315 | 30.078 |
| 8/27/99 | 11:02:25 | 960 | 8.867 | 6.874 | 5.433 | 5.42 | 5.386 | 30.084 |
| 8/27/99 | 12:02:25 | 1020 | 8.861 | 6.862 | 5.425 | 5.388 | 5.301 | 30.094 |
| 8/27/99 | 13:02:25 | 1080 | 8.839 | 6.836 | 5.396 | 5.357 | 5.252 | 30.068 |
| 8/27/99 | 14:02:25 | 1140 | 8.827 | 6.822 | 5.384 | 5.339 | 5.266 | 30.057 |
| 8/27/99 | 15:02:25 | 1200 | 8.813 | 6.813 | 5.379 | 5.331 | 5.294 | 30.041 |
| 8/27/99 | 16:02:25 | 1260 | 8.807 | 6.804 | 5.373 | 5.325 | 5.323 | 30.029 |
| 8/27/99 | 17:02:25 | 1320 | 8.807 | 6.802 | 5.373 | 5.325 | 5.337 | 30.023 |
| 8/27/99 | 18:02:25 | 1380 | 8.81 | 6.804 | 5.373 | 5.331 | 5.344 | 30.011 |
| 8/27/99 | 19:02:25 | 1440 | 8.816 | 6.807 | 5.379 | 5.336 | 5.351 | 30.009 |
| 8/27/99 | 20:02:25 | 1500 | 8.821 | 6.813 | 5.384 | 5.342 | 5.351 | 30.025 |
| 8/27/99 | 21:02:25 | 1560 | 8.833 | 6.822 | 5.39 | 5.354 | 5.344 | 30.039 |
| 8/27/99 | 22:02:25 | 1620 | 8.836 | 6.822 | 5.39 | 5.354 | 5.308 | 30.043 |
| 8/27/99 | 23:02:25 | 1680 | 8.836 | 6.822 | 5.39 | 5.351 | 5.273 | 30.045 |
| 8/28/99 | 0:02:25 | 1740 | 8.83 | 6.816 | 5.387 | 5.339 | 5.245 | 30.045 |
| 8/28/99 | 1:02:25 | 1800 | 8.818 | 6.81 | 5.376 | 5.331 | 5.238 | 30.037 |
| 8/28/99 | 2:02:25 | 1860 | 8.807 | 6.802 | 5.37 | 5.325 | 5.245 | 30.025 |
| 8/28/99 | 3:02:25 | 1920 | 8.798 | 6.793 | 5.364 | 5.322 | 5.266 | 30.021 |
| 8/28/99 | 4:02:25 | 1980 | 8.793 | 6.79 | 5.359 | 5.322 | 5.301 | 30.011 |
| 8/28/99 | 5:02:25 | 2040 | 8.793 | 6.787 | 5.361 | 5.328 | 5.323 | 30.011 |
| 8/28/99 | 6:02:25 | 2100 | 8.801 | 6.79 | 5.364 | 5.331 | 5.337 | 30.019 |
| 8/28/99 | 7:02:25 | 2160 | 8.804 | 6.799 | 5.37 | 5.339 | 5.337 | 30.027 |
| 8/28/99 | 8:02:25 | 2220 | 8.813 | 6.804 | 5.376 | 5.351 | 5.344 | 30.031 |
| 8/28/99 | 9:02:25 | 2280 | 8.821 | 6.81 | 5.379 | 5.357 | 5.344 | 30.033 |
| 8/28/99 | 10:02:25 | 2340 | 8.827 | 6.813 | 5.384 | 5.359 | 5.315 | 30.033 |
| 8/28/99 | 11:02:25 | 2400 | 8.83 | 6.816 | 5.384 | 5.359 | 5.273 | 30.037 |
| 8/28/99 | 12:02:25 | 2460 | 8.827 | 6.813 | 5.379 | 5.351 | 5.252 | 30.031 |
| 8/28/99 | 13:02:25 | 2520 | 8.816 | 6.804 | 5.373 | 5.342 | 5.231 | 30.017 |
| 8/28/99 | 14:02:25 | 2580 | 8.807 | 6.802 | 5.364 | 5.336 | 5.231 | 30.002 |
| 8/28/99 | 15:02:25 | 2640 | 8.795 | 6.787 | 5.359 | 5.334 | 5.252 | 29.992 |
| 8/28/99 | 16:02:25 | 2700 | 8.79 | 6.781 | 5.347 | 5.331 | 5.28 | 29.976 |
| 8/28/99 | 17:02:25 | 2760 | 8.787 | 6.778 | 5.347 | 5.334 | 5.301 | 29.968 |
| 8/28/99 | 18:02:25 | 2820 | 8.79 | 6.781 | 5.35 | 5.336 | 5.315 | 29.966 |
| 8/28/99 | 19:02:25 | 2880 | 8.798 | 6.787 | 5.353 | 5.345 | 5.323 | 29.968 |
| 8/28/99 | 20:02:25 | 2940 | 8.804 | 6.793 | 5.361 | 5.351 | 5.33 | 29.97 |
| 8/28/99 | 21:02:25 | 3000 | 8.813 | 6.802 | 5.367 | 5.359 | 5.33 | 29.98 |
| 8/28/99 | 22:02:25 | 3060 | 8.818 | 6.807 | 5.373 | 5.365 | 5.315 | 29.992 |
| 8/28/99 | 23:02:25 | 3120 | 8.821 | 6.804 | 5.376 | 5.368 | 5.28 | 29.984 |
| 8/29/99 | 0:02:25 | 3180 | 8.821 | 6.804 | 5.376 | 5.359 | 5.252 | 29.988 |

EW-99-01 Aquifer Testing
Antecedent Water Level Monitoring
Hermit 3000 Transducer Data

| Observation Point: | | | PZ-99-08I | MWCR-99-02 | PZ-99-01A | PZ-99-01B | PZ-99-01C | Barometer |
|---|---|---|---|---|---|---|---|---|
| | | | Chan[4] | Chan[5] | Chan[6] | Chan[7] | Chan[8] | Chan[0] |
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 8/29/99 | 1:02:25 | 3240 | 8.813 | 6.802 | 5.37 | 5.348 | 5.231 | 29.986 |
| 8/29/99 | 2:02:25 | 3300 | 8.804 | 6.793 | 5.364 | 5.345 | 5.224 | 29.984 |
| 8/29/99 | 3:02:25 | 3360 | 8.795 | 6.787 | 5.359 | 5.342 | 5.245 | 29.978 |
| 8/29/99 | 4:02:25 | 3420 | 8.79 | 6.781 | 5.353 | 5.342 | 5.266 | 29.98 |
| 8/29/99 | 5:02:25 | 3480 | 8.79 | 6.781 | 5.35 | 5.342 | 5.294 | 29.984 |
| 8/29/99 | 6:02:25 | 3540 | 8.793 | 6.784 | 5.353 | 5.345 | 5.323 | 29.984 |
| 8/29/99 | 7:02:25 | 3600 | 8.795 | 6.79 | 5.359 | 5.354 | 5.33 | 29.988 |
| 8/29/99 | 8:02:25 | 3660 | 8.804 | 6.799 | 5.361 | 5.359 | 5.33 | 29.994 |
| 8/29/99 | 9:02:25 | 3720 | 8.81 | 6.804 | 5.364 | 5.365 | 5.337 | 29.994 |
| 8/29/99 | 10:02:25 | 3780 | 8.821 | 6.813 | 5.37 | 5.374 | 5.337 | 30.013 |
| 8/29/99 | 11:02:25 | 3840 | 8.824 | 6.819 | 5.373 | 5.377 | 5.294 | 30.019 |
| 8/29/99 | 12:02:25 | 3900 | 8.824 | 6.819 | 5.37 | 5.371 | 5.266 | 30.002 |
| 8/29/99 | 13:02:25 | 3960 | 8.818 | 6.813 | 5.356 | 5.362 | 5.238 | 29.984 |
| 8/29/99 | 14:02:25 | 4020 | 8.81 | 6.807 | 5.344 | 5.351 | 5.224 | 29.976 |
| 8/29/99 | 15:02:25 | 4080 | 8.801 | 6.804 | 5.338 | 5.348 | 5.238 | 29.974 |
| 8/29/99 | 16:02:25 | 4140 | 8.795 | 6.802 | 5.336 | 5.345 | 5.266 | 29.974 |
| 8/29/99 | 17:02:25 | 4200 | 8.793 | 6.799 | 5.33 | 5.345 | 5.287 | 29.974 |
| 8/29/99 | 18:02:25 | 4260 | 8.795 | 6.802 | 5.338 | 5.351 | 5.323 | 29.994 |
| 8/29/99 | 19:02:25 | 4320 | 8.804 | 6.81 | 5.347 | 5.362 | 5.33 | 30.025 |
| 8/29/99 | 20:02:25 | 4380 | 8.821 | 6.825 | 5.361 | 5.374 | 5.351 | 30.084 |
| 8/29/99 | 21:02:25 | 4440 | 8.83 | 6.833 | 5.376 | 5.385 | 5.358 | 30.121 |
| 8/29/99 | 22:02:25 | 4500 | 8.844 | 6.848 | 5.384 | 5.397 | 5.365 | 30.159 |
| 8/29/99 | 23:02:25 | 4560 | 8.85 | 6.856 | 5.393 | 5.403 | 5.344 | 30.178 |
| 8/30/99 | 0:02:25 | 4620 | 8.859 | 6.862 | 5.402 | 5.405 | 5.308 | 30.204 |
| 8/30/99 | 1:02:25 | 4680 | 8.856 | 6.862 | 5.404 | 5.4 | 5.287 | 30.233 |
| 8/30/99 | 2:02:25 | 4740 | 8.85 | 6.856 | 5.399 | 5.391 | 5.273 | 30.235 |
| 8/30/99 | 3:02:25 | 4800 | 8.841 | 6.851 | 5.387 | 5.382 | 5.273 | 30.228 |
| 8/30/99 | 4:02:25 | 4860 | 8.836 | 6.848 | 5.387 | 5.385 | 5.294 | 30.251 |
| 8/30/99 | 5:02:25 | 4920 | 8.833 | 6.845 | 5.384 | 5.385 | 5.323 | 30.265 |
| 8/30/99 | 6:02:25 | 4980 | 8.833 | 6.851 | 5.387 | 5.385 | 5.344 | 30.273 |
| 8/30/99 | 7:02:25 | 5040 | 8.844 | 6.859 | 5.399 | 5.397 | 5.372 | 30.308 |
| 8/30/99 | 8:02:25 | 5100 | 8.856 | 6.865 | 5.404 | 5.403 | 5.372 | 30.34 |
| 8/30/99 | 9:02:25 | 5160 | 8.861 | 6.874 | 5.41 | 5.408 | 5.379 | 30.336 |

Test defined on: 8/26/99 18:55:54
Test started on: 8/26/99 19:02:25
Test stopped on: N/A N/A
Data gathered using Linear testing
Time between data points: 60.0000 Minutes.
Number of data samples: 87

Channel number [4]
Measurement type: Pressure/Level
Channel name: PZ-99-08I
Linearity: 0.0026

Channel number [5]
Measurement type: Pressure/Level
Channel name: MWCR-99-02
Linearity: 0

EW-99-01 Aquifer Testing
Antecedent Water Level Monitoring
Hermit 3000 Transducer Data

| Observation Point: | | | PZ-99-08I | MWCR-99-02 | PZ-99-01A | PZ-99-01B | PZ-99-01C | Barometer |
|---|---|---|---|---|---|---|---|---|
| | | | Chan[4] | Chan[5] | Chan[6] | Chan[7] | Chan[8] | Chan[0] |
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| Scale: | | | | 19.9159 | Scale: | | | 19.993 |
| Offset: | | | | -0.0533 | Offset: | | | 0.088 |
| Warmup: | | | | 50 | Warmup: | | | 50 |
| Specific gravity: | | | 1 | | Specific gravity: | | | 1 |
| Mode: | | | TOC | | Mode: | | | TOC |
| User-defined reference: | | | 8.85 | Feet H2O | User-defined reference: | | | 6.87 Feet H2O |
| Referenced on: | | | test start | | Referenced on: | | | channel definition. |
| Pressure head at reference: | | | 11.135 | Feet H2O | Pressure head at reference: | | | 1.068 Feet H2O |
| Channel number [6] | | | | | Channel number [7] | | | |
| Measurement type: | | | Pressure/Level | | Measurement type: | | | Pressure/Level |
| Channel name: | | | PZ-99-01A | | Channel name: | | | PZ-99-01B |
| Linearity: | | | 0.0059 | | Linearity: | | | 0.0212 |
| Scale: | | | | 19.9092 | Scale: | | | 19.9368 |
| Offset: | | | | -0.033 | Offset: | | | 0.1304 |
| Warmup: | | | | 50 | Warmup: | | | 50 |
| Specific gravity: | | | 1 | | Specific gravity: | | | 1 |
| Mode: | | | TOC | | Mode: | | | TOC |
| User-defined reference: | | | 5.37 | Feet H2O | User-defined reference: | | | 5.44 Feet H2O |
| Referenced on: | | | test start | | Referenced on: | | | test start |
| Pressure head at reference: | | | 2.639 | Feet H2O | Pressure head at reference: | | | 24.53 Feet H2O |
| Channel number [8] | | | | | Channel number [0] | | | |
| Measurement type: | | | Pressure/Level | | Measurement type: | | | Barometric Pressure |
| Channel name: | | | PZ-99-01C | | Channel name: | | | Barometric |
| Linearity: | | | 0.026 | | Linearity: | | | 0 |
| Scale: | | | | 48.849 | Scale: | | | 0 |
| Offset: | | | | -0.025 | Offset: | | | 0 |
| Warmup: | | | | 50 | Warmup: | | | 50 |
| Specific gravity: | | | 1 | | | | | |
| Mode: | | | TOC | | | | | |
| User-defined reference: | | | 5.4 | Feet H2O | | | | |
| Referenced on: | | | test start | | | | | |
| Pressure head at reference: | | | 32.293 | Feet H2O | | | | |

TABLE J-2

Flow Rate Measurements
EW-99-01 Stepped Rate Discharge Test

Table J-2
Flow Rate Measurements
EW-99-01 Stepped Rate Discharge Test

| Minutes Pumping at Each Rate | Minutes Since Start of Pumping | Flowmeter 1 Instantaneous Flow (gpm) | Flowmeter 1 Totalized Flow Reading | Flowmeter 2 Totalized Flow Reading |
|---|---|---|---|---|
| **Step 1 (5 gpm)** | 0 | 5.15 | 1,154 | 219,078 |
| 6 | 6 | 5.15 | NM | NM |
| 18 | 18 | 5.15 | 1,249 | NM |
| 48 | 48 | 5.15 | 1,413 | NM |
| 76 | 76 | 5.15 | 1,552 | NM |
| 103 | 103 | 5.2 | 1,691 | 219,546 |
| 120 | 120 | 5.15 | 1,779 | 219,634 |
| **Step 2 (10 gpm)** | 120 | 9.99 | 1,779 | NM |
| 16 | 136 | 10.04 | 1,940 | 219,813 |
| 26 | 146 | 9.99 | 2,040 | 219,924 |
| 71 | 191 | 9.99 | 2,486 | 220,412 |
| 106 | 226 | 9.99 | 2,840 | 220,800 |
| 120 | 240 | 9.99 | 2,967 | 220,940 |
| **Step 3 (17 gpm)** | 240 | 16.98 | 2,987 | NM |
| 39 | 279 | 17.03 | 3,650 | 221,788 |
| 84 | 324 | 17.03 | 4,413 | 222,523 |
| 104 | 344 | 17.03 | 4,753 | 222,895 |
| 140 | 380 | 17.03 | 5,348 | 223,666 |
| **Cumulative Discharge:** | | | 4194 gal. | 4588 gal. |

Notes: Pumping started at 1100 AM on August 30, 1999.

TABLE J-3

Flow Rate Measurements
EW-99-01 Constant Discharge Pumping Test

Table J-3
Flow Rate Measurements
EW-99-01 Constant Discharge Pumping Test

| Minutes | Flowmeter 1 Instantaneous Flow (gpm) | Flowmeter 1 Totalized Flow Reading | Cumulative Discharge 1 | Flowmeter 2 Totalized Flow Reading | Cumulative Discharge 2 |
|---|---|---|---|---|---|
| 0 | 0 | 5,371 | 0 | 223,667 | 0 |
| 12 | 15.09 | 5,560 | 189 | 223,875 | 208 |
| 81 | 15.14 | 6,605 | 1,234 | 224,920 | 1,253 |
| 279 | 15.14 | 9,595 | 4,224 | 228,280 | 4,613 |
| 339 | 15.14 | 10,498 | 5,127 | 229,170 | 5,503 |
| 403 | 15.19 | 11,468 | 6,097 | 230,220 | 6,553 |
| 463 | 15.19 | 12,385 | 7,014 | 231,227 | 7,560 |
| 635 | 15.14 | 14,980 | 9,609 | 234,063 | 10,396 |
| 699 | 15.04 | 15,926 | 10,555 | 235,090 | 11,423 |
| 748 | 15.09 | 16,654 | 11,283 | 235,990 | 12,323 |
| 833 | 15.04 | 18,020 | 12,649 | 237,480 | 13,813 |
| 882 | 15.09 | 18,685 | 13,314 | 238,000 | 14,333 |
| 1253 | 15.15 | 24,259 | 18,888 | 244,158 | 20,491 |
| 1388 | 15.19 | 26,308 | 20,937 | 246,380 | 22,713 |
| 1593 | 15.14 | 29,395 | 24,024 | 249,725 | 26,058 |
| 1708 | 15.19 | 31,145 | 25,774 | 251,625 | 27,958 |
| 1900 | 15.19 | 34,010 | 28,639 | 254,735 | 31,068 |
| 2123 | 15.14 | 37,405 | 32,034 | 258,420 | 34,753 |
| 2800 | 15.14 | 47,606 | 42,235 | 269,490 | 45,823 |
| 2940 | 15.04 | 49,744 | 44,373 | 271,835 | 48,168 |
| 2970 | 15.09 | 50,214 | 44,843 | 272,320 | 48,653 |
| 3000 | 15.04 | 50,660 | 45,289 | 272,805 | 49,138 |
| 3060 | 15.09 | 51,552 | 46,181 | 273,770 | 50,103 |

Notes:

1 Pumping started at 0937 AM on August 31, 1999.

2 In-line electronic flowmeter (flowmeter1) is considered to be representative of actual discharge rate and discharge based on observed total discharge volume in holding tar

3 Time-weighted average discharge rate = 5.12 gpm.

TABLE J-4

EW-99-01 Constant Rate Pumping Test
Hermit 3000 – Transducer Data During Pumping Interval

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Pumping Interval**

| Observation Point: | | | EW-99-01 | MCR-99-01 | PZ-99-01I | PZ-99-08I | MCWR-99-02 | PZ-99-01A | PZ-99-01B | PZ-99-01C | Barometer |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Chan[1] | Chan[2] | Chan[3] | Chan[4] | Chan[5] | Chan[6] | Chan[7] | Chan[8] | Chan[0] |
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 8/31/99 | 9:36:25 | 0 | 8.3 | 6.936 | 6.023 | 8.905 | 6.931 | 5.428 | 5.524 | 5.472 | 30.442 |
| 8/31/99 | 9:36:27 | 0.0483 | 8.3 | 6.932 | 6.023 | 8.908 | 6.937 | 5.428 | 5.524 | 5.472 | 30.452 |
| 8/31/99 | 9:36:30 | 0.0967 | 8.3 | 6.932 | 6.026 | 8.905 | 6.937 | 5.431 | 5.521 | 5.465 | 30.454 |
| 8/31/99 | 9:36:33 | 0.145 | 8.3 | 6.936 | 6.035 | 8.905 | 6.937 | 5.431 | 5.521 | 5.465 | 30.459 |
| 8/31/99 | 9:36:36 | 0.1933 | 8.3 | 6.936 | 6.037 | 8.905 | 6.937 | 5.434 | 5.521 | 5.458 | 30.457 |
| 8/31/99 | 9:36:39 | 0.2417 | 8.3 | 6.936 | 6.04 | 8.902 | 6.934 | 5.434 | 5.521 | 5.458 | 30.459 |
| 8/31/99 | 9:36:42 | 0.29 | 8.3 | 6.936 | 6.04 | 8.899 | 6.934 | 5.431 | 5.521 | 5.458 | 30.463 |
| 8/31/99 | 9:36:45 | 0.3383 | 8.3 | 6.936 | 6.04 | 8.899 | 6.931 | 5.428 | 5.521 | 5.472 | 30.461 |
| 8/31/99 | 9:36:48 | 0.3867 | 8.3 | 6.936 | 6.037 | 8.902 | 6.937 | 5.431 | 5.521 | 5.472 | 30.459 |
| 8/31/99 | 9:36:51 | 0.435 | 8.3 | 6.936 | 6.043 | 8.905 | 6.937 | 5.434 | 5.521 | 5.465 | 30.459 |
| 8/31/99 | 9:36:54 | 0.4833 | 8.3 | 6.94 | 6.046 | 8.905 | 6.934 | 5.434 | 5.524 | 5.458 | 30.459 |
| 8/31/99 | 9:36:56 | 0.5317 | 8.328 | 6.94 | 6.04 | 8.899 | 6.934 | 5.428 | 5.524 | 5.472 | 30.457 |
| 8/31/99 | 9:36:59 | 0.58 | 8.847 | 6.936 | 6.04 | 8.902 | 6.937 | 5.428 | 5.524 | 5.472 | 30.461 |
| 8/31/99 | 9:37:02 | 0.6283 | 9.317 | 6.94 | 6.046 | 8.905 | 6.937 | 5.434 | 5.524 | 5.458 | 30.454 |
| 8/31/99 | 9:37:05 | 0.6767 | 9.735 | 6.94 | 6.046 | 8.902 | 6.934 | 5.434 | 5.524 | 5.458 | 30.457 |
| 8/31/99 | 9:37:08 | 0.725 | 10.108 | 6.94 | 6.043 | 8.899 | 6.934 | 5.428 | 5.524 | 5.472 | 30.454 |
| 8/31/99 | 9:37:11 | 0.7733 | 10.463 | 6.936 | 6.043 | 8.902 | 6.937 | 5.431 | 5.53 | 5.472 | 30.45 |
| 8/31/99 | 9:37:14 | 0.8217 | 10.757 | 6.94 | 6.049 | 8.908 | 6.937 | 5.434 | 5.53 | 5.458 | 30.454 |
| 8/31/99 | 9:37:17 | 0.87 | 11.028 | 6.94 | 6.046 | 8.902 | 6.934 | 5.431 | 5.524 | 5.472 | 30.452 |
| 8/31/99 | 9:37:20 | 0.9183 | 11.251 | 6.936 | 6.043 | 8.905 | 6.937 | 5.434 | 5.53 | 5.472 | 30.454 |
| 8/31/99 | 9:37:23 | 0.9667 | 11.439 | 6.94 | 6.046 | 8.902 | 6.934 | 5.431 | 5.53 | 5.465 | 30.454 |
| 8/31/99 | 9:37:25 | 1.0165 | 11.608 | 6.94 | 6.049 | 8.908 | 6.939 | 5.437 | 5.532 | 5.465 | 30.45 |
| 8/31/99 | 9:37:29 | 1.0692 | 11.748 | 6.94 | 6.043 | 8.902 | 6.934 | 5.428 | 5.53 | 5.479 | 30.452 |
| 8/31/99 | 9:37:32 | 1.125 | 11.857 | 6.945 | 6.043 | 8.902 | 6.937 | 5.431 | 5.53 | 5.472 | 30.45 |
| 8/31/99 | 9:37:36 | 1.1842 | 11.959 | 6.945 | 6.049 | 8.908 | 6.937 | 5.437 | 5.532 | 5.458 | 30.446 |
| 8/31/99 | 9:37:39 | 1.2468 | 12.07 | 6.945 | 6.043 | 8.902 | 6.937 | 5.431 | 5.532 | 5.479 | 30.454 |
| 8/31/99 | 9:37:43 | 1.3132 | 12.142 | 6.94 | 6.043 | 8.905 | 6.939 | 5.434 | 5.535 | 5.479 | 30.446 |
| 8/31/99 | 9:37:48 | 1.3835 | 12.204 | 6.945 | 6.049 | 8.905 | 6.939 | 5.431 | 5.535 | 5.465 | 30.446 |
| 8/31/99 | 9:37:52 | 1.458 | 12.308 | 6.945 | 6.058 | 8.911 | 6.939 | 5.431 | 5.535 | 5.465 | 30.446 |
| 8/31/99 | 9:37:57 | 1.537 | 12.378 | 6.94 | 6.058 | 8.911 | 6.937 | 5.437 | 5.535 | 5.479 | 30.444 |
| 8/31/99 | 9:38:02 | 1.6207 | 12.445 | 6.945 | 6.052 | 8.911 | 6.937 | 5.437 | 5.538 | 5.486 | 30.446 |
| 8/31/99 | 9:38:07 | 1.7092 | 12.514 | 6.94 | 6.061 | 8.911 | 6.939 | 5.434 | 5.535 | 5.465 | 30.446 |
| 8/31/99 | 9:38:13 | 1.803 | 12.599 | 6.945 | 6.058 | 8.911 | 6.942 | 5.431 | 5.538 | 5.465 | 30.442 |
| 8/31/99 | 9:38:19 | 1.9023 | 12.689 | 6.945 | 6.052 | 8.914 | 6.937 | 5.437 | 5.538 | 5.486 | 30.446 |
| 8/31/99 | 9:38:25 | 2.0077 | 12.78 | 6.945 | 6.055 | 8.914 | 6.939 | 5.434 | 5.541 | 5.486 | 30.444 |
| 8/31/99 | 9:38:32 | 2.1192 | 12.879 | 6.945 | 6.061 | 8.911 | 6.939 | 5.434 | 5.541 | 5.479 | 30.44 |
| 8/31/99 | 9:38:39 | 2.2373 | 12.957 | 6.945 | 6.055 | 8.914 | 6.937 | 5.437 | 5.541 | 5.493 | 30.442 |
| 8/31/99 | 9:38:46 | 2.3625 | 13.031 | 6.945 | 6.061 | 8.911 | 6.939 | 5.434 | 5.541 | 5.479 | 30.44 |
| 8/31/99 | 9:38:54 | 2.495 | 13.097 | 6.945 | 6.061 | 8.911 | 6.939 | 5.434 | 5.541 | 5.486 | 30.44 |
| 8/31/99 | 9:39:03 | 2.6355 | 13.144 | 6.945 | 6.061 | 8.911 | 6.942 | 5.431 | 5.544 | 5.479 | 30.442 |
| 8/31/99 | 9:39:12 | 2.7843 | 13.205 | 6.949 | 6.058 | 8.911 | 6.942 | 5.434 | 5.547 | 5.493 | 30.434 |
| 8/31/99 | 9:39:21 | 2.9418 | 13.25 | 6.949 | 6.058 | 8.911 | 6.942 | 5.434 | 5.547 | 5.493 | 30.438 |
| 8/31/99 | 9:39:31 | 3.1087 | 13.294 | 6.945 | 6.058 | 8.914 | 6.939 | 5.44 | 5.547 | 5.508 | 30.438 |
| 8/31/99 | 9:39:42 | 3.2855 | 13.331 | 6.949 | 6.063 | 8.911 | 6.942 | 5.434 | 5.55 | 5.493 | 30.438 |
| 8/31/99 | 9:39:53 | 3.4728 | 13.38 | 6.949 | 6.061 | 8.914 | 6.939 | 5.44 | 5.55 | 5.515 | 30.44 |
| 8/31/99 | 9:40:05 | 3.6712 | 13.417 | 6.945 | 6.061 | 8.914 | 6.939 | 5.44 | 5.553 | 5.508 | 30.44 |
| 8/31/99 | 9:40:17 | 3.8813 | 13.465 | 6.949 | 6.061 | 8.914 | 6.942 | 5.437 | 5.555 | 5.508 | 30.438 |
| 8/31/99 | 9:40:31 | 4.104 | 13.499 | 6.949 | 6.061 | 8.911 | 6.939 | 5.443 | 5.558 | 5.522 | 30.459 |
| 8/31/99 | 9:40:45 | 4.3398 | 13.521 | 6.945 | 6.063 | 8.914 | 6.939 | 5.44 | 5.555 | 5.515 | 30.444 |
| 8/31/99 | 9:41:00 | 4.5897 | 13.547 | 6.949 | 6.058 | 8.914 | 6.939 | 5.44 | 5.561 | 5.536 | 30.438 |
| 8/31/99 | 9:41:16 | 4.8543 | 13.579 | 6.945 | 6.063 | 8.914 | 6.939 | 5.44 | 5.558 | 5.522 | 30.434 |
| 8/31/99 | 9:41:33 | 5.1347 | 13.61 | 6.945 | 6.063 | 8.914 | 6.939 | 5.44 | 5.561 | 5.529 | 30.436 |
| 8/31/99 | 9:41:50 | 5.4315 | 13.636 | 6.953 | 6.061 | 8.914 | 6.942 | 5.437 | 5.564 | 5.529 | 30.438 |
| 8/31/99 | 9:42:09 | 5.746 | 13.655 | 6.953 | 6.061 | 8.914 | 6.945 | 5.44 | 5.564 | 5.529 | 30.434 |
| 8/31/99 | 9:42:29 | 6.0792 | 13.677 | 6.953 | 6.066 | 8.911 | 6.945 | 5.437 | 5.567 | 5.522 | 30.434 |
| 8/31/99 | 9:42:50 | 6.432 | 13.692 | 6.953 | 6.066 | 8.914 | 6.945 | 5.437 | 5.567 | 5.529 | 30.438 |
| 8/31/99 | 9:43:13 | 6.8058 | 13.709 | 6.953 | 6.061 | 8.916 | 6.942 | 5.443 | 5.57 | 5.55 | 30.436 |
| 8/31/99 | 9:43:37 | 7.2018 | 13.729 | 6.953 | 6.063 | 8.914 | 6.945 | 5.437 | 5.57 | 5.536 | 30.436 |
| 8/31/99 | 9:44:02 | 7.6212 | 13.743 | 6.953 | 6.066 | 8.916 | 6.942 | 5.443 | 5.57 | 5.543 | 30.438 |
| 8/31/99 | 9:44:28 | 8.0655 | 13.772 | 6.958 | 6.063 | 8.916 | 6.948 | 5.44 | 5.573 | 5.543 | 30.438 |
| 8/31/99 | 9:44:57 | 8.5362 | 13.794 | 6.958 | 6.069 | 8.914 | 6.948 | 5.44 | 5.573 | 5.536 | 30.438 |
| 8/31/99 | 9:45:27 | 9.0347 | 13.81 | 6.953 | 6.066 | 8.916 | 6.945 | 5.446 | 5.573 | 5.55 | 30.44 |
| 8/31/99 | 9:45:58 | 9.5627 | 13.836 | 6.958 | 6.066 | 8.914 | 6.948 | 5.44 | 5.573 | 5.543 | 30.438 |
| 8/31/99 | 9:46:32 | 10.122 | 13.852 | 6.953 | 6.069 | 8.916 | 6.945 | 5.446 | 5.573 | 5.55 | 30.44 |
| 8/31/99 | 9:47:07 | 10.7145 | 13.865 | 6.962 | 6.069 | 8.916 | 6.951 | 5.44 | 5.576 | 5.543 | 30.444 |
| 8/31/99 | 9:47:45 | 11.342 | 13.871 | 6.958 | 6.063 | 8.919 | 6.948 | 5.446 | 5.576 | 5.564 | 30.442 |
| 8/31/99 | 9:48:25 | 12.0068 | 13.857 | 6.958 | 6.063 | 8.916 | 6.948 | 5.446 | 5.576 | 5.564 | 30.438 |
| 8/31/99 | 9:49:07 | 12.711 | 13.881 | 6.958 | 6.072 | 8.916 | 6.951 | 5.446 | 5.573 | 5.55 | 30.442 |
| 8/31/99 | 9:49:52 | 13.4568 | 13.893 | 6.962 | 6.066 | 8.919 | 6.948 | 5.448 | 5.573 | 5.564 | 30.444 |
| 8/31/99 | 9:50:39 | 14.2468 | 13.913 | 6.962 | 6.072 | 8.916 | 6.954 | 5.443 | 5.573 | 5.543 | 30.442 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Pumping Interval**

| Observation Point: | | | EW-99-01 | MCR-99-01 | PZ-99-01I | PZ-99-08I | MCWR-99-02 | PZ-99-01A | PZ-99-01B | PZ-99-01C | Barometer |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Chan[1] | Chan[2] | Chan[3] | Chan[4] | Chan[5] | Chan[6] | Chan[7] | Chan[8] | Chan[0] |
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 8/31/99 | 9:51:30 | 15.0837 | 13.934 | 6.962 | 6.069 | 8.919 | 6.951 | 5.451 | 5.57 | 5.564 | 30.442 |
| 8/31/99 | 9:52:23 | 15.9702 | 13.941 | 6.962 | 6.066 | 8.922 | 6.951 | 5.448 | 5.57 | 5.571 | 30.44 |
| 8/31/99 | 9:53:19 | 16.9092 | 13.946 | 6.966 | 6.069 | 8.919 | 6.957 | 5.448 | 5.57 | 5.557 | 30.44 |
| 8/31/99 | 9:54:19 | 17.9038 | 13.97 | 6.962 | 6.069 | 8.922 | 6.954 | 5.454 | 5.564 | 5.564 | 30.442 |
| 8/31/99 | 9:55:22 | 18.9575 | 13.988 | 6.966 | 6.069 | 8.922 | 6.954 | 5.454 | 5.567 | 5.571 | 30.44 |
| 8/31/99 | 9:56:29 | 20.0735 | 13.998 | 6.962 | 6.075 | 8.919 | 6.957 | 5.454 | 5.564 | 5.557 | 30.442 |
| 8/31/99 | 9:57:40 | 21.2557 | 13.998 | 6.966 | 6.075 | 8.919 | 6.96 | 5.448 | 5.567 | 5.55 | 30.446 |
| 8/31/99 | 9:58:55 | 22.5078 | 14.016 | 6.966 | 6.078 | 8.919 | 6.965 | 5.454 | 5.564 | 5.557 | 30.446 |
| 8/31/99 | 10:00:15 | 23.8343 | 14.051 | 6.971 | 6.069 | 8.925 | 6.965 | 5.457 | 5.564 | 5.571 | 30.442 |
| 8/31/99 | 10:01:39 | 25.2393 | 14.064 | 6.971 | 6.072 | 8.922 | 6.965 | 5.457 | 5.564 | 5.571 | 30.446 |
| 8/31/99 | 10:03:08 | 26.7277 | 14.067 | 6.971 | 6.078 | 8.919 | 6.968 | 5.454 | 5.564 | 5.557 | 30.444 |
| 8/31/99 | 10:04:43 | 28.3042 | 14.08 | 6.971 | 6.078 | 8.925 | 6.965 | 5.46 | 5.564 | 5.571 | 30.444 |
| 8/31/99 | 10:06:23 | 29.974 | 14.103 | 6.971 | 6.081 | 8.922 | 6.965 | 5.457 | 5.564 | 5.557 | 30.444 |
| 8/31/99 | 10:08:09 | 31.7428 | 14.116 | 6.971 | 6.072 | 8.928 | 6.968 | 5.46 | 5.564 | 5.571 | 30.444 |
| 8/31/99 | 10:10:01 | 33.6165 | 14.108 | 6.975 | 6.072 | 8.922 | 6.971 | 5.46 | 5.567 | 5.564 | 30.465 |
| 8/31/99 | 10:12:01 | 35.6012 | 14.111 | 6.975 | 6.081 | 8.925 | 6.974 | 5.457 | 5.57 | 5.557 | 30.442 |
| 8/31/99 | 10:14:07 | 37.7035 | 14.106 | 6.975 | 6.081 | 8.925 | 6.971 | 5.463 | 5.57 | 5.564 | 30.444 |
| 8/31/99 | 10:16:20 | 39.9303 | 14.134 | 6.975 | 6.075 | 8.925 | 6.977 | 5.46 | 5.57 | 5.564 | 30.444 |
| 8/31/99 | 10:18:42 | 42.2892 | 14.14 | 6.979 | 6.081 | 8.925 | 6.977 | 5.46 | 5.57 | 5.557 | 30.442 |
| 8/31/99 | 10:21:12 | 44.7878 | 14.156 | 6.984 | 6.075 | 8.931 | 6.974 | 5.466 | 5.57 | 5.578 | 30.442 |
| 8/31/99 | 10:23:51 | 47.4345 | 14.147 | 6.979 | 6.081 | 8.931 | 6.977 | 5.466 | 5.57 | 5.571 | 30.444 |
| 8/31/99 | 10:26:39 | 50.238 | 14.166 | 6.979 | 6.078 | 8.934 | 6.977 | 5.466 | 5.573 | 5.578 | 30.448 |
| 8/31/99 | 10:29:37 | 53.2077 | 14.178 | 6.979 | 6.086 | 8.931 | 6.98 | 5.468 | 5.573 | 5.564 | 30.448 |
| 8/31/99 | 10:32:46 | 56.3533 | 14.192 | 6.984 | 6.081 | 8.934 | 6.98 | 5.468 | 5.576 | 5.578 | 30.448 |
| 8/31/99 | 10:36:06 | 59.6853 | 14.197 | 6.984 | 6.084 | 8.934 | 6.986 | 5.466 | 5.576 | 5.564 | 30.446 |
| 8/31/99 | 10:39:37 | 63.2148 | 14.236 | 6.988 | 6.086 | 8.931 | 6.986 | 5.466 | 5.579 | 5.557 | 30.45 |
| 8/31/99 | 10:43:22 | 66.9533 | 14.252 | 6.992 | 6.089 | 8.934 | 6.986 | 5.468 | 5.579 | 5.564 | 30.45 |
| 8/31/99 | 10:47:19 | 70.9135 | 14.241 | 6.992 | 6.084 | 8.939 | 6.983 | 5.474 | 5.584 | 5.578 | 30.45 |
| 8/31/99 | 10:51:31 | 75.1083 | 14.219 | 6.988 | 6.092 | 8.937 | 6.986 | 5.471 | 5.581 | 5.557 | 30.448 |
| 8/31/99 | 10:55:58 | 79.5517 | 14.217 | 6.992 | 6.086 | 8.939 | 6.988 | 5.474 | 5.581 | 5.564 | 30.448 |
| 8/31/99 | 11:00:40 | 84.2583 | 14.249 | 6.992 | 6.086 | 8.939 | 6.986 | 5.477 | 5.581 | 5.578 | 30.448 |
| 8/31/99 | 11:05:39 | 89.2438 | 14.27 | 6.992 | 6.089 | 8.942 | 6.988 | 5.477 | 5.581 | 5.571 | 30.444 |
| 8/31/99 | 11:10:56 | 94.5247 | 14.303 | 6.996 | 6.092 | 8.939 | 6.991 | 5.474 | 5.581 | 5.557 | 30.446 |
| 8/31/99 | 11:16:32 | 100.1185 | 14.333 | 6.992 | 6.095 | 8.942 | 6.988 | 5.477 | 5.581 | 5.557 | 30.446 |
| 8/31/99 | 11:22:27 | 106.0438 | 14.354 | 6.996 | 6.095 | 8.945 | 6.991 | 5.477 | 5.581 | 5.557 | 30.446 |
| 8/31/99 | 11:28:44 | 112.3202 | 14.343 | 7.001 | 6.092 | 8.948 | 6.991 | 5.483 | 5.584 | 5.564 | 30.438 |
| 8/31/99 | 11:35:23 | 118.9685 | 14.343 | 7.001 | 6.098 | 8.948 | 6.991 | 5.483 | 5.581 | 5.543 | 30.44 |
| 8/31/99 | 11:42:25 | 126.0107 | 14.362 | 7.001 | 6.095 | 8.951 | 6.991 | 5.489 | 5.581 | 5.557 | 30.442 |
| 8/31/99 | 11:49:53 | 133.4702 | 14.376 | 7.005 | 6.101 | 8.948 | 6.997 | 5.48 | 5.584 | 5.536 | 30.438 |
| 8/31/99 | 11:57:47 | 141.3717 | 14.357 | 7.005 | 6.095 | 8.951 | 6.994 | 5.486 | 5.581 | 5.55 | 30.438 |
| 8/31/99 | 12:06:09 | 149.7413 | 14.387 | 7.009 | 6.101 | 8.948 | 6.997 | 5.483 | 5.584 | 5.529 | 30.44 |
| 8/31/99 | 12:15:01 | 158.607 | 14.373 | 7.009 | 6.101 | 8.951 | 6.997 | 5.483 | 5.584 | 5.522 | 30.438 |
| 8/31/99 | 12:24:24 | 167.998 | 14.389 | 7.009 | 6.104 | 8.951 | 6.997 | 5.486 | 5.581 | 5.515 | 30.44 |
| 8/31/99 | 12:34:21 | 177.9455 | 14.41 | 7.009 | 6.101 | 8.954 | 7 | 5.486 | 5.581 | 5.522 | 30.434 |
| 8/31/99 | 12:44:21 | 187.9455 | 14.407 | 7.014 | 6.098 | 8.957 | 7 | 5.489 | 5.579 | 5.522 | 30.436 |
| 8/31/99 | 12:54:21 | 197.9455 | 14.401 | 7.005 | 6.098 | 8.954 | 6.994 | 5.483 | 5.579 | 5.493 | 30.416 |
| 8/31/99 | 13:04:21 | 207.9455 | 14.413 | 7.009 | 6.098 | 8.954 | 6.994 | 5.486 | 5.57 | 5.486 | 30.434 |
| 8/31/99 | 13:14:21 | 217.9455 | 14.436 | 7.018 | 6.101 | 8.96 | 6.997 | 5.491 | 5.57 | 5.515 | 30.43 |
| 8/31/99 | 13:24:21 | 227.9455 | 14.429 | 7.018 | 6.107 | 8.957 | 7 | 5.486 | 5.579 | 5.479 | 30.43 |
| 8/31/99 | 13:34:21 | 237.9455 | 14.432 | 7.018 | 6.104 | 8.954 | 7 | 5.486 | 5.576 | 5.479 | 30.428 |
| 8/31/99 | 13:44:21 | 247.9455 | 14.446 | 7.014 | 6.101 | 8.954 | 7 | 5.486 | 5.573 | 5.472 | 30.426 |
| 8/31/99 | 13:54:21 | 257.9455 | 14.439 | 7.014 | 6.095 | 8.957 | 6.997 | 5.489 | 5.57 | 5.493 | 30.422 |
| 8/31/99 | 14:04:21 | 267.9455 | 14.425 | 7.014 | 6.104 | 8.957 | 6.997 | 5.489 | 5.57 | 5.472 | 30.43 |
| 8/31/99 | 14:14:21 | 277.9455 | 14.429 | 7.014 | 6.095 | 8.957 | 6.994 | 5.489 | 5.564 | 5.479 | 30.422 |
| 8/31/99 | 14:24:21 | 287.9455 | 14.438 | 6.996 | 6.098 | 8.954 | 6.994 | 5.486 | 5.561 | 5.465 | 30.422 |
| 8/31/99 | 14:34:21 | 297.9455 | 14.439 | 7.001 | 6.095 | 8.954 | 6.991 | 5.48 | 5.561 | 5.458 | 30.416 |
| 8/31/99 | 14:44:21 | 307.9455 | 14.433 | 6.996 | 6.089 | 8.954 | 6.988 | 5.483 | 5.555 | 5.465 | 30.414 |
| 8/31/99 | 14:54:21 | 317.9455 | 14.439 | 6.996 | 6.086 | 8.951 | 6.988 | 5.483 | 5.555 | 5.458 | 30.408 |
| 8/31/99 | 15:04:21 | 327.9455 | 14.454 | 6.996 | 6.092 | 8.945 | 6.988 | 5.48 | 5.555 | 5.444 | 30.404 |
| 8/31/99 | 15:14:21 | 337.9455 | 14.457 | 6.996 | 6.086 | 8.948 | 6.983 | 5.483 | 5.553 | 5.458 | 30.404 |
| 8/31/99 | 15:24:21 | 347.9455 | 14.441 | 6.992 | 6.081 | 8.948 | 6.988 | 5.48 | 5.55 | 5.458 | 30.404 |
| 8/31/99 | 15:34:21 | 357.9455 | 14.462 | 6.992 | 6.084 | 8.945 | 6.986 | 5.48 | 5.547 | 5.451 | 30.406 |
| 8/31/99 | 15:44:21 | 367.9455 | 14.432 | 6.988 | 6.081 | 8.945 | 6.983 | 5.477 | 5.55 | 5.458 | 30.4 |
| 8/31/99 | 15:54:21 | 377.9455 | 14.425 | 6.992 | 6.084 | 8.942 | 6.986 | 5.474 | 5.547 | 5.444 | 30.402 |
| 8/31/99 | 16:04:21 | 387.9455 | 14.433 | 6.992 | 6.081 | 8.942 | 6.986 | 5.471 | 5.544 | 5.451 | 30.408 |
| 8/31/99 | 16:14:21 | 397.9455 | 14.462 | 6.988 | 6.081 | 8.937 | 6.983 | 5.471 | 5.544 | 5.451 | 30.402 |
| 8/31/99 | 16:24:21 | 407.9455 | 14.458 | 6.979 | 6.075 | 8.939 | 6.98 | 5.471 | 5.538 | 5.458 | 30.4 |
| 8/31/99 | 16:34:21 | 417.9455 | 14.445 | 6.975 | 6.072 | 8.939 | 6.98 | 5.468 | 5.538 | 5.465 | 30.397 |
| 8/31/99 | 16:44:21 | 427.9455 | 14.452 | 6.975 | 6.069 | 8.939 | 6.977 | 5.471 | 5.532 | 5.479 | 30.393 |
| 8/31/99 | 16:54:21 | 437.9455 | 14.481 | 6.975 | 6.066 | 8.934 | 6.974 | 5.471 | 5.532 | 5.479 | 30.41 |
| 8/31/99 | 17:04:21 | 447.9455 | 14.481 | 6.975 | 6.069 | 8.931 | 6.977 | 5.466 | 5.532 | 5.472 | 30.383 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Pumping Interval**

| Observation Point: | | | EW-99-01 | MCR-99-01 | PZ-99-01I | PZ-99-08I | MCWR-99-02 | PZ-99-01A | PZ-99-01B | PZ-99-01C | Barometer |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Chan[1] | Chan[2] | Chan[3] | Chan[4] | Chan[5] | Chan[6] | Chan[7] | Chan[8] | Chan[0] |
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 8/31/99 | 17:14:21 | 457.9455 | 14.487 | 6.975 | 6.063 | 8.937 | 6.971 | 5.466 | 5.53 | 5.479 | 30.385 |
| 8/31/99 | 17:24:21 | 467.9455 | 14.458 | 6.975 | 6.069 | 8.931 | 6.974 | 5.463 | 5.53 | 5.472 | 30.383 |
| 8/31/99 | 17:34:21 | 477.9455 | 14.481 | 6.971 | 6.058 | 8.931 | 6.968 | 5.466 | 5.524 | 5.501 | 30.383 |
| 8/31/99 | 17:44:21 | 487.9455 | 14.444 | 6.971 | 6.066 | 8.928 | 6.971 | 5.46 | 5.527 | 5.486 | 30.385 |
| 8/31/99 | 17:54:21 | 497.9455 | 14.467 | 6.966 | 6.066 | 8.928 | 6.968 | 5.466 | 5.524 | 5.501 | 30.391 |
| 8/31/99 | 18:04:21 | 507.9455 | 14.49 | 6.966 | 6.061 | 8.931 | 6.965 | 5.466 | 5.524 | 5.522 | 30.393 |
| 8/31/99 | 18:14:21 | 517.9455 | 14.514 | 6.966 | 6.063 | 8.928 | 6.968 | 5.463 | 5.524 | 5.515 | 30.385 |
| 8/31/99 | 18:24:21 | 527.9455 | 14.496 | 6.971 | 6.063 | 8.928 | 6.971 | 5.46 | 5.524 | 5.501 | 30.387 |
| 8/31/99 | 18:34:21 | 537.9455 | 14.499 | 6.966 | 6.061 | 8.931 | 6.965 | 5.466 | 5.521 | 5.529 | 30.383 |
| 8/31/99 | 18:44:21 | 547.9455 | 14.524 | 6.966 | 6.061 | 8.925 | 6.968 | 5.46 | 5.524 | 5.522 | 30.381 |
| 8/31/99 | 18:54:21 | 557.9455 | 14.506 | 6.966 | 6.061 | 8.925 | 6.968 | 5.46 | 5.524 | 5.522 | 30.377 |
| 8/31/99 | 19:04:21 | 567.9455 | 14.522 | 6.971 | 6.063 | 8.928 | 6.968 | 5.463 | 5.524 | 5.529 | 30.379 |
| 8/31/99 | 19:14:21 | 577.9455 | 14.547 | 6.966 | 6.063 | 8.928 | 6.971 | 5.463 | 5.524 | 5.536 | 30.377 |
| 8/31/99 | 19:24:21 | 587.9455 | 14.538 | 6.966 | 6.049 | 8.931 | 6.968 | 5.466 | 5.521 | 5.55 | 30.377 |
| 8/31/99 | 19:34:21 | 597.9455 | 14.535 | 6.966 | 6.058 | 8.931 | 6.968 | 5.466 | 5.524 | 5.55 | 30.375 |
| 8/31/99 | 19:44:21 | 607.9455 | 14.495 | 6.966 | 6.052 | 8.934 | 6.971 | 5.463 | 5.521 | 5.557 | 30.375 |
| 8/31/99 | 19:54:21 | 617.9455 | 14.476 | 6.966 | 6.052 | 8.934 | 6.971 | 5.468 | 5.524 | 5.564 | 30.375 |
| 8/31/99 | 20:04:21 | 627.9455 | 14.477 | 6.966 | 6.061 | 8.934 | 6.971 | 5.468 | 5.527 | 5.557 | 30.383 |
| 8/31/99 | 20:14:21 | 637.9455 | 14.467 | 6.975 | 6.058 | 8.934 | 6.977 | 5.466 | 5.527 | 5.55 | 30.377 |
| 8/31/99 | 20:24:21 | 647.9455 | 14.471 | 6.979 | 6.061 | 8.937 | 6.977 | 5.466 | 5.53 | 5.557 | 30.381 |
| 8/31/99 | 20:34:21 | 657.9455 | 14.509 | 6.979 | 6.063 | 8.939 | 6.977 | 5.468 | 5.532 | 5.557 | 30.377 |
| 8/31/99 | 20:44:21 | 667.9455 | 14.492 | 6.979 | 6.058 | 8.942 | 6.977 | 5.471 | 5.53 | 5.578 | 30.379 |
| 8/31/99 | 20:54:21 | 677.9455 | 14.446 | 6.979 | 6.061 | 8.945 | 6.977 | 5.477 | 5.53 | 5.571 | 30.381 |
| 8/31/99 | 21:04:21 | 687.9455 | 14.465 | 6.984 | 6.066 | 8.942 | 6.98 | 5.468 | 5.535 | 5.557 | 30.375 |
| 8/31/99 | 21:14:21 | 697.9455 | 14.371 | 6.979 | 6.058 | 8.945 | 6.977 | 5.48 | 5.538 | 5.578 | 30.375 |
| 8/31/99 | 21:24:21 | 707.9455 | 14.33 | 6.979 | 6.061 | 8.945 | 6.98 | 5.477 | 5.538 | 5.571 | 30.373 |
| 8/31/99 | 21:34:21 | 717.9455 | 14.316 | 6.984 | 6.063 | 8.945 | 6.986 | 5.477 | 5.535 | 5.564 | 30.371 |
| 8/31/99 | 21:44:21 | 727.9455 | 14.331 | 6.984 | 6.061 | 8.948 | 6.988 | 5.477 | 5.538 | 5.564 | 30.373 |
| 8/31/99 | 21:54:21 | 737.9455 | 14.334 | 6.988 | 6.066 | 8.948 | 6.988 | 5.474 | 5.541 | 5.564 | 30.369 |
| 8/31/99 | 22:04:21 | 747.9455 | 14.331 | 6.988 | 6.061 | 8.954 | 6.986 | 5.483 | 5.541 | 5.585 | 30.369 |
| 8/31/99 | 22:14:21 | 757.9455 | 14.309 | 6.992 | 6.069 | 8.951 | 6.991 | 5.477 | 5.544 | 5.557 | 30.373 |
| 8/31/99 | 22:24:21 | 767.9455 | 14.306 | 6.988 | 6.066 | 8.954 | 6.991 | 5.486 | 5.544 | 5.578 | 30.371 |
| 8/31/99 | 22:34:21 | 777.9455 | 14.305 | 6.992 | 6.063 | 8.96 | 6.997 | 5.483 | 5.547 | 5.578 | 30.371 |
| 8/31/99 | 22:44:21 | 787.9455 | 14.315 | 6.992 | 6.072 | 8.954 | 6.994 | 5.483 | 5.547 | 5.571 | 30.375 |
| 8/31/99 | 22:54:21 | 797.9455 | 14.306 | 6.992 | 6.069 | 8.96 | 6.994 | 5.489 | 5.55 | 5.578 | 30.371 |
| 8/31/99 | 23:04:21 | 807.9455 | 14.315 | 6.996 | 6.072 | 8.96 | 6.997 | 5.486 | 5.553 | 5.571 | 30.375 |
| 8/31/99 | 23:14:21 | 817.9455 | 14.29 | 6.992 | 6.063 | 8.968 | 6.997 | 5.489 | 5.553 | 5.592 | 30.375 |
| 8/31/99 | 23:24:21 | 827.9455 | 14.289 | 6.996 | 6.063 | 8.965 | 7 | 5.489 | 5.553 | 5.585 | 30.373 |
| 8/31/99 | 23:34:21 | 837.9455 | 14.292 | 6.996 | 6.066 | 8.968 | 6.997 | 5.491 | 5.553 | 5.585 | 30.375 |
| 8/31/99 | 23:44:21 | 847.9455 | 14.268 | 7.001 | 6.072 | 8.965 | 7.003 | 5.489 | 5.558 | 5.564 | 30.379 |
| 8/31/99 | 23:54:21 | 857.9455 | 14.334 | 7.001 | 6.075 | 8.968 | 7 | 5.491 | 5.555 | 5.571 | 30.373 |
| 9/1/99 | 0:04:21 | 867.9455 | 14.384 | 7.001 | 6.075 | 8.968 | 7.006 | 5.489 | 5.558 | 5.557 | 30.371 |
| 9/1/99 | 0:14:21 | 877.9455 | 14.349 | 7.001 | 6.066 | 8.971 | 7.006 | 5.491 | 5.558 | 5.564 | 30.369 |
| 9/1/99 | 0:24:21 | 887.9455 | 14.36 | 7.001 | 6.069 | 8.974 | 7 | 5.497 | 5.558 | 5.571 | 30.373 |
| 9/1/99 | 0:34:21 | 897.9455 | 14.335 | 7.001 | 6.069 | 8.977 | 7.003 | 5.497 | 5.561 | 5.564 | 30.375 |
| 9/1/99 | 0:44:21 | 907.9455 | 14.338 | 7.005 | 6.072 | 8.977 | 7.009 | 5.494 | 5.561 | 5.557 | 30.375 |
| 9/1/99 | 0:54:21 | 917.9455 | 14.324 | 7.001 | 6.069 | 8.977 | 7.003 | 5.5 | 5.561 | 5.557 | 30.381 |
| 9/1/99 | 1:04:21 | 927.9455 | 14.295 | 7.005 | 6.069 | 8.977 | 7.009 | 5.494 | 5.561 | 5.543 | 30.379 |
| 9/1/99 | 1:14:21 | 937.9455 | 14.255 | 7.005 | 6.075 | 8.98 | 7.006 | 5.5 | 5.564 | 5.536 | 30.377 |
| 9/1/99 | 1:24:21 | 947.9455 | 14.241 | 7.009 | 6.072 | 8.977 | 7.009 | 5.5 | 5.564 | 5.543 | 30.381 |
| 9/1/99 | 1:34:21 | 957.9455 | 14.23 | 7.001 | 6.069 | 8.98 | 7.006 | 5.5 | 5.564 | 5.536 | 30.381 |
| 9/1/99 | 1:44:21 | 967.9455 | 14.238 | 7.009 | 6.075 | 8.977 | 7.009 | 5.494 | 5.567 | 5.515 | 30.375 |
| 9/1/99 | 1:54:21 | 977.9455 | 14.243 | 7.009 | 6.069 | 8.98 | 7.009 | 5.497 | 5.567 | 5.529 | 30.375 |
| 9/1/99 | 2:04:21 | 987.9455 | 14.201 | 7.014 | 6.072 | 8.977 | 7.011 | 5.494 | 5.567 | 5.508 | 30.373 |
| 9/1/99 | 2:14:21 | 997.9455 | 14.21 | 7.009 | 6.072 | 8.977 | 7.006 | 5.497 | 5.564 | 5.515 | 30.371 |
| 9/1/99 | 2:24:21 | 1007.946 | 14.222 | 7.009 | 6.066 | 8.977 | 7.009 | 5.491 | 5.567 | 5.508 | 30.367 |
| 9/1/99 | 2:34:21 | 1017.946 | 14.246 | 7.005 | 6.072 | 8.974 | 7.006 | 5.494 | 5.564 | 5.501 | 30.365 |
| 9/1/99 | 2:44:21 | 1027.946 | 14.216 | 7.009 | 6.072 | 8.974 | 7.006 | 5.491 | 5.567 | 5.486 | 30.369 |
| 9/1/99 | 2:54:21 | 1037.946 | 14.192 | 7.009 | 6.072 | 8.971 | 7.009 | 5.491 | 5.567 | 5.479 | 30.365 |
| 9/1/99 | 3:04:21 | 1047.946 | 14.178 | 7.009 | 6.061 | 8.974 | 7.006 | 5.489 | 5.564 | 5.486 | 30.361 |
| 9/1/99 | 3:14:21 | 1057.946 | 14.144 | 7.009 | 6.066 | 8.971 | 7.006 | 5.486 | 5.567 | 5.472 | 30.363 |
| 9/1/99 | 3:24:21 | 1067.946 | 14.169 | 7.001 | 6.061 | 8.971 | 7 | 5.491 | 5.561 | 5.486 | 30.359 |
| 9/1/99 | 3:34:21 | 1077.946 | 14.176 | 7.005 | 6.058 | 8.968 | 7 | 5.489 | 5.561 | 5.486 | 30.361 |
| 9/1/99 | 3:44:21 | 1087.946 | 14.213 | 7.001 | 6.058 | 8.968 | 6.997 | 5.489 | 5.561 | 5.486 | 30.355 |
| 9/1/99 | 3:54:21 | 1097.946 | 14.133 | 7.001 | 6.055 | 8.965 | 6.997 | 5.489 | 5.558 | 5.486 | 30.351 |
| 9/1/99 | 4:04:21 | 1107.946 | 14.175 | 7.001 | 6.052 | 8.965 | 6.997 | 5.486 | 5.558 | 5.486 | 30.351 |
| 9/1/99 | 4:14:21 | 1117.946 | 14.21 | 7.001 | 6.055 | 8.962 | 6.997 | 5.48 | 5.558 | 5.472 | 30.349 |
| 9/1/99 | 4:24:21 | 1127.946 | 14.175 | 6.996 | 6.052 | 8.962 | 6.997 | 5.48 | 5.558 | 5.472 | 30.353 |
| 9/1/99 | 4:34:21 | 1137.946 | 14.17 | 6.996 | 6.052 | 8.962 | 6.991 | 5.483 | 5.558 | 5.486 | 30.353 |
| 9/1/99 | 4:44:21 | 1147.946 | 14.178 | 6.996 | 6.046 | 8.96 | 6.991 | 5.483 | 5.558 | 5.493 | 30.353 |
| 9/1/99 | 4:54:21 | 1157.946 | 14.146 | 7.001 | 6.055 | 8.957 | 6.994 | 5.477 | 5.558 | 5.472 | 30.353 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Pumping Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99-02 Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ-99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/1/99 | 5:04:21 | 1167.946 | 14.15 | 6.992 | 6.046 | 8.957 | 6.988 | 5.48 | 5.555 | 5.493 | 30.355 |
| 9/1/99 | 5:14:21 | 1177.946 | 14.16 | 6.992 | 6.046 | 8.954 | 6.994 | 5.477 | 5.555 | 5.493 | 30.355 |
| 9/1/99 | 5:24:21 | 1187.946 | 14.122 | 6.992 | 6.052 | 8.954 | 6.988 | 5.477 | 5.558 | 5.493 | 30.361 |
| 9/1/99 | 5:34:21 | 1197.946 | 14.141 | 6.992 | 6.049 | 8.957 | 6.988 | 5.48 | 5.558 | 5.501 | 30.363 |
| 9/1/99 | 5:44:21 | 1207.946 | 14.14 | 6.992 | 6.043 | 8.957 | 6.988 | 5.48 | 5.558 | 5.508 | 30.363 |
| 9/1/99 | 5:54:21 | 1217.946 | 14.16 | 6.992 | 6.046 | 8.951 | 6.991 | 5.474 | 5.561 | 5.501 | 30.367 |
| 9/1/99 | 6:04:21 | 1227.946 | 14.143 | 6.996 | 6.046 | 8.951 | 6.991 | 5.474 | 5.561 | 5.501 | 30.367 |
| 9/1/99 | 6:14:21 | 1237.946 | 14.074 | 6.992 | 6.04 | 8.954 | 6.988 | 5.48 | 5.558 | 5.529 | 30.369 |
| 9/1/99 | 6:24:21 | 1247.946 | 14.127 | 6.996 | 6.049 | 8.951 | 6.994 | 5.477 | 5.564 | 5.515 | 30.375 |
| 9/1/99 | 6:34:21 | 1257.946 | 14.108 | 6.992 | 6.043 | 8.954 | 6.994 | 5.474 | 5.561 | 5.529 | 30.373 |
| 9/1/99 | 6:44:21 | 1267.946 | 14.127 | 6.992 | 6.049 | 8.951 | 6.991 | 5.48 | 5.564 | 5.522 | 30.377 |
| 9/1/99 | 6:54:21 | 1277.946 | 14.162 | 6.996 | 6.049 | 8.951 | 6.991 | 5.477 | 5.564 | 5.529 | 30.383 |
| 9/1/99 | 7:04:21 | 1287.946 | 14.165 | 6.988 | 6.046 | 8.954 | 6.991 | 5.48 | 5.564 | 5.543 | 30.379 |
| 9/1/99 | 7:14:21 | 1297.946 | 14.169 | 6.992 | 6.04 | 8.957 | 6.988 | 5.483 | 5.564 | 5.557 | 30.379 |
| 9/1/99 | 7:24:21 | 1307.946 | 14.17 | 6.988 | 6.046 | 8.957 | 6.988 | 5.48 | 5.564 | 5.55 | 30.383 |
| 9/1/99 | 7:34:21 | 1317.946 | 14.179 | 6.992 | 6.046 | 8.957 | 6.988 | 5.477 | 5.561 | 5.55 | 30.387 |
| 9/1/99 | 7:44:21 | 1327.946 | 14.22 | 6.996 | 6.046 | 8.957 | 6.994 | 5.477 | 5.567 | 5.55 | 30.387 |
| 9/1/99 | 7:54:21 | 1337.946 | 14.195 | 6.988 | 6.037 | 8.957 | 6.991 | 5.477 | 5.558 | 5.55 | 30.395 |
| 9/1/99 | 8:04:21 | 1347.946 | 14.214 | 6.996 | 6.049 | 8.962 | 6.994 | 5.486 | 5.573 | 5.571 | 30.395 |
| 9/1/99 | 8:14:21 | 1357.946 | 14.211 | 7.001 | 6.046 | 8.96 | 7 | 5.483 | 5.576 | 5.571 | 30.397 |
| 9/1/99 | 8:24:21 | 1367.946 | 14.214 | 6.996 | 6.046 | 8.962 | 6.994 | 5.486 | 5.573 | 5.578 | 30.4 |
| 9/1/99 | 8:34:21 | 1377.946 | 14.187 | 7.001 | 6.049 | 8.96 | 7 | 5.483 | 5.579 | 5.564 | 30.395 |
| 9/1/99 | 8:44:21 | 1387.946 | 14.191 | 6.996 | 6.046 | 8.965 | 6.997 | 5.489 | 5.576 | 5.592 | 30.395 |
| 9/1/99 | 8:54:21 | 1397.946 | 14.191 | 7.005 | 6.052 | 8.965 | 7 | 5.486 | 5.581 | 5.564 | 30.393 |
| 9/1/99 | 9:04:21 | 1407.946 | 14.176 | 7.001 | 6.052 | 8.962 | 7 | 5.486 | 5.584 | 5.571 | 30.389 |
| 9/1/99 | 9:14:21 | 1417.946 | 14.185 | 7.005 | 6.052 | 8.965 | 7.003 | 5.486 | 5.581 | 5.571 | 30.385 |
| 9/1/99 | 9:24:21 | 1427.946 | 14.168 | 7.005 | 6.046 | 8.971 | 7.003 | 5.491 | 5.581 | 5.599 | 30.389 |
| 9/1/99 | 9:34:21 | 1437.946 | 14.156 | 7.005 | 6.046 | 8.971 | 7.003 | 5.491 | 5.581 | 5.585 | 30.385 |
| 9/1/99 | 9:44:21 | 1447.946 | 14.153 | 7.009 | 6.049 | 8.974 | 7.006 | 5.491 | 5.584 | 5.592 | 30.387 |
| 9/1/99 | 9:54:21 | 1457.946 | 14.189 | 7.005 | 6.055 | 8.974 | 7.006 | 5.494 | 5.584 | 5.585 | 30.383 |
| 9/1/99 | 10:04:21 | 1467.946 | 14.151 | 7.009 | 6.052 | 8.977 | 7.006 | 5.494 | 5.587 | 5.592 | 30.381 |
| 9/1/99 | 10:14:21 | 1477.946 | 14.16 | 7.009 | 6.052 | 8.977 | 7.009 | 5.497 | 5.59 | 5.592 | 30.385 |
| 9/1/99 | 10:24:21 | 1487.946 | 14.182 | 7.014 | 6.055 | 8.98 | 7.009 | 5.5 | 5.59 | 5.592 | 30.391 |
| 9/1/99 | 10:34:21 | 1497.946 | 14.184 | 7.014 | 6.058 | 8.98 | 7.014 | 5.494 | 5.593 | 5.585 | 30.389 |
| 9/1/99 | 10:44:21 | 1507.946 | 14.223 | 7.018 | 6.061 | 8.98 | 7.014 | 5.494 | 5.659 | 5.578 | 30.389 |
| 9/1/99 | 10:54:21 | 1517.946 | 14.188 | 7.014 | 6.061 | 8.983 | 7.011 | 5.5 | 5.659 | 5.592 | 30.389 |
| 9/1/99 | 11:04:21 | 1527.946 | 14.236 | 7.018 | 6.058 | 8.983 | 7.017 | 5.5 | 5.599 | 5.592 | 30.387 |
| 9/1/99 | 11:14:21 | 1537.946 | 14.213 | 7.014 | 6.055 | 8.985 | 7.014 | 5.503 | 5.602 | 5.599 | 30.385 |
| 9/1/99 | 11:24:21 | 1547.946 | 14.178 | 7.014 | 6.061 | 8.985 | 7.02 | 5.5 | 5.602 | 5.585 | 30.387 |
| 9/1/99 | 11:34:21 | 1557.946 | 14.265 | 7.014 | 6.058 | 8.985 | 7.02 | 5.5 | 5.602 | 5.592 | 30.387 |
| 9/1/99 | 11:44:21 | 1567.946 | 14.262 | 7.018 | 6.058 | 8.985 | 7.02 | 5.503 | 5.602 | 5.592 | 30.385 |
| 9/1/99 | 11:54:21 | 1577.946 | 14.229 | 7.018 | 6.058 | 8.988 | 7.02 | 5.506 | 5.604 | 5.599 | 30.381 |
| 9/1/99 | 12:04:21 | 1587.946 | 14.252 | 7.018 | 6.063 | 8.988 | 7.02 | 5.506 | 5.604 | 5.585 | 30.379 |
| 9/1/99 | 12:14:21 | 1597.946 | 14.225 | 7.018 | 6.058 | 8.988 | 7.023 | 5.503 | 5.604 | 5.571 | 30.375 |
| 9/1/99 | 12:24:21 | 1607.946 | 14.261 | 7.018 | 6.058 | 8.991 | 7.02 | 5.506 | 5.61 | 5.578 | 30.375 |
| 9/1/99 | 12:34:21 | 1617.946 | 14.233 | 7.022 | 6.063 | 8.988 | 7.023 | 5.506 | 5.613 | 5.564 | 30.377 |
| 9/1/99 | 12:44:21 | 1627.946 | 14.22 | 7.018 | 6.055 | 8.994 | 7.02 | 5.509 | 5.613 | 5.571 | 30.369 |
| 9/1/99 | 12:54:21 | 1637.946 | 14.198 | 7.022 | 6.063 | 8.988 | 7.02 | 5.503 | 5.613 | 5.55 | 30.365 |
| 9/1/99 | 13:04:21 | 1647.946 | 14.239 | 7.022 | 6.063 | 8.991 | 7.023 | 5.506 | 5.616 | 5.543 | 30.361 |
| 9/1/99 | 13:14:21 | 1657.946 | 14.225 | 7.022 | 6.061 | 8.991 | 7.023 | 5.503 | 5.613 | 5.543 | 30.363 |
| 9/1/99 | 13:24:21 | 1667.946 | 14.251 | 7.018 | 6.061 | 8.994 | 7.02 | 5.509 | 5.607 | 5.55 | 30.359 |
| 9/1/99 | 13:34:21 | 1677.946 | 14.213 | 7.018 | 6.063 | 8.991 | 7.023 | 5.506 | 5.616 | 5.536 | 30.357 |
| 9/1/99 | 13:44:21 | 1687.946 | 14.232 | 7.022 | 6.063 | 8.991 | 7.023 | 5.506 | 5.616 | 5.529 | 30.357 |
| 9/1/99 | 13:54:21 | 1697.946 | 14.303 | 7.022 | 6.058 | 8.994 | 7.02 | 5.509 | 5.613 | 5.536 | 30.353 |
| 9/1/99 | 14:04:21 | 1707.946 | 14.29 | 7.018 | 6.061 | 8.994 | 7.02 | 5.509 | 5.613 | 5.529 | 30.353 |
| 9/1/99 | 14:14:21 | 1717.946 | 14.279 | 7.022 | 6.058 | 8.994 | 7.02 | 5.509 | 5.613 | 5.522 | 30.349 |
| 9/1/99 | 14:24:21 | 1727.946 | 14.295 | 7.022 | 6.055 | 8.991 | 7.023 | 5.503 | 5.613 | 5.515 | 30.351 |
| 9/1/99 | 14:34:21 | 1737.946 | 14.321 | 7.022 | 6.049 | 8.991 | 7.02 | 5.509 | 5.613 | 5.522 | 30.347 |
| 9/1/99 | 14:44:21 | 1747.946 | 14.262 | 7.018 | 6.058 | 8.988 | 7.02 | 5.506 | 5.613 | 5.508 | 30.34 |
| 9/1/99 | 14:54:21 | 1757.946 | 14.293 | 7.018 | 6.055 | 8.985 | 7.017 | 5.506 | 5.607 | 5.508 | 30.345 |
| 9/1/99 | 15:04:21 | 1767.946 | 14.252 | 7.022 | 6.055 | 8.983 | 7.02 | 5.503 | 5.61 | 5.479 | 30.332 |
| 9/1/99 | 15:14:21 | 1777.946 | 14.249 | 7.018 | 6.049 | 8.985 | 7.017 | 5.503 | 5.607 | 5.493 | 30.332 |
| 9/1/99 | 15:24:21 | 1787.946 | 14.271 | 7.018 | 6.049 | 8.985 | 7.014 | 5.503 | 5.604 | 5.486 | 30.33 |
| 9/1/99 | 15:34:21 | 1797.946 | 14.246 | 7.018 | 6.052 | 8.98 | 7.017 | 5.5 | 5.607 | 5.472 | 30.334 |
| 9/1/99 | 15:44:21 | 1807.946 | 14.239 | 7.014 | 6.049 | 8.977 | 7.014 | 5.497 | 5.602 | 5.479 | 30.328 |
| 9/1/99 | 15:54:21 | 1817.946 | 14.303 | 7.014 | 6.043 | 8.977 | 7.011 | 5.497 | 5.602 | 5.479 | 30.328 |
| 9/1/99 | 16:04:21 | 1827.946 | 14.352 | 7.009 | 6.043 | 8.977 | 7.009 | 5.497 | 5.602 | 5.479 | 30.328 |
| 9/1/99 | 16:14:21 | 1837.946 | 14.286 | 7.014 | 6.037 | 8.974 | 7.011 | 5.494 | 5.602 | 5.479 | 30.326 |
| 9/1/99 | 16:24:21 | 1847.946 | 14.26 | 7.014 | 6.04 | 8.971 | 7.011 | 5.489 | 5.599 | 5.472 | 30.324 |
| 9/1/99 | 16:34:21 | 1857.946 | 14.287 | 7.009 | 6.037 | 8.968 | 7.011 | 5.489 | 5.599 | 5.472 | 30.32 |
| 9/1/99 | 16:44:21 | 1867.946 | 14.242 | 7.009 | 6.04 | 8.965 | 7.009 | 5.486 | 5.599 | 5.465 | 30.322 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Pumping Interval**

| Observation Point: | | | EW-99-01 | MCR-99-01 | PZ-99-01I | PZ-99-08I | MCWR-99-02 | PZ-99-01A | PZ-99-01B | PZ-99-01C | Barometer |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Chan[1] | Chan[2] | Chan[3] | Chan[4] | Chan[5] | Chan[6] | Chan[7] | Chan[8] | Chan[0] |
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/1/99 | 16:54:21 | 1877.946 | 14.226 | 7.005 | 6.035 | 8.968 | 7.003 | 5.491 | 5.596 | 5.479 | 30.324 |
| 9/1/99 | 17:04:21 | 1887.946 | 14.243 | 7.005 | 6.037 | 8.965 | 7.006 | 5.486 | 5.599 | 5.472 | 30.322 |
| 9/1/99 | 17:14:21 | 1897.946 | 14.251 | 7.005 | 6.037 | 8.962 | 7.003 | 5.483 | 5.596 | 5.472 | 30.326 |
| 9/1/99 | 17:24:21 | 1907.946 | 14.233 | 7.005 | 6.032 | 8.96 | 7.003 | 5.48 | 5.593 | 5.479 | 30.318 |
| 9/1/99 | 17:34:21 | 1917.946 | 14.243 | 7.001 | 6.026 | 8.962 | 7 | 5.48 | 5.59 | 5.501 | 30.31 |
| 9/1/99 | 17:44:21 | 1927.946 | 14.255 | 7.001 | 6.032 | 8.96 | 7 | 5.48 | 5.593 | 5.486 | 30.316 |
| 9/1/99 | 17:54:21 | 1937.946 | 14.246 | 6.996 | 6.026 | 8.957 | 6.997 | 5.48 | 5.59 | 5.501 | 30.314 |
| 9/1/99 | 18:04:21 | 1947.946 | 14.287 | 7.001 | 6.029 | 8.954 | 7 | 5.474 | 5.593 | 5.486 | 30.316 |
| 9/1/99 | 18:14:21 | 1957.946 | 14.264 | 6.996 | 6.029 | 8.954 | 6.994 | 5.477 | 5.59 | 5.501 | 30.316 |
| 9/1/99 | 18:24:21 | 1967.946 | 14.257 | 6.996 | 6.029 | 8.951 | 6.997 | 5.474 | 5.59 | 5.501 | 30.314 |
| 9/1/99 | 18:34:21 | 1977.946 | 14.273 | 6.996 | 6.026 | 8.951 | 6.997 | 5.471 | 5.593 | 5.501 | 30.308 |
| 9/1/99 | 18:44:21 | 1987.946 | 14.284 | 6.996 | 6.017 | 8.954 | 6.994 | 5.474 | 5.59 | 5.536 | 30.31 |
| 9/1/99 | 18:54:21 | 1997.946 | 14.277 | 6.996 | 6.023 | 8.951 | 6.997 | 5.471 | 5.593 | 5.515 | 30.31 |
| 9/1/99 | 19:04:21 | 2007.946 | 14.249 | 6.992 | 6.017 | 8.951 | 6.994 | 5.471 | 5.587 | 5.536 | 30.308 |
| 9/1/99 | 19:14:21 | 2017.946 | 14.289 | 6.992 | 6.02 | 8.951 | 6.991 | 5.474 | 5.59 | 5.536 | 30.306 |
| 9/1/99 | 19:24:21 | 2027.946 | 14.286 | 6.992 | 6.017 | 8.951 | 6.997 | 5.471 | 5.59 | 5.543 | 30.304 |
| 9/1/99 | 19:34:21 | 2037.946 | 14.276 | 6.992 | 6.02 | 8.951 | 6.991 | 5.474 | 5.587 | 5.543 | 30.304 |
| 9/1/99 | 19:44:21 | 2047.946 | 14.265 | 6.992 | 6.023 | 8.951 | 6.991 | 5.477 | 5.59 | 5.55 | 30.306 |
| 9/1/99 | 19:54:21 | 2057.946 | 14.281 | 6.992 | 6.02 | 8.954 | 6.991 | 5.48 | 5.59 | 5.557 | 30.306 |
| 9/1/99 | 20:04:21 | 2067.946 | 14.274 | 6.992 | 6.017 | 8.954 | 6.997 | 5.477 | 5.593 | 5.564 | 30.31 |
| 9/1/99 | 20:14:21 | 2077.946 | 14.343 | 6.996 | 6.017 | 8.957 | 6.994 | 5.48 | 5.596 | 5.571 | 30.312 |
| 9/1/99 | 20:24:21 | 2087.946 | 14.352 | 6.996 | 6.017 | 8.957 | 6.997 | 5.48 | 5.596 | 5.571 | 30.318 |
| 9/1/99 | 20:34:21 | 2097.946 | 14.327 | 6.996 | 6.026 | 8.957 | 6.997 | 5.483 | 5.596 | 5.571 | 30.32 |
| 9/1/99 | 20:44:21 | 2107.946 | 14.296 | 6.996 | 6.026 | 8.957 | 6.994 | 5.483 | 5.599 | 5.571 | 30.32 |
| 9/1/99 | 20:54:21 | 2117.946 | 14.309 | 7.001 | 6.026 | 8.96 | 7 | 5.48 | 5.602 | 5.571 | 30.322 |
| 9/1/99 | 21:04:21 | 2127.946 | 14.344 | 7.001 | 6.023 | 8.957 | 7 | 5.48 | 5.602 | 5.571 | 30.318 |
| 9/1/99 | 21:14:21 | 2137.946 | 14.362 | 6.996 | 6.02 | 8.962 | 7 | 5.486 | 5.602 | 5.592 | 30.314 |
| 9/1/99 | 21:24:21 | 2147.946 | 14.378 | 7.001 | 6.02 | 8.962 | 7 | 5.483 | 5.602 | 5.585 | 30.318 |
| 9/1/99 | 21:34:21 | 2157.946 | 14.347 | 7.001 | 6.023 | 8.962 | 7.006 | 5.483 | 5.604 | 5.578 | 30.31 |
| 9/1/99 | 21:44:21 | 2167.946 | 14.373 | 7.001 | 6.029 | 8.962 | 7 | 5.483 | 5.604 | 5.578 | 30.31 |
| 9/1/99 | 21:54:21 | 2177.946 | 14.352 | 7.001 | 6.026 | 8.962 | 7 | 5.483 | 5.607 | 5.578 | 30.308 |
| 9/1/99 | 22:04:21 | 2187.946 | 14.369 | 7.005 | 6.032 | 8.965 | 7.003 | 5.486 | 5.613 | 5.578 | 30.312 |
| 9/1/99 | 22:14:21 | 2197.946 | 14.357 | 7.005 | 6.032 | 8.965 | 7.006 | 5.486 | 5.613 | 5.578 | 30.308 |
| 9/1/99 | 22:24:21 | 2207.946 | 14.379 | 7.001 | 6.029 | 8.971 | 7.003 | 5.491 | 5.607 | 5.592 | 30.308 |
| 9/1/99 | 22:34:21 | 2217.946 | 14.368 | 7.009 | 6.035 | 8.971 | 7.009 | 5.489 | 5.619 | 5.578 | 30.308 |
| 9/1/99 | 22:44:21 | 2227.946 | 14.384 | 7.009 | 6.035 | 8.974 | 7.011 | 5.489 | 5.619 | 5.578 | 30.312 |
| 9/1/99 | 22:54:21 | 2237.946 | 14.407 | 7.005 | 6.029 | 8.977 | 7.006 | 5.494 | 5.616 | 5.599 | 30.308 |
| 9/1/99 | 23:04:21 | 2247.946 | 14.373 | 7.009 | 6.035 | 8.977 | 7.011 | 5.489 | 5.619 | 5.585 | 30.308 |
| 9/1/99 | 23:14:21 | 2257.946 | 14.371 | 7.009 | 6.029 | 8.98 | 7.011 | 5.494 | 5.622 | 5.599 | 30.304 |
| 9/1/99 | 23:24:21 | 2267.946 | 14.384 | 7.009 | 6.035 | 8.98 | 7.009 | 5.494 | 5.619 | 5.592 | 30.3 |
| 9/1/99 | 23:34:21 | 2277.946 | 14.42 | 7.014 | 6.04 | 8.98 | 7.017 | 5.494 | 5.625 | 5.585 | 30.304 |
| 9/1/99 | 23:44:21 | 2287.946 | 14.41 | 7.014 | 6.035 | 8.983 | 7.011 | 5.5 | 5.625 | 5.599 | 30.304 |
| 9/1/99 | 23:54:21 | 2297.946 | 14.413 | 7.022 | 6.043 | 8.983 | 7.017 | 5.497 | 5.627 | 5.585 | 30.308 |
| 9/2/99 | 0:04:21 | 2307.946 | 14.403 | 7.022 | 6.037 | 8.988 | 7.017 | 5.5 | 5.627 | 5.606 | 30.306 |
| 9/2/99 | 0:14:21 | 2317.946 | 14.432 | 7.022 | 6.04 | 8.988 | 7.023 | 5.5 | 5.63 | 5.592 | 30.31 |
| 9/2/99 | 0:24:21 | 2327.946 | 14.438 | 7.022 | 6.04 | 8.988 | 7.023 | 5.5 | 5.63 | 5.599 | 30.304 |
| 9/2/99 | 0:34:21 | 2337.946 | 14.423 | 7.027 | 6.046 | 8.988 | 7.023 | 5.5 | 5.633 | 5.592 | 30.306 |
| 9/2/99 | 0:44:21 | 2347.946 | 14.435 | 7.027 | 6.046 | 8.991 | 7.029 | 5.5 | 5.636 | 5.585 | 30.306 |
| 9/2/99 | 0:54:21 | 2357.946 | 14.382 | 7.027 | 6.049 | 8.991 | 7.023 | 5.506 | 5.633 | 5.592 | 30.306 |
| 9/2/99 | 1:04:21 | 2367.946 | 14.429 | 7.022 | 6.043 | 8.994 | 7.02 | 5.509 | 5.636 | 5.599 | 30.308 |
| 9/2/99 | 1:14:21 | 2377.946 | 14.433 | 7.027 | 6.049 | 8.994 | 7.026 | 5.506 | 5.633 | 5.585 | 30.298 |
| 9/2/99 | 1:24:21 | 2387.946 | 14.462 | 7.027 | 6.052 | 8.991 | 7.026 | 5.503 | 5.636 | 5.571 | 30.298 |
| 9/2/99 | 1:34:21 | 2397.946 | 14.575 | 7.027 | 6.052 | 8.994 | 7.026 | 5.506 | 5.636 | 5.571 | 30.294 |
| 9/2/99 | 1:44:21 | 2407.946 | 14.554 | 7.031 | 6.043 | 8.997 | 7.029 | 5.506 | 5.636 | 5.578 | 30.298 |
| 9/2/99 | 1:54:21 | 2417.946 | 14.546 | 7.031 | 6.043 | 8.994 | 7.029 | 5.506 | 5.636 | 5.564 | 30.292 |
| 9/2/99 | 2:04:21 | 2427.946 | 14.492 | 7.027 | 6.046 | 8.997 | 7.026 | 5.512 | 5.639 | 5.564 | 30.292 |
| 9/2/99 | 2:14:21 | 2437.946 | 14.43 | 7.027 | 6.049 | 8.997 | 7.026 | 5.512 | 5.639 | 5.557 | 30.296 |
| 9/2/99 | 2:24:21 | 2447.946 | 14.458 | 7.031 | 6.052 | 8.994 | 7.035 | 5.503 | 5.639 | 5.536 | 30.296 |
| 9/2/99 | 2:34:21 | 2457.946 | 14.441 | 7.031 | 6.052 | 8.994 | 7.032 | 5.5 | 5.642 | 5.536 | 30.292 |
| 9/2/99 | 2:44:21 | 2467.946 | 14.429 | 7.031 | 6.046 | 8.997 | 7.032 | 5.503 | 5.639 | 5.543 | 30.292 |
| 9/2/99 | 2:54:21 | 2477.946 | 14.426 | 7.031 | 6.043 | 8.997 | 7.029 | 5.509 | 5.636 | 5.543 | 30.288 |
| 9/2/99 | 3:04:21 | 2487.946 | 14.414 | 7.031 | 6.052 | 8.994 | 7.029 | 5.506 | 5.639 | 5.522 | 30.285 |
| 9/2/99 | 3:14:21 | 2497.946 | 14.429 | 7.031 | 6.043 | 8.997 | 7.029 | 5.506 | 5.636 | 5.536 | 30.285 |
| 9/2/99 | 3:24:21 | 2507.946 | 14.406 | 7.027 | 6.046 | 8.991 | 7.029 | 5.5 | 5.636 | 5.515 | 30.283 |
| 9/2/99 | 3:34:21 | 2517.946 | 14.369 | 7.027 | 6.043 | 8.994 | 7.023 | 5.509 | 5.636 | 5.529 | 30.285 |
| 9/2/99 | 3:44:21 | 2527.946 | 14.376 | 7.027 | 6.043 | 8.991 | 7.029 | 5.497 | 5.633 | 5.508 | 30.283 |
| 9/2/99 | 3:54:21 | 2537.946 | 14.433 | 7.027 | 6.046 | 8.991 | 7.023 | 5.503 | 5.633 | 5.515 | 30.283 |
| 9/2/99 | 4:04:21 | 2547.946 | 14.429 | 7.027 | 6.04 | 8.991 | 7.026 | 5.503 | 5.633 | 5.515 | 30.283 |
| 9/2/99 | 4:14:21 | 2557.946 | 14.414 | 7.027 | 6.046 | 8.988 | 7.023 | 5.503 | 5.633 | 5.501 | 30.283 |
| 9/2/99 | 4:24:21 | 2567.946 | 14.41 | 7.022 | 6.043 | 8.985 | 7.02 | 5.494 | 5.633 | 5.493 | 30.279 |
| 9/2/99 | 4:34:21 | 2577.946 | 14.429 | 7.027 | 6.04 | 8.985 | 7.023 | 5.491 | 5.633 | 5.486 | 30.281 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Pumping Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99-02 Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ-99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/2/99 | 4:44:21 | 2587.946 | 14.403 | 7.022 | 6.043 | 8.983 | 7.02 | 5.491 | 5.633 | 5.486 | 30.279 |
| 9/2/99 | 4:54:21 | 2597.946 | 14.391 | 7.022 | 6.04 | 8.98 | 7.023 | 5.494 | 5.633 | 5.486 | 30.281 |
| 9/2/99 | 5:04:21 | 2607.946 | 14.389 | 7.022 | 6.037 | 8.983 | 7.02 | 5.494 | 5.63 | 5.493 | 30.281 |
| 9/2/99 | 5:14:21 | 2617.946 | 14.442 | 7.022 | 6.037 | 8.98 | 7.017 | 5.491 | 5.63 | 5.493 | 30.281 |
| 9/2/99 | 5:24:21 | 2627.946 | 14.489 | 7.014 | 6.032 | 8.98 | 7.011 | 5.497 | 5.625 | 5.508 | 30.279 |
| 9/2/99 | 5:34:21 | 2637.946 | 14.49 | 7.014 | 6.032 | 8.98 | 7.011 | 5.494 | 5.625 | 5.508 | 30.279 |
| 9/2/99 | 5:44:21 | 2647.946 | 14.495 | 7.014 | 6.032 | 8.977 | 7.017 | 5.494 | 5.627 | 5.501 | 30.288 |
| 9/2/99 | 5:54:21 | 2657.946 | 14.519 | 7.018 | 6.029 | 8.98 | 7.014 | 5.494 | 5.627 | 5.515 | 30.29 |
| 9/2/99 | 6:04:21 | 2667.946 | 14.492 | 7.018 | 6.032 | 8.974 | 7.017 | 5.489 | 5.627 | 5.508 | 30.29 |
| 9/2/99 | 6:14:21 | 2677.946 | 14.514 | 7.014 | 6.032 | 8.977 | 7.011 | 5.494 | 5.625 | 5.515 | 30.294 |
| 9/2/99 | 6:24:21 | 2687.946 | 14.492 | 7.014 | 6.026 | 8.977 | 7.009 | 5.491 | 5.625 | 5.529 | 30.294 |
| 9/2/99 | 6:34:21 | 2697.946 | 14.506 | 7.009 | 6.032 | 8.971 | 7.009 | 5.486 | 5.622 | 5.508 | 30.292 |
| 9/2/99 | 6:44:21 | 2707.946 | 14.462 | 7.014 | 6.026 | 8.971 | 7.011 | 5.486 | 5.622 | 5.522 | 30.296 |
| 9/2/99 | 6:54:21 | 2717.946 | 14.477 | 7.014 | 6.026 | 8.968 | 7.011 | 5.48 | 5.625 | 5.522 | 30.298 |
| 9/2/99 | 7:04:21 | 2727.946 | 14.483 | 7.009 | 6.023 | 8.974 | 7.006 | 5.491 | 5.627 | 5.543 | 30.296 |
| 9/2/99 | 7:14:21 | 2737.946 | 14.533 | 7.009 | 6.023 | 8.971 | 7.011 | 5.489 | 5.622 | 5.543 | 30.3 |
| 9/2/99 | 7:24:21 | 2747.946 | 14.626 | 7.009 | 6.026 | 8.971 | 7.006 | 5.491 | 5.625 | 5.55 | 30.304 |
| 9/2/99 | 7:34:21 | 2757.946 | 14.608 | 7.014 | 6.023 | 8.974 | 7.011 | 5.489 | 5.625 | 5.557 | 30.308 |
| 9/2/99 | 7:44:21 | 2767.946 | 14.569 | 7.009 | 6.026 | 8.971 | 7.006 | 5.491 | 5.625 | 5.55 | 30.304 |
| 9/2/99 | 7:54:21 | 2777.946 | 14.661 | 7.014 | 6.026 | 8.971 | 7.011 | 5.489 | 5.627 | 5.557 | 30.308 |
| 9/2/99 | 8:04:21 | 2787.946 | 14.646 | 7.009 | 6.02 | 8.968 | 7.009 | 5.486 | 5.619 | 5.543 | 30.314 |
| 9/2/99 | 8:14:21 | 2797.946 | 14.638 | 7.014 | 6.023 | 8.974 | 7.011 | 5.491 | 5.627 | 5.578 | 30.308 |
| 9/2/99 | 8:24:21 | 2807.946 | 14.689 | 7.014 | 6.023 | 8.971 | 7.011 | 5.489 | 5.63 | 5.585 | 30.306 |
| 9/2/99 | 8:34:21 | 2817.946 | 14.651 | 7.014 | 6.023 | 8.974 | 7.009 | 5.491 | 5.63 | 5.585 | 30.306 |
| 9/2/99 | 8:44:21 | 2827.946 | 14.652 | 7.009 | 6.026 | 8.974 | 7.009 | 5.489 | 5.63 | 5.585 | 30.306 |
| 9/2/99 | 8:54:21 | 2837.946 | 14.727 | 7.014 | 6.032 | 8.974 | 7.011 | 5.489 | 5.633 | 5.571 | 30.306 |
| 9/2/99 | 9:04:21 | 2847.946 | 14.832 | 7.014 | 6.026 | 8.974 | 7.011 | 5.489 | 5.63 | 5.592 | 30.304 |
| 9/2/99 | 9:14:21 | 2857.946 | 14.881 | 7.014 | 6.026 | 8.977 | 7.011 | 5.491 | 5.633 | 5.606 | 30.306 |
| 9/2/99 | 9:24:21 | 2867.946 | 14.988 | 7.018 | 6.032 | 8.974 | 7.014 | 5.489 | 5.636 | 5.585 | 30.304 |
| 9/2/99 | 9:34:21 | 2877.946 | 15.086 | 7.018 | 6.023 | 8.971 | 7.014 | 5.491 | 5.645 | 5.585 | 30.304 |
| 9/2/99 | 9:44:21 | 2887.946 | 15.057 | 7.018 | 6.029 | 8.983 | 7.014 | 5.497 | 5.636 | 5.606 | 30.294 |
| 9/2/99 | 9:54:21 | 2897.946 | 15.045 | 7.018 | 6.032 | 8.983 | 7.014 | 5.497 | 5.639 | 5.606 | 30.3 |
| 9/2/99 | 10:04:21 | 2907.946 | 15.038 | 7.022 | 6.029 | 8.985 | 7.017 | 5.497 | 5.639 | 5.606 | 30.302 |
| 9/2/99 | 10:14:21 | 2917.946 | 15.017 | 7.018 | 6.032 | 8.985 | 7.017 | 5.5 | 5.639 | 5.606 | 30.302 |
| 9/2/99 | 10:24:21 | 2927.946 | 15.07 | 7.022 | 6.035 | 8.988 | 7.02 | 5.503 | 5.639 | 5.606 | 30.306 |
| 9/2/99 | 10:34:21 | 2937.946 | 15.065 | 7.022 | 6.043 | 8.985 | 7.023 | 5.497 | 5.645 | 5.599 | 30.308 |
| 9/2/99 | 10:44:21 | 2947.946 | 15.067 | 7.027 | 6.037 | 8.985 | 7.026 | 5.497 | 5.645 | 5.599 | 30.298 |
| 9/2/99 | 10:54:21 | 2957.946 | 15.102 | 7.027 | 6.035 | 8.991 | 7.023 | 5.503 | 5.645 | 5.606 | 30.294 |
| 9/2/99 | 11:04:21 | 2967.946 | 15.116 | 7.022 | 6.037 | 8.991 | 7.02 | 5.503 | 5.645 | 5.613 | 30.292 |
| 9/2/99 | 11:14:21 | 2977.946 | 15.137 | 7.027 | 6.035 | 8.991 | 7.023 | 5.503 | 5.645 | 5.613 | 30.288 |
| 9/2/99 | 11:24:21 | 2987.946 | 15.192 | 7.027 | 6.04 | 8.994 | 7.023 | 5.506 | 5.645 | 5.606 | 30.288 |
| 9/2/99 | 11:34:21 | 2997.946 | 15.168 | 7.027 | 6.04 | 8.994 | 7.023 | 5.506 | 5.648 | 5.613 | 30.29 |
| 9/2/99 | 11:44:21 | 3007.946 | 15.162 | 7.031 | 6.043 | 8.994 | 7.032 | 5.503 | 5.65 | 5.599 | 30.285 |
| 9/2/99 | 11:54:21 | 3017.946 | 15.143 | 7.031 | 6.049 | 8.994 | 7.032 | 5.503 | 5.65 | 5.599 | 30.283 |
| 9/2/99 | 12:04:21 | 3027.946 | 15.156 | 7.031 | 6.046 | 8.997 | 7.029 | 5.506 | 5.65 | 5.599 | 30.279 |
| 9/2/99 | 12:14:21 | 3037.946 | 15.124 | 7.031 | 6.043 | 9 | 7.032 | 5.503 | 5.65 | 5.613 | 30.285 |
| 9/2/99 | 12:24:21 | 3047.946 | 15.119 | 7.031 | 6.04 | 9 | 7.029 | 5.512 | 5.65 | 5.613 | 30.279 |
| 9/2/99 | 12:34:21 | 3057.946 | 15.121 | 7.035 | 6.04 | 9 | 7.032 | 5.509 | 5.65 | 5.62 | 30.288 |

IN_SITU INC. Hermit 3000
Serial number: 45369
Firmware Version 7.08
Unit name: HERMIT 3000

Test name: Constant. Discharge

Test defined on: 8/31/99 9:12:52
Test started on: 8/31/99 9:36:25
Test stopped on: 9/2/99 12:37:09
Test extracted on: 9/2/99 12:53:59

Channel number [1]
Measurement type: Pressure/Level
Channel name: EW-99-01
Linearity: 0.045
Scale: 10.0569
Offset: -0.0486
Warmup: 50
Specific gravity: 1
Mode: TOC
User-defined reference: 8.3 Feet H2O
Referenced on: test start
Pressure head at reference: 24.189 Feet H2O

Channel number [2]
Measurement type: Pressure/Level
Channel name: MWCR-99-01
Linearity: 0.0376
Scale: 29.9413

Channel number [3]
Measurement type: Pressure/Level
Channel name: PZ-99-01I
Linearity: 0.08
Scale: 19.937

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Pumping Interval**

| Observation Point: | EW-99-01 | MCR-99-01 | PZ-99-01I | PZ-99-08I | MCWR-99-02 | PZ-99-01A | PZ-99-01B | PZ-99-01C | Barometer |
|---|---|---|---|---|---|---|---|---|---|
| | Chan[1] | Chan[2] | Chan[3] | Chan[4] | Chan[5] | Chan[6] | Chan[7] | Chan[8] | Chan[0] |
| Date Time ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| Offset: | | 0.027 | | | Offset: | | | | -0.06 |
| Warmup: | | 50 | | | Warmup: | | | | 50 |
| Specific gravity: | 1 | | | | Specific gravity: | | | 1 | |
| Mode: | TOC | | | | Mode: | | | TOC | |
| User-defined reference: | 6.92 | Feet H2O | | | User-defined reference: | | | 6.02 | Feet H2O |
| Referenced on: | channel definition. | | | | Referenced on: | | | channel definition. | |
| Pressure head at reference: | 0.877 | Feet H2O | | | Pressure head at reference: | | | 11.555 | Feet H2O |

Channel number [4]

| | | |
|---|---|---|
| Measurement type: | Pressure/Level | |
| Channel name: | PZ-99-08I | |
| Linearity: | 0.0026 | |
| Scale: | 19.9159 | |
| Offset: | -0.0533 | |
| Warmup: | 50 | |
| Specific gravity: | 1 | |
| Mode: | TOC | |
| User-defined reference: | 8.9 | Feet H2O |
| Referenced on: | channel definition. | |
| Pressure head at reference: | 11.117 | Feet H2O |

Channel number [5]

| | | |
|---|---|---|
| Measurement type: | Pressure/Level | |
| Channel name: | MWCR-99-02 | |
| Linearity: | 0 | |
| Scale: | 19.993 | |
| Offset: | 0.088 | |
| Warmup: | 50 | |
| Specific gravity: | 1 | |
| Mode: | TOC | |
| User-defined reference: | 6.92 | Feet H2O |
| Referenced on: | channel definition. | |
| Pressure head at reference: | 1.055 | Feet H2O |

Channel number [6]

| | | |
|---|---|---|
| Measurement type: | Pressure/Level | |
| Channel name: | PZ-99-01A | |
| Linearity: | 0.0059 | |
| Scale: | 19.9092 | |
| Offset: | -0.033 | |
| Warmup: | 50 | |
| Specific gravity: | 1 | |
| Mode: | TOC | |
| User-defined reference: | 5.43 | Feet H2O |
| Referenced on: | channel definition. | |
| Pressure head at reference: | 2.594 | Feet H2O |

Channel number [7]

| | | |
|---|---|---|
| Measurement type: | Pressure/Level | |
| Channel name: | PZ-99-01B | |
| Linearity: | 0.0212 | |
| Scale: | 19.9368 | |
| Offset: | 0.1304 | |
| Warmup: | 50 | |
| Specific gravity: | 1 | |
| Mode: | TOC | |
| User-defined reference: | 5.52 | Feet H2O |
| Referenced on: | channel definition. | |
| Pressure head at reference: | 24.562 | Feet H2O |

Channel number [8]

| | | |
|---|---|---|
| Measurement type: | Pressure/Level | |
| Channel name: | PZ-99-01C | |
| Linearity: | 0.026 | |
| Scale: | 48.849 | |
| Offset: | -0.025 | |
| Warmup: | 50 | |
| Specific gravity: | 1 | |
| Mode: | TOC | |
| User-defined reference: | 5.46 | Feet H2O |
| Referenced on: | channel definition. | |
| Pressure head at reference: | 32.291 | Feet H2O |

Channel number [0]

| | | |
|---|---|---|
| Measurement type: | Barometric Pressure | |
| Channel name: | Barometric | |
| Linearity: | 0 | |
| Scale: | 0 | |
| Offset: | 0 | |
| Warmup: | 50 | |

TABLE J-5

EW-99-01 Constant Rate Pumping Test
Hermit 3000 – Transducer Data During Recovery Interval

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/2/99 | 12:37:09 | 0 | 15.137 | 7.035 | 6.032 | 8.997 | 7.032 | 5.512 | 5.656 | 5.606 | 30.263 |
| 9/2/99 | 12:37:11 | 0.0487 | 15.137 | 7.035 | 6.032 | 8.994 | 7.032 | 5.509 | 5.656 | 5.613 | 30.267 |
| 9/2/99 | 12:37:14 | 0.0973 | 15.131 | 7.035 | 6.032 | 8.994 | 7.035 | 5.512 | 5.653 | 5.606 | 30.267 |
| 9/2/99 | 12:37:17 | 0.146 | 15.138 | 7.035 | 6.037 | 8.994 | 7.029 | 5.506 | 5.653 | 5.613 | 30.265 |
| 9/2/99 | 12:37:20 | 0.1947 | 15.14 | 7.035 | 6.035 | 8.997 | 7.029 | 5.509 | 5.653 | 5.62 | 30.267 |
| 9/2/99 | 12:37:23 | 0.2433 | 15.13 | 7.035 | 6.035 | 8.994 | 7.032 | 5.512 | 5.65 | 5.606 | 30.267 |
| 9/2/99 | 12:37:26 | 0.292 | 15.138 | 7.031 | 6.04 | 8.994 | 7.029 | 5.506 | 5.65 | 5.613 | 30.265 |
| 9/2/99 | 12:37:29 | 0.3407 | 14.598 | 7.04 | 6.032 | 8.997 | 7.032 | 5.509 | 5.65 | 5.62 | 30.267 |
| 9/2/99 | 12:37:32 | 0.3893 | 13.843 | 7.035 | 6.037 | 8.991 | 7.032 | 5.509 | 5.65 | 5.599 | 30.263 |
| 9/2/99 | 12:37:35 | 0.438 | 12.833 | 7.031 | 6.035 | 8.997 | 7.029 | 5.509 | 5.65 | 5.62 | 30.269 |
| 9/2/99 | 12:37:38 | 0.4867 | 11.947 | 7.035 | 6.032 | 8.988 | 7.032 | 5.512 | 5.65 | 5.606 | 30.265 |
| 9/2/99 | 12:37:41 | 0.5353 | 11.142 | 7.035 | 6.037 | 8.991 | 7.029 | 5.506 | 5.65 | 5.613 | 30.263 |
| 9/2/99 | 12:37:44 | 0.584 | 10.383 | 7.035 | 6.029 | 8.997 | 7.032 | 5.512 | 5.65 | 5.613 | 30.267 |
| 9/2/99 | 12:37:46 | 0.6327 | 9.677 | 7.035 | 6.035 | 8.988 | 7.032 | 5.509 | 5.65 | 5.599 | 30.261 |
| 9/2/99 | 12:37:49 | 0.6813 | 9.02 | 7.031 | 6.032 | 8.997 | 7.029 | 5.509 | 5.648 | 5.62 | 30.265 |
| 9/2/99 | 12:37:52 | 0.73 | 8.41 | 7.035 | 6.026 | 8.991 | 7.032 | 5.509 | 5.648 | 5.606 | 30.267 |
| 9/2/99 | 12:37:55 | 0.7787 | 8.3 | 7.031 | 6.032 | 8.997 | 7.029 | 5.506 | 5.648 | 5.62 | 30.265 |
| 9/2/99 | 12:37:58 | 0.8273 | 8.3 | 7.035 | 6.029 | 8.991 | 7.032 | 5.509 | 5.648 | 5.606 | 30.265 |
| 9/2/99 | 12:38:01 | 0.876 | 8.3 | 7.031 | 6.032 | 8.994 | 7.029 | 5.506 | 5.648 | 5.62 | 30.261 |
| 9/2/99 | 12:38:04 | 0.9247 | 8.3 | 7.035 | 6.026 | 8.991 | 7.032 | 5.509 | 5.648 | 5.606 | 30.265 |
| 9/2/99 | 12:38:07 | 0.9733 | 8.3 | 7.035 | 6.032 | 8.991 | 7.029 | 5.509 | 5.648 | 5.606 | 30.263 |
| 9/2/99 | 12:38:10 | 1.0232 | 8.3 | 7.031 | 6.032 | 8.991 | 7.026 | 5.506 | 5.648 | 5.613 | 30.263 |
| 9/2/99 | 12:38:13 | 1.0758 | 8.3 | 7.035 | 6.023 | 8.991 | 7.032 | 5.512 | 5.648 | 5.613 | 30.263 |
| 9/2/99 | 12:38:16 | 1.1317 | 8.3 | 7.035 | 6.023 | 8.991 | 7.032 | 5.512 | 5.648 | 5.613 | 30.261 |
| 9/2/99 | 12:38:20 | 1.1908 | 8.3 | 7.035 | 6.029 | 8.991 | 7.029 | 5.506 | 5.648 | 5.606 | 30.261 |
| 9/2/99 | 12:38:24 | 1.2535 | 8.3 | 7.027 | 6.023 | 8.994 | 7.029 | 5.509 | 5.645 | 5.62 | 30.265 |
| 9/2/99 | 12:38:28 | 1.3198 | 8.3 | 7.027 | 6.026 | 8.994 | 7.026 | 5.506 | 5.645 | 5.62 | 30.259 |
| 9/2/99 | 12:38:32 | 1.3902 | 8.3 | 7.031 | 6.029 | 8.994 | 7.029 | 5.509 | 5.648 | 5.62 | 30.259 |
| 9/2/99 | 12:38:36 | 1.4647 | 8.3 | 7.027 | 6.017 | 8.997 | 7.026 | 5.509 | 5.648 | 5.606 | 30.259 |
| 9/2/99 | 12:38:41 | 1.5437 | 8.3 | 7.031 | 6.023 | 8.991 | 7.032 | 5.503 | 5.648 | 5.606 | 30.261 |
| 9/2/99 | 12:38:46 | 1.6273 | 8.3 | 7.031 | 6.023 | 8.991 | 7.032 | 5.503 | 5.648 | 5.606 | 30.259 |
| 9/2/99 | 12:38:51 | 1.7158 | 8.3 | 7.027 | 6.02 | 8.997 | 7.026 | 5.509 | 5.645 | 5.613 | 30.259 |
| 9/2/99 | 12:38:57 | 1.8097 | 8.3 | 7.027 | 6.023 | 8.991 | 7.029 | 5.503 | 5.648 | 5.599 | 30.259 |
| 9/2/99 | 12:39:03 | 1.909 | 8.3 | 7.027 | 6.017 | 8.997 | 7.026 | 5.506 | 5.645 | 5.613 | 30.261 |
| 9/2/99 | 12:39:09 | 2.0143 | 8.3 | 7.027 | 6.014 | 8.994 | 7.026 | 5.506 | 5.645 | 5.613 | 30.259 |
| 9/2/99 | 12:39:16 | 2.1258 | 8.3 | 7.027 | 6.02 | 8.994 | 7.029 | 5.503 | 5.648 | 5.599 | 30.257 |
| 9/2/99 | 12:39:23 | 2.244 | 8.3 | 7.027 | 6.023 | 8.991 | 7.029 | 5.5 | 5.648 | 5.592 | 30.263 |
| 9/2/99 | 12:39:31 | 2.3692 | 8.3 | 7.027 | 6.014 | 8.991 | 7.026 | 5.506 | 5.648 | 5.606 | 30.257 |
| 9/2/99 | 12:39:39 | 2.5017 | 8.3 | 7.022 | 6.02 | 8.991 | 7.029 | 5.5 | 5.648 | 5.592 | 30.257 |
| 9/2/99 | 12:39:47 | 2.6422 | 8.3 | 7.027 | 6.02 | 8.994 | 7.023 | 5.506 | 5.648 | 5.599 | 30.257 |
| 9/2/99 | 12:39:56 | 2.791 | 8.3 | 7.027 | 6.009 | 8.991 | 7.02 | 5.503 | 5.648 | 5.585 | 30.259 |
| 9/2/99 | 12:40:05 | 2.9485 | 8.3 | 7.022 | 6.017 | 8.991 | 7.02 | 5.509 | 5.648 | 5.599 | 30.257 |
| 9/2/99 | 12:40:15 | 3.1153 | 8.3 | 7.022 | 6.009 | 8.991 | 7.023 | 5.5 | 5.648 | 5.585 | 30.255 |
| 9/2/99 | 12:40:26 | 3.2922 | 8.3 | 7.027 | 6.009 | 8.991 | 7.023 | 5.5 | 5.65 | 5.578 | 30.255 |
| 9/2/99 | 12:40:37 | 3.4795 | 8.3 | 7.022 | 6.017 | 8.991 | 7.02 | 5.506 | 5.648 | 5.585 | 30.255 |
| 9/2/99 | 12:40:49 | 3.6778 | 8.3 | 7.027 | 6.006 | 8.991 | 7.02 | 5.503 | 5.65 | 5.571 | 30.251 |
| 9/2/99 | 12:41:02 | 3.888 | 8.3 | 7.022 | 6.026 | 8.997 | 7.017 | 5.506 | 5.648 | 5.585 | 30.247 |
| 9/2/99 | 12:41:15 | 4.1107 | 8.3 | 7.022 | 6.02 | 8.997 | 7.023 | 5.5 | 5.648 | 5.557 | 30.249 |
| 9/2/99 | 12:41:29 | 4.3465 | 8.3 | 7.018 | 6.023 | 8.997 | 7.017 | 5.503 | 5.648 | 5.571 | 30.249 |
| 9/2/99 | 12:41:44 | 4.5963 | 8.3 | 7.022 | 6.02 | 8.997 | 7.02 | 5.497 | 5.648 | 5.557 | 30.249 |
| 9/2/99 | 12:42:00 | 4.861 | 8.3 | 7.018 | 6.023 | 8.997 | 7.02 | 5.497 | 5.648 | 5.543 | 30.251 |
| 9/2/99 | 12:42:17 | 5.1413 | 8.3 | 7.014 | 6.02 | 8.994 | 7.014 | 5.503 | 5.65 | 5.557 | 30.253 |
| 9/2/99 | 12:42:35 | 5.4382 | 8.3 | 7.018 | 6.017 | 8.997 | 7.017 | 5.497 | 5.648 | 5.543 | 30.253 |
| 9/2/99 | 12:42:54 | 5.7527 | 8.3 | 7.018 | 6.017 | 8.994 | 7.014 | 5.5 | 5.65 | 5.55 | 30.255 |
| 9/2/99 | 12:43:14 | 6.0858 | 8.3 | 7.018 | 6.023 | 8.997 | 7.011 | 5.5 | 5.65 | 5.536 | 30.251 |
| 9/2/99 | 12:43:35 | 6.4387 | 8.3 | 7.018 | 6.023 | 8.997 | 7.011 | 5.5 | 5.648 | 5.536 | 30.253 |
| 9/2/99 | 12:43:57 | 6.8125 | 8.3 | 7.018 | 6.012 | 8.994 | 7.017 | 5.494 | 5.648 | 5.536 | 30.263 |
| 9/2/99 | 12:44:21 | 7.2085 | 8.3 | 7.018 | 6.02 | 8.997 | 7.014 | 5.497 | 5.65 | 5.522 | 30.259 |
| 9/2/99 | 12:44:46 | 7.6278 | 8.3 | 7.014 | 6.02 | 8.994 | 7.011 | 5.5 | 5.648 | 5.536 | 30.257 |
| 9/2/99 | 12:45:13 | 8.0722 | 8.3 | 7.014 | 6.02 | 8.994 | 7.009 | 5.5 | 5.648 | 5.536 | 30.265 |
| 9/2/99 | 12:45:41 | 8.5428 | 8.3 | 7.014 | 6.017 | 8.994 | 7.011 | 5.497 | 5.648 | 5.529 | 30.263 |
| 9/2/99 | 12:46:11 | 9.0413 | 8.3 | 7.014 | 6.014 | 8.997 | 7.011 | 5.497 | 5.65 | 5.515 | 30.261 |
| 9/2/99 | 12:46:43 | 9.5693 | 8.3 | 7.014 | 6.017 | 8.997 | 7.011 | 5.494 | 5.645 | 5.515 | 30.261 |
| 9/2/99 | 12:47:16 | 10.1287 | 8.3 | 7.014 | 6.02 | 8.994 | 7.011 | 5.494 | 5.648 | 5.522 | 30.257 |
| 9/2/99 | 12:47:52 | 10.7212 | 8.3 | 7.014 | 6.014 | 8.994 | 7.009 | 5.497 | 5.645 | 5.529 | 30.263 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/2/99 | 12:48:29 | 11.3487 | 8.3 | 7.009 | 6.014 | 8.994 | 7.014 | 5.491 | 5.645 | 5.515 | 30.259 |
| 9/2/99 | 12:49:09 | 12.0135 | 8.3 | 7.009 | 6.017 | 8.994 | 7.009 | 5.494 | 5.642 | 5.508 | 30.265 |
| 9/2/99 | 12:49:52 | 12.7177 | 8.3 | 7.014 | 6.014 | 8.991 | 7.011 | 5.491 | 5.642 | 5.515 | 30.275 |
| 9/2/99 | 12:50:36 | 13.4635 | 8.3 | 7.014 | 6.009 | 8.985 | 7.009 | 5.494 | 5.642 | 5.522 | 30.271 |
| 9/2/99 | 12:51:24 | 14.2535 | 8.3 | 7.014 | 6.006 | 8.991 | 7.011 | 5.491 | 5.636 | 5.515 | 30.269 |
| 9/2/99 | 12:52:14 | 15.0903 | 8.3 | 7.009 | 6.006 | 8.997 | 7.009 | 5.489 | 5.636 | 5.501 | 30.253 |
| 9/2/99 | 12:53:07 | 15.9768 | 8.3 | 7.005 | 6.012 | 8.991 | 7.006 | 5.494 | 5.633 | 5.522 | 30.255 |
| 9/2/99 | 12:54:03 | 16.9158 | 8.3 | 7.014 | 6.012 | 8.991 | 7.006 | 5.491 | 5.633 | 5.508 | 30.275 |
| 9/2/99 | 12:55:03 | 17.9105 | 8.3 | 7.005 | 6.009 | 8.994 | 7.006 | 5.491 | 5.627 | 5.508 | 30.261 |
| 9/2/99 | 12:56:06 | 18.9642 | 8.3 | 7.009 | 6.003 | 8.991 | 7.009 | 5.489 | 5.627 | 5.501 | 30.261 |
| 9/2/99 | 12:57:13 | 20.0802 | 8.3 | 7.009 | 6.003 | 8.991 | 7.009 | 5.489 | 5.625 | 5.501 | 30.261 |
| 9/2/99 | 12:58:24 | 21.2623 | 8.3 | 7.005 | 6.003 | 8.991 | 7.006 | 5.489 | 5.619 | 5.508 | 30.263 |
| 9/2/99 | 12:59:39 | 22.5145 | 8.3 | 7.005 | 6.003 | 8.994 | 7.006 | 5.491 | 5.622 | 5.515 | 30.265 |
| 9/2/99 | 13:00:59 | 23.841 | 8.3 | 7.005 | 6 | 8.991 | 7.009 | 5.486 | 5.616 | 5.508 | 30.263 |
| 9/2/99 | 13:02:23 | 25.246 | 8.3 | 7.005 | 6.009 | 8.994 | 7.006 | 5.489 | 5.613 | 5.515 | 30.263 |
| 9/2/99 | 13:03:53 | 26.7343 | 8.3 | 7.005 | 6.009 | 8.991 | 7.003 | 5.489 | 5.613 | 5.515 | 30.265 |
| 9/2/99 | 13:05:27 | 28.3108 | 8.3 | 7.001 | 6 | 8.991 | 7.003 | 5.489 | 5.61 | 5.508 | 30.263 |
| 9/2/99 | 13:07:07 | 29.9807 | 8.3 | 7.001 | 6 | 8.991 | 7.003 | 5.489 | 5.61 | 5.508 | 30.267 |
| 9/2/99 | 13:08:53 | 31.7495 | 8.299 | 7.001 | 5.997 | 8.991 | 7.003 | 5.489 | 5.61 | 5.508 | 30.265 |
| 9/2/99 | 13:10:46 | 33.6232 | 8.299 | 7.001 | 5.997 | 8.988 | 7.011 | 5.483 | 5.607 | 5.493 | 30.267 |
| 9/2/99 | 13:12:45 | 35.6078 | 8.299 | 7.001 | 6.006 | 8.988 | 7.003 | 5.483 | 5.607 | 5.493 | 30.269 |
| 9/2/99 | 13:14:51 | 37.7102 | 8.299 | 7.001 | 6.006 | 8.985 | 7.009 | 5.48 | 5.607 | 5.486 | 30.267 |
| 9/2/99 | 13:17:05 | 39.937 | 8.299 | 6.996 | 5.994 | 8.988 | 7.003 | 5.483 | 5.604 | 5.508 | 30.263 |
| 9/2/99 | 13:19:26 | 42.2958 | 8.299 | 6.996 | 5.994 | 8.991 | 7.006 | 5.483 | 5.607 | 5.501 | 30.265 |
| 9/2/99 | 13:21:56 | 44.7945 | 8.299 | 6.996 | 5.994 | 8.991 | 7 | 5.483 | 5.607 | 5.493 | 30.269 |
| 9/2/99 | 13:24:35 | 47.4412 | 8.299 | 6.996 | 5.994 | 8.991 | 7.006 | 5.483 | 5.607 | 5.493 | 30.265 |
| 9/2/99 | 13:27:23 | 50.2447 | 8.299 | 6.996 | 6 | 8.985 | 7.009 | 5.48 | 5.607 | 5.486 | 30.263 |
| 9/2/99 | 13:30:21 | 53.2143 | 8.299 | 6.996 | 5.991 | 8.991 | 7.006 | 5.48 | 5.604 | 5.493 | 30.267 |
| 9/2/99 | 13:33:30 | 56.36 | 8.299 | 6.996 | 6 | 8.983 | 7.009 | 5.477 | 5.604 | 5.479 | 30.267 |
| 9/2/99 | 13:36:50 | 59.692 | 8.299 | 6.992 | 6 | 8.983 | 7.003 | 5.48 | 5.604 | 5.486 | 30.263 |
| 9/2/99 | 13:40:22 | 63.2215 | 8.299 | 7.001 | 5.989 | 8.988 | 7.003 | 5.48 | 5.604 | 5.493 | 30.261 |
| 9/2/99 | 13:44:06 | 66.96 | 8.299 | 6.992 | 5.989 | 8.988 | 7 | 5.48 | 5.604 | 5.486 | 30.263 |
| 9/2/99 | 13:48:04 | 70.9202 | 8.299 | 6.992 | 6 | 8.98 | 7.003 | 5.474 | 5.604 | 5.465 | 30.261 |
| 9/2/99 | 13:52:15 | 75.115 | 8.299 | 6.992 | 5.991 | 8.98 | 7.003 | 5.471 | 5.604 | 5.465 | 30.261 |
| 9/2/99 | 13:56:42 | 79.5583 | 8.299 | 6.992 | 5.989 | 8.98 | 7.003 | 5.474 | 5.604 | 5.465 | 30.257 |
| 9/2/99 | 14:01:24 | 84.265 | 8.299 | 6.988 | 5.983 | 8.977 | 6.994 | 5.471 | 5.602 | 5.451 | 30.257 |
| 9/2/99 | 14:06:24 | 89.2505 | 8.299 | 6.988 | 5.983 | 8.977 | 6.994 | 5.471 | 5.596 | 5.451 | 30.259 |
| 9/2/99 | 14:11:40 | 94.5313 | 8.299 | 6.984 | 5.983 | 8.977 | 6.994 | 5.468 | 5.593 | 5.444 | 30.255 |
| 9/2/99 | 14:17:16 | 100.1252 | 8.299 | 6.988 | 5.983 | 8.974 | 6.994 | 5.468 | 5.593 | 5.444 | 30.259 |
| 9/2/99 | 14:23:12 | 106.0505 | 8.299 | 6.988 | 5.983 | 8.974 | 6.994 | 5.471 | 5.596 | 5.444 | 30.255 |
| 9/2/99 | 14:29:28 | 112.3268 | 8.299 | 6.988 | 5.98 | 8.974 | 6.991 | 5.468 | 5.596 | 5.437 | 30.253 |
| 9/2/99 | 14:36:07 | 118.9752 | 8.299 | 6.984 | 5.98 | 8.974 | 6.988 | 5.468 | 5.596 | 5.43 | 30.253 |
| 9/2/99 | 14:43:10 | 126.0173 | 8.299 | 6.984 | 5.98 | 8.971 | 6.986 | 5.466 | 5.593 | 5.43 | 30.251 |
| 9/2/99 | 14:50:37 | 133.4768 | 8.299 | 6.984 | 5.977 | 8.971 | 6.986 | 5.466 | 5.593 | 5.423 | 30.251 |
| 9/2/99 | 14:58:31 | 141.3783 | 8.299 | 6.984 | 5.977 | 8.971 | 6.983 | 5.463 | 5.593 | 5.423 | 30.253 |
| 9/2/99 | 15:06:53 | 149.748 | 8.299 | 6.984 | 5.974 | 8.968 | 6.98 | 5.46 | 5.59 | 5.416 | 30.247 |
| 9/2/99 | 15:15:45 | 158.6137 | 8.299 | 6.979 | 5.974 | 8.968 | 6.977 | 5.463 | 5.59 | 5.409 | 30.247 |
| 9/2/99 | 15:25:09 | 168.0047 | 8.299 | 6.979 | 5.974 | 8.965 | 6.974 | 5.457 | 5.587 | 5.409 | 30.249 |
| 9/2/99 | 15:35:06 | 177.9522 | 8.299 | 6.975 | 5.971 | 8.962 | 6.971 | 5.457 | 5.584 | 5.402 | 30.245 |
| 9/2/99 | 15:45:06 | 187.9522 | 8.299 | 6.971 | 5.968 | 8.96 | 6.968 | 5.454 | 5.581 | 5.395 | 30.243 |
| 9/2/99 | 15:55:06 | 197.9522 | 8.299 | 6.975 | 5.968 | 8.96 | 6.965 | 5.451 | 5.581 | 5.395 | 30.239 |
| 9/2/99 | 16:05:06 | 207.9522 | 8.299 | 6.971 | 5.965 | 8.957 | 6.965 | 5.451 | 5.576 | 5.388 | 30.237 |
| 9/2/99 | 16:15:06 | 217.9522 | 8.299 | 6.966 | 5.963 | 8.954 | 6.962 | 5.448 | 5.576 | 5.388 | 30.235 |
| 9/2/99 | 16:25:06 | 227.9522 | 8.299 | 6.966 | 5.963 | 8.951 | 6.96 | 5.446 | 5.573 | 5.381 | 30.235 |
| 9/2/99 | 16:35:06 | 237.9522 | 8.299 | 6.962 | 5.96 | 8.951 | 6.957 | 5.443 | 5.567 | 5.381 | 30.228 |
| 9/2/99 | 16:45:06 | 247.9522 | 8.299 | 6.962 | 5.957 | 8.948 | 6.957 | 5.443 | 5.567 | 5.374 | 30.228 |
| 9/2/99 | 16:55:06 | 257.9522 | 8.299 | 6.958 | 5.954 | 8.948 | 6.957 | 5.44 | 5.567 | 5.374 | 30.222 |
| 9/2/99 | 17:05:06 | 267.9522 | 8.299 | 6.958 | 5.954 | 8.945 | 6.954 | 5.44 | 5.564 | 5.374 | 30.228 |
| 9/2/99 | 17:15:06 | 277.9522 | 8.299 | 6.958 | 5.951 | 8.942 | 6.951 | 5.437 | 5.561 | 5.374 | 30.224 |
| 9/2/99 | 17:25:06 | 287.9522 | 8.299 | 6.953 | 5.951 | 8.942 | 6.951 | 5.437 | 5.561 | 5.374 | 30.228 |
| 9/2/99 | 17:35:06 | 297.9522 | 8.299 | 6.953 | 5.948 | 8.939 | 6.948 | 5.434 | 5.558 | 5.374 | 30.228 |
| 9/2/99 | 17:45:06 | 307.9522 | 8.299 | 6.949 | 5.945 | 8.939 | 6.948 | 5.431 | 5.555 | 5.374 | 30.224 |
| 9/2/99 | 17:55:06 | 317.9522 | 8.299 | 6.949 | 5.945 | 8.937 | 6.945 | 5.431 | 5.555 | 5.374 | 30.228 |
| 9/2/99 | 18:05:06 | 327.9522 | 8.299 | 6.949 | 5.942 | 8.934 | 6.945 | 5.431 | 5.553 | 5.374 | 30.224 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/2/99 | 18:15:06 | 337.9522 | 8.299 | 6.945 | 5.942 | 8.931 | 6.945 | 5.428 | 5.55 | 5.381 | 30.231 |
| 9/2/99 | 18:25:06 | 347.9522 | 8.299 | 6.945 | 5.94 | 8.931 | 6.942 | 5.428 | 5.55 | 5.381 | 30.235 |
| 9/2/99 | 18:35:06 | 357.9522 | 8.299 | 6.94 | 5.94 | 8.931 | 6.942 | 5.425 | 5.55 | 5.381 | 30.235 |
| 9/2/99 | 18:45:06 | 367.9522 | 8.299 | 6.94 | 5.94 | 8.928 | 6.939 | 5.423 | 5.547 | 5.388 | 30.235 |
| 9/2/99 | 18:55:06 | 377.9522 | 8.299 | 6.936 | 5.934 | 8.925 | 6.939 | 5.423 | 5.544 | 5.395 | 30.228 |
| 9/2/99 | 19:05:06 | 387.9522 | 8.299 | 6.936 | 5.934 | 8.925 | 6.939 | 5.423 | 5.544 | 5.395 | 30.231 |
| 9/2/99 | 19:15:06 | 397.9522 | 8.299 | 6.936 | 5.934 | 8.922 | 6.937 | 5.42 | 5.541 | 5.402 | 30.231 |
| 9/2/99 | 19:25:06 | 407.9522 | 8.299 | 6.932 | 5.931 | 8.922 | 6.939 | 5.42 | 5.541 | 5.402 | 30.231 |
| 9/2/99 | 19:35:06 | 417.9522 | 8.299 | 6.932 | 5.931 | 8.922 | 6.937 | 5.42 | 5.541 | 5.409 | 30.235 |
| 9/2/99 | 19:45:06 | 427.9522 | 8.299 | 6.932 | 5.928 | 8.919 | 6.937 | 5.417 | 5.535 | 5.409 | 30.228 |
| 9/2/99 | 19:55:06 | 437.9522 | 8.299 | 6.932 | 5.928 | 8.919 | 6.934 | 5.417 | 5.541 | 5.416 | 30.233 |
| 9/2/99 | 20:05:06 | 447.9522 | 8.299 | 6.927 | 5.928 | 8.919 | 6.937 | 5.417 | 5.535 | 5.423 | 30.231 |
| 9/2/99 | 20:15:06 | 457.9522 | 8.299 | 6.927 | 5.928 | 8.914 | 6.934 | 5.417 | 5.538 | 5.423 | 30.233 |
| 9/2/99 | 20:25:06 | 467.9522 | 8.299 | 6.927 | 5.922 | 8.919 | 6.934 | 5.417 | 5.538 | 5.423 | 30.233 |
| 9/2/99 | 20:35:06 | 477.9522 | 8.299 | 6.927 | 5.922 | 8.914 | 6.934 | 5.417 | 5.538 | 5.43 | 30.235 |
| 9/2/99 | 20:45:06 | 487.9522 | 8.299 | 6.923 | 5.919 | 8.914 | 6.934 | 5.414 | 5.538 | 5.437 | 30.233 |
| 9/2/99 | 20:55:06 | 497.9522 | 8.299 | 6.923 | 5.925 | 8.916 | 6.934 | 5.414 | 5.532 | 5.437 | 30.233 |
| 9/2/99 | 21:05:06 | 507.9522 | 8.299 | 6.927 | 5.925 | 8.916 | 6.934 | 5.417 | 5.538 | 5.444 | 30.235 |
| 9/2/99 | 21:15:06 | 517.9522 | 8.299 | 6.923 | 5.919 | 8.916 | 6.934 | 5.417 | 5.538 | 5.451 | 30.237 |
| 9/2/99 | 21:25:06 | 527.9522 | 8.299 | 6.923 | 5.919 | 8.916 | 6.934 | 5.417 | 5.532 | 5.451 | 30.235 |
| 9/2/99 | 21:35:06 | 537.9522 | 8.299 | 6.923 | 5.922 | 8.919 | 6.934 | 5.417 | 5.532 | 5.451 | 30.235 |
| 9/2/99 | 21:45:06 | 547.9522 | 8.299 | 6.923 | 5.922 | 8.916 | 6.934 | 5.414 | 5.532 | 5.458 | 30.228 |
| 9/2/99 | 21:55:06 | 557.9522 | 8.299 | 6.923 | 5.922 | 8.919 | 6.937 | 5.417 | 5.538 | 5.458 | 30.233 |
| 9/2/99 | 22:05:06 | 567.9522 | 8.299 | 6.923 | 5.922 | 8.919 | 6.937 | 5.417 | 5.538 | 5.458 | 30.228 |
| 9/2/99 | 22:15:06 | 577.9522 | 8.299 | 6.923 | 5.922 | 8.919 | 6.937 | 5.417 | 5.541 | 5.458 | 30.226 |
| 9/2/99 | 22:25:06 | 587.9522 | 8.299 | 6.923 | 5.925 | 8.922 | 6.937 | 5.417 | 5.538 | 5.465 | 30.231 |
| 9/2/99 | 22:35:06 | 597.9522 | 8.299 | 6.927 | 5.925 | 8.922 | 6.937 | 5.42 | 5.538 | 5.465 | 30.231 |
| 9/2/99 | 22:45:06 | 607.9522 | 8.299 | 6.927 | 5.925 | 8.922 | 6.937 | 5.42 | 5.541 | 5.465 | 30.228 |
| 9/2/99 | 22:55:06 | 617.9522 | 8.299 | 6.927 | 5.925 | 8.925 | 6.939 | 5.42 | 5.541 | 5.465 | 30.231 |
| 9/2/99 | 23:05:06 | 627.9522 | 8.299 | 6.927 | 5.928 | 8.925 | 6.939 | 5.42 | 5.544 | 5.465 | 30.226 |
| 9/2/99 | 23:15:06 | 637.9522 | 8.299 | 6.927 | 5.928 | 8.928 | 6.942 | 5.423 | 5.544 | 5.465 | 30.231 |
| 9/2/99 | 23:25:06 | 647.9522 | 8.299 | 6.927 | 5.928 | 8.925 | 6.939 | 5.42 | 5.544 | 5.465 | 30.228 |
| 9/2/99 | 23:35:06 | 657.9522 | 8.299 | 6.927 | 5.928 | 8.928 | 6.942 | 5.423 | 5.544 | 5.465 | 30.231 |
| 9/2/99 | 23:45:06 | 667.9522 | 8.299 | 6.932 | 5.931 | 8.931 | 6.945 | 5.425 | 5.547 | 5.465 | 30.233 |
| 9/2/99 | 23:55:06 | 677.9522 | 8.299 | 6.932 | 5.934 | 8.931 | 6.945 | 5.425 | 5.544 | 5.479 | 30.233 |
| 9/3/99 | 0:05:06 | 687.9522 | 8.299 | 6.932 | 5.931 | 8.931 | 6.945 | 5.425 | 5.547 | 5.479 | 30.233 |
| 9/3/99 | 0:15:06 | 697.9522 | 8.297 | 6.932 | 5.934 | 8.931 | 6.948 | 5.428 | 5.547 | 5.479 | 30.231 |
| 9/3/99 | 0:25:06 | 707.9522 | 8.297 | 6.932 | 5.934 | 8.934 | 6.948 | 5.428 | 5.547 | 5.479 | 30.233 |
| 9/3/99 | 0:35:06 | 717.9522 | 8.297 | 6.932 | 5.934 | 8.934 | 6.948 | 5.428 | 5.55 | 5.479 | 30.235 |
| 9/3/99 | 0:45:06 | 727.9522 | 8.297 | 6.932 | 5.934 | 8.937 | 6.951 | 5.428 | 5.55 | 5.479 | 30.231 |
| 9/3/99 | 0:55:06 | 737.9522 | 8.297 | 6.94 | 5.934 | 8.937 | 6.951 | 5.428 | 5.55 | 5.479 | 30.228 |
| 9/3/99 | 1:05:06 | 747.9522 | 8.297 | 6.94 | 5.937 | 8.937 | 6.951 | 5.431 | 5.553 | 5.479 | 30.233 |
| 9/3/99 | 1:15:06 | 757.9522 | 8.297 | 6.94 | 5.94 | 8.939 | 6.954 | 5.431 | 5.553 | 5.479 | 30.233 |
| 9/3/99 | 1:25:06 | 767.9522 | 8.297 | 6.94 | 5.937 | 8.939 | 6.954 | 5.431 | 5.553 | 5.479 | 30.228 |
| 9/3/99 | 1:35:06 | 777.9522 | 8.297 | 6.945 | 5.94 | 8.939 | 6.954 | 5.434 | 5.553 | 5.479 | 30.231 |
| 9/3/99 | 1:45:06 | 787.9522 | 8.297 | 6.94 | 5.94 | 8.942 | 6.954 | 5.434 | 5.553 | 5.479 | 30.226 |
| 9/3/99 | 1:55:06 | 797.9522 | 8.297 | 6.945 | 5.94 | 8.942 | 6.957 | 5.434 | 5.555 | 5.479 | 30.224 |
| 9/3/99 | 2:05:06 | 807.9522 | 8.297 | 6.94 | 5.94 | 8.942 | 6.957 | 5.434 | 5.555 | 5.472 | 30.226 |
| 9/3/99 | 2:15:06 | 817.9522 | 8.297 | 6.945 | 5.94 | 8.942 | 6.96 | 5.434 | 5.555 | 5.472 | 30.224 |
| 9/3/99 | 2:25:06 | 827.9522 | 8.297 | 6.945 | 5.942 | 8.942 | 6.96 | 5.434 | 5.555 | 5.465 | 30.228 |
| 9/3/99 | 2:35:06 | 837.9522 | 8.297 | 6.949 | 5.942 | 8.945 | 6.962 | 5.437 | 5.555 | 5.458 | 30.228 |
| 9/3/99 | 2:45:06 | 847.9522 | 8.297 | 6.949 | 5.942 | 8.945 | 6.962 | 5.437 | 5.555 | 5.458 | 30.228 |
| 9/3/99 | 2:55:06 | 857.9522 | 8.297 | 6.949 | 5.945 | 8.945 | 6.96 | 5.437 | 5.555 | 5.451 | 30.231 |
| 9/3/99 | 3:05:06 | 867.9522 | 8.297 | 6.949 | 5.945 | 8.948 | 6.962 | 5.437 | 5.555 | 5.451 | 30.233 |
| 9/3/99 | 3:15:06 | 877.9522 | 8.297 | 6.949 | 5.945 | 8.948 | 6.962 | 5.437 | 5.555 | 5.444 | 30.233 |
| 9/3/99 | 3:25:06 | 887.9522 | 8.297 | 6.949 | 5.945 | 8.948 | 6.962 | 5.437 | 5.555 | 5.43 | 30.228 |
| 9/3/99 | 3:35:06 | 897.9522 | 8.297 | 6.953 | 5.948 | 8.948 | 6.965 | 5.437 | 5.555 | 5.437 | 30.233 |
| 9/3/99 | 3:45:06 | 907.9522 | 8.297 | 6.949 | 5.945 | 8.948 | 6.962 | 5.437 | 5.555 | 5.423 | 30.228 |
| 9/3/99 | 3:55:06 | 917.9522 | 8.297 | 6.949 | 5.945 | 8.948 | 6.962 | 5.437 | 5.555 | 5.416 | 30.233 |
| 9/3/99 | 4:05:06 | 927.9522 | 8.297 | 6.949 | 5.945 | 8.945 | 6.962 | 5.437 | 5.553 | 5.416 | 30.231 |
| 9/3/99 | 4:15:06 | 937.9522 | 8.297 | 6.949 | 5.945 | 8.945 | 6.962 | 5.44 | 5.553 | 5.409 | 30.231 |
| 9/3/99 | 4:25:06 | 947.9522 | 8.297 | 6.949 | 5.945 | 8.945 | 6.962 | 5.44 | 5.553 | 5.402 | 30.233 |
| 9/3/99 | 4:35:06 | 957.9522 | 8.297 | 6.949 | 5.942 | 8.942 | 6.96 | 5.434 | 5.55 | 5.402 | 30.233 |
| 9/3/99 | 4:45:06 | 967.9522 | 8.297 | 6.945 | 5.942 | 8.942 | 6.96 | 5.437 | 5.55 | 5.395 | 30.222 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/3/99 | 4:55:06 | 977.9522 | 8.297 | 6.945 | 5.942 | 8.942 | 6.96 | 5.437 | 5.547 | 5.395 | 30.228 |
| 9/3/99 | 5:05:06 | 987.9522 | 8.297 | 6.949 | 5.942 | 8.939 | 6.96 | 5.431 | 5.55 | 5.388 | 30.231 |
| 9/3/99 | 5:15:06 | 997.9522 | 8.297 | 6.945 | 5.94 | 8.939 | 6.957 | 5.434 | 5.544 | 5.388 | 30.228 |
| 9/3/99 | 5:25:06 | 1007.952 | 8.297 | 6.94 | 5.94 | 8.939 | 6.954 | 5.428 | 5.544 | 5.381 | 30.226 |
| 9/3/99 | 5:35:06 | 1017.952 | 8.297 | 6.94 | 5.94 | 8.937 | 6.957 | 5.434 | 5.541 | 5.381 | 30.228 |
| 9/3/99 | 5:45:06 | 1027.952 | 8.297 | 6.94 | 5.937 | 8.937 | 6.954 | 5.428 | 5.541 | 5.381 | 30.231 |
| 9/3/99 | 5:55:06 | 1037.952 | 8.297 | 6.94 | 5.937 | 8.934 | 6.954 | 5.431 | 5.541 | 5.381 | 30.233 |
| 9/3/99 | 6:05:06 | 1047.952 | 8.297 | 6.94 | 5.937 | 8.934 | 6.954 | 5.431 | 5.541 | 5.381 | 30.241 |
| 9/3/99 | 6:15:06 | 1057.952 | 8.297 | 6.94 | 5.934 | 8.934 | 6.951 | 5.431 | 5.541 | 5.381 | 30.243 |
| 9/3/99 | 6:25:06 | 1067.952 | 8.297 | 6.936 | 5.934 | 8.934 | 6.951 | 5.428 | 5.535 | 5.381 | 30.245 |
| 9/3/99 | 6:35:06 | 1077.952 | 8.297 | 6.936 | 5.934 | 8.931 | 6.948 | 5.42 | 5.532 | 5.381 | 30.245 |
| 9/3/99 | 6:45:06 | 1087.952 | 8.297 | 6.936 | 5.931 | 8.931 | 6.948 | 5.42 | 5.532 | 5.388 | 30.249 |
| 9/3/99 | 6:55:06 | 1097.952 | 8.297 | 6.936 | 5.931 | 8.931 | 6.948 | 5.42 | 5.532 | 5.388 | 30.249 |
| 9/3/99 | 7:05:06 | 1107.952 | 8.296 | 6.932 | 5.931 | 8.928 | 6.945 | 5.42 | 5.532 | 5.395 | 30.251 |
| 9/3/99 | 7:15:06 | 1117.952 | 8.296 | 6.932 | 5.928 | 8.925 | 6.945 | 5.42 | 5.532 | 5.402 | 30.249 |
| 9/3/99 | 7:25:06 | 1127.952 | 8.296 | 6.932 | 5.928 | 8.925 | 6.945 | 5.423 | 5.532 | 5.402 | 30.249 |
| 9/3/99 | 7:35:06 | 1137.952 | 8.296 | 6.932 | 5.928 | 8.922 | 6.945 | 5.423 | 5.532 | 5.409 | 30.253 |
| 9/3/99 | 7:45:06 | 1147.952 | 8.296 | 6.932 | 5.928 | 8.922 | 6.945 | 5.423 | 5.53 | 5.416 | 30.255 |
| 9/3/99 | 7:55:06 | 1157.952 | 8.296 | 6.932 | 5.925 | 8.922 | 6.942 | 5.417 | 5.527 | 5.416 | 30.253 |
| 9/3/99 | 8:05:06 | 1167.952 | 8.296 | 6.932 | 5.925 | 8.922 | 6.942 | 5.417 | 5.53 | 5.423 | 30.255 |
| 9/3/99 | 8:15:06 | 1177.952 | 8.296 | 6.932 | 5.925 | 8.922 | 6.942 | 5.417 | 5.53 | 5.423 | 30.255 |
| 9/3/99 | 8:25:06 | 1187.952 | 8.296 | 6.927 | 5.925 | 8.919 | 6.942 | 5.417 | 5.53 | 5.43 | 30.257 |
| 9/3/99 | 8:35:06 | 1197.952 | 8.296 | 6.932 | 5.925 | 8.919 | 6.945 | 5.423 | 5.532 | 5.43 | 30.263 |
| 9/3/99 | 8:45:06 | 1207.952 | 8.296 | 6.932 | 5.925 | 8.922 | 6.945 | 5.425 | 5.532 | 5.437 | 30.259 |
| 9/3/99 | 8:55:06 | 1217.952 | 8.296 | 6.932 | 5.925 | 8.919 | 6.945 | 5.423 | 5.532 | 5.444 | 30.261 |
| 9/3/99 | 9:05:06 | 1227.952 | 8.296 | 6.927 | 5.925 | 8.919 | 6.942 | 5.42 | 5.53 | 5.444 | 30.257 |
| 9/3/99 | 9:15:06 | 1237.952 | 8.296 | 6.932 | 5.925 | 8.922 | 6.945 | 5.42 | 5.532 | 5.451 | 30.257 |
| 9/3/99 | 9:25:06 | 1247.952 | 8.297 | 6.932 | 5.925 | 8.919 | 6.945 | 5.42 | 5.53 | 5.451 | 30.255 |
| 9/3/99 | 9:35:06 | 1257.952 | 8.297 | 6.927 | 5.925 | 8.919 | 6.942 | 5.42 | 5.53 | 5.458 | 30.255 |
| 9/3/99 | 9:45:06 | 1267.952 | 8.297 | 6.932 | 5.925 | 8.919 | 6.942 | 5.42 | 5.532 | 5.465 | 30.257 |
| 9/3/99 | 9:55:06 | 1277.952 | 8.297 | 6.927 | 5.922 | 8.919 | 6.942 | 5.417 | 5.53 | 5.465 | 30.253 |
| 9/3/99 | 10:05:06 | 1287.952 | 8.297 | 6.932 | 5.925 | 8.922 | 6.939 | 5.417 | 5.527 | 5.465 | 30.261 |
| 9/3/99 | 10:15:06 | 1297.952 | 8.297 | 6.932 | 5.928 | 8.922 | 6.945 | 5.42 | 5.532 | 5.472 | 30.259 |
| 9/3/99 | 10:25:06 | 1307.952 | 8.297 | 6.932 | 5.928 | 8.922 | 6.942 | 5.42 | 5.532 | 5.472 | 30.257 |
| 9/3/99 | 10:35:06 | 1317.952 | 8.297 | 6.932 | 5.928 | 8.922 | 6.942 | 5.423 | 5.532 | 5.479 | 30.255 |
| 9/3/99 | 10:45:06 | 1327.952 | 8.297 | 6.936 | 5.928 | 8.925 | 6.945 | 5.423 | 5.535 | 5.479 | 30.257 |
| 9/3/99 | 10:55:06 | 1337.952 | 8.297 | 6.936 | 5.928 | 8.925 | 6.945 | 5.423 | 5.535 | 5.479 | 30.255 |
| 9/3/99 | 11:05:06 | 1347.952 | 8.297 | 6.936 | 5.928 | 8.925 | 6.945 | 5.423 | 5.535 | 5.472 | 30.247 |
| 9/3/99 | 11:15:06 | 1357.952 | 8.297 | 6.936 | 5.928 | 8.925 | 6.945 | 5.423 | 5.535 | 5.479 | 30.245 |
| 9/3/99 | 11:25:06 | 1367.952 | 8.297 | 6.936 | 5.928 | 8.928 | 6.945 | 5.423 | 5.535 | 5.479 | 30.247 |
| 9/3/99 | 11:35:06 | 1377.952 | 8.297 | 6.936 | 5.931 | 8.928 | 6.948 | 5.425 | 5.538 | 5.479 | 30.241 |
| 9/3/99 | 11:45:06 | 1387.952 | 8.297 | 6.936 | 5.931 | 8.931 | 6.948 | 5.425 | 5.538 | 5.479 | 30.239 |
| 9/3/99 | 11:55:06 | 1397.952 | 8.297 | 6.94 | 5.931 | 8.931 | 6.951 | 5.425 | 5.538 | 5.479 | 30.243 |
| 9/3/99 | 12:05:06 | 1407.952 | 8.297 | 6.94 | 5.934 | 8.931 | 6.951 | 5.428 | 5.538 | 5.479 | 30.243 |
| 9/3/99 | 12:15:06 | 1417.952 | 8.297 | 6.94 | 5.934 | 8.934 | 6.951 | 5.428 | 5.541 | 5.486 | 30.237 |
| 9/3/99 | 12:25:06 | 1427.952 | 8.297 | 6.945 | 5.934 | 8.934 | 6.954 | 5.431 | 5.541 | 5.486 | 30.243 |
| 9/3/99 | 12:35:06 | 1437.952 | 8.297 | 6.945 | 5.937 | 8.937 | 6.954 | 5.431 | 5.541 | 5.486 | 30.243 |
| 9/3/99 | 12:45:06 | 1447.952 | 8.297 | 6.945 | 5.937 | 8.937 | 6.954 | 5.431 | 5.544 | 5.486 | 30.237 |
| 9/3/99 | 12:55:06 | 1457.952 | 8.297 | 6.945 | 5.942 | 8.939 | 6.957 | 5.434 | 5.544 | 5.486 | 30.243 |
| 9/3/99 | 13:05:06 | 1467.952 | 8.297 | 6.949 | 5.94 | 8.939 | 6.957 | 5.434 | 5.547 | 5.493 | 30.243 |
| 9/3/99 | 13:15:06 | 1477.952 | 8.297 | 6.949 | 5.942 | 8.942 | 6.96 | 5.434 | 5.547 | 5.486 | 30.243 |
| 9/3/99 | 13:25:06 | 1487.952 | 8.297 | 6.949 | 5.942 | 8.942 | 6.96 | 5.434 | 5.547 | 5.486 | 30.239 |
| 9/3/99 | 13:35:06 | 1497.952 | 8.297 | 6.949 | 5.942 | 8.942 | 6.96 | 5.434 | 5.547 | 5.493 | 30.239 |
| 9/3/99 | 13:45:06 | 1507.952 | 8.297 | 6.949 | 5.942 | 8.945 | 6.96 | 5.437 | 5.547 | 5.486 | 30.235 |
| 9/3/99 | 13:55:06 | 1517.952 | 8.297 | 6.953 | 5.945 | 8.945 | 6.962 | 5.44 | 5.55 | 5.486 | 30.241 |
| 9/3/99 | 14:05:06 | 1527.952 | 8.297 | 6.953 | 5.945 | 8.945 | 6.962 | 5.44 | 5.553 | 5.479 | 30.241 |
| 9/3/99 | 14:15:06 | 1537.952 | 8.297 | 6.958 | 5.948 | 8.948 | 6.965 | 5.443 | 5.553 | 5.479 | 30.237 |
| 9/3/99 | 14:25:06 | 1547.952 | 8.297 | 6.958 | 5.948 | 8.948 | 6.965 | 5.443 | 5.553 | 5.465 | 30.239 |
| 9/3/99 | 14:35:06 | 1557.952 | 8.297 | 6.958 | 5.948 | 8.951 | 6.968 | 5.443 | 5.553 | 5.458 | 30.233 |
| 9/3/99 | 14:45:06 | 1567.952 | 8.299 | 6.958 | 5.948 | 8.951 | 6.965 | 5.443 | 5.553 | 5.458 | 30.235 |
| 9/3/99 | 14:55:06 | 1577.952 | 8.299 | 6.958 | 5.951 | 8.951 | 6.968 | 5.446 | 5.553 | 5.451 | 30.241 |
| 9/3/99 | 15:05:06 | 1587.952 | 8.299 | 6.958 | 5.951 | 8.951 | 6.968 | 5.446 | 5.553 | 5.444 | 30.237 |
| 9/3/99 | 15:15:06 | 1597.952 | 8.299 | 6.958 | 5.951 | 8.951 | 6.968 | 5.443 | 5.553 | 5.444 | 30.239 |
| 9/3/99 | 15:25:06 | 1607.952 | 8.299 | 6.962 | 5.951 | 8.951 | 6.968 | 5.443 | 5.553 | 5.437 | 30.233 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/3/99 | 15:35:06 | 1617.952 | 8.299 | 6.962 | 5.951 | 8.951 | 6.968 | 5.443 | 5.553 | 5.43 | 30.237 |
| 9/3/99 | 15:45:06 | 1627.952 | 8.299 | 6.962 | 5.951 | 8.951 | 6.968 | 5.443 | 5.553 | 5.43 | 30.237 |
| 9/3/99 | 15:55:06 | 1637.952 | 8.299 | 6.962 | 5.954 | 8.951 | 6.971 | 5.446 | 5.553 | 5.423 | 30.239 |
| 9/3/99 | 16:05:06 | 1647.952 | 8.299 | 6.962 | 5.951 | 8.951 | 6.968 | 5.443 | 5.553 | 5.423 | 30.237 |
| 9/3/99 | 16:15:06 | 1657.952 | 8.299 | 6.958 | 5.948 | 8.951 | 6.968 | 5.443 | 5.55 | 5.416 | 30.235 |
| 9/3/99 | 16:25:06 | 1667.952 | 8.299 | 6.953 | 5.951 | 8.948 | 6.965 | 5.44 | 5.547 | 5.409 | 30.231 |
| 9/3/99 | 16:35:06 | 1677.952 | 8.299 | 6.953 | 5.951 | 8.948 | 6.965 | 5.44 | 5.547 | 5.402 | 30.235 |
| 9/3/99 | 16:45:06 | 1687.952 | 8.299 | 6.953 | 5.948 | 8.948 | 6.965 | 5.44 | 5.547 | 5.402 | 30.233 |
| 9/3/99 | 16:55:06 | 1697.952 | 8.299 | 6.953 | 5.948 | 8.945 | 6.965 | 5.437 | 5.544 | 5.395 | 30.231 |
| 9/3/99 | 17:05:06 | 1707.952 | 8.299 | 6.949 | 5.945 | 8.945 | 6.962 | 5.437 | 5.544 | 5.395 | 30.228 |
| 9/3/99 | 17:15:06 | 1717.952 | 8.299 | 6.953 | 5.945 | 8.942 | 6.962 | 5.437 | 5.541 | 5.388 | 30.228 |
| 9/3/99 | 17:25:06 | 1727.952 | 8.299 | 6.949 | 5.945 | 8.942 | 6.962 | 5.434 | 5.541 | 5.388 | 30.231 |
| 9/3/99 | 17:35:06 | 1737.952 | 8.299 | 6.949 | 5.942 | 8.942 | 6.96 | 5.434 | 5.541 | 5.381 | 30.226 |
| 9/3/99 | 17:45:06 | 1747.952 | 8.299 | 6.949 | 5.942 | 8.939 | 6.96 | 5.434 | 5.538 | 5.381 | 30.228 |
| 9/3/99 | 17:55:06 | 1757.952 | 8.299 | 6.949 | 5.942 | 8.939 | 6.96 | 5.431 | 5.538 | 5.374 | 30.233 |
| 9/3/99 | 18:05:06 | 1767.952 | 8.299 | 6.945 | 5.94 | 8.937 | 6.957 | 5.428 | 5.532 | 5.381 | 30.231 |
| 9/3/99 | 18:15:06 | 1777.952 | 8.299 | 6.945 | 5.94 | 8.937 | 6.957 | 5.431 | 5.532 | 5.374 | 30.235 |
| 9/3/99 | 18:25:06 | 1787.952 | 8.299 | 6.945 | 5.94 | 8.934 | 6.957 | 5.428 | 5.53 | 5.374 | 30.239 |
| 9/3/99 | 18:35:06 | 1797.952 | 8.299 | 6.945 | 5.937 | 8.931 | 6.954 | 5.428 | 5.527 | 5.374 | 30.233 |
| 9/3/99 | 18:45:06 | 1807.952 | 8.299 | 6.94 | 5.937 | 8.931 | 6.951 | 5.425 | 5.53 | 5.381 | 30.233 |
| 9/3/99 | 18:55:06 | 1817.952 | 8.299 | 6.94 | 5.937 | 8.928 | 6.951 | 5.425 | 5.527 | 5.374 | 30.237 |
| 9/3/99 | 19:05:06 | 1827.952 | 8.299 | 6.936 | 5.934 | 8.925 | 6.951 | 5.423 | 5.524 | 5.381 | 30.235 |
| 9/3/99 | 19:15:06 | 1837.952 | 8.299 | 6.936 | 5.931 | 8.925 | 6.948 | 5.423 | 5.524 | 5.381 | 30.233 |
| 9/3/99 | 19:25:06 | 1847.952 | 8.299 | 6.936 | 5.931 | 8.922 | 6.948 | 5.42 | 5.521 | 5.388 | 30.231 |
| 9/3/99 | 19:35:06 | 1857.952 | 8.299 | 6.936 | 5.931 | 8.922 | 6.945 | 5.42 | 5.521 | 5.388 | 30.233 |
| 9/3/99 | 19:45:06 | 1867.952 | 8.299 | 6.936 | 5.928 | 8.922 | 6.945 | 5.42 | 5.521 | 5.395 | 30.233 |
| 9/3/99 | 19:55:06 | 1877.952 | 8.299 | 6.936 | 5.928 | 8.922 | 6.942 | 5.42 | 5.521 | 5.395 | 30.233 |
| 9/3/99 | 20:05:06 | 1887.952 | 8.299 | 6.932 | 5.928 | 8.922 | 6.945 | 5.417 | 5.521 | 5.395 | 30.243 |
| 9/3/99 | 20:15:06 | 1897.952 | 8.299 | 6.932 | 5.928 | 8.919 | 6.942 | 5.417 | 5.518 | 5.402 | 30.241 |
| 9/3/99 | 20:25:06 | 1907.952 | 8.299 | 6.932 | 5.925 | 8.919 | 6.942 | 5.417 | 5.518 | 5.409 | 30.249 |
| 9/3/99 | 20:35:06 | 1917.952 | 8.299 | 6.932 | 5.928 | 8.916 | 6.942 | 5.42 | 5.518 | 5.416 | 30.249 |
| 9/3/99 | 20:45:06 | 1927.952 | 8.299 | 6.932 | 5.925 | 8.919 | 6.942 | 5.417 | 5.521 | 5.423 | 30.255 |
| 9/3/99 | 20:55:06 | 1937.952 | 8.299 | 6.932 | 5.925 | 8.916 | 6.939 | 5.417 | 5.518 | 5.423 | 30.251 |
| 9/3/99 | 21:05:06 | 1947.952 | 8.299 | 6.932 | 5.925 | 8.916 | 6.942 | 5.417 | 5.518 | 5.423 | 30.255 |
| 9/3/99 | 21:15:06 | 1957.952 | 8.299 | 6.927 | 5.922 | 8.916 | 6.939 | 5.417 | 5.518 | 5.43 | 30.255 |
| 9/3/99 | 21:25:06 | 1967.952 | 8.299 | 6.932 | 5.922 | 8.916 | 6.942 | 5.417 | 5.518 | 5.43 | 30.255 |
| 9/3/99 | 21:35:06 | 1977.952 | 8.299 | 6.927 | 5.925 | 8.916 | 6.942 | 5.417 | 5.518 | 5.437 | 30.257 |
| 9/3/99 | 21:45:06 | 1987.952 | 8.299 | 6.927 | 5.922 | 8.916 | 6.942 | 5.417 | 5.518 | 5.444 | 30.261 |
| 9/3/99 | 21:55:06 | 1997.952 | 8.299 | 6.927 | 5.922 | 8.916 | 6.939 | 5.417 | 5.518 | 5.444 | 30.259 |
| 9/3/99 | 22:05:06 | 2007.952 | 8.299 | 6.927 | 5.922 | 8.916 | 6.939 | 5.417 | 5.518 | 5.451 | 30.255 |
| 9/3/99 | 22:15:06 | 2017.952 | 8.299 | 6.927 | 5.922 | 8.916 | 6.939 | 5.417 | 5.521 | 5.451 | 30.253 |
| 9/3/99 | 22:25:06 | 2027.952 | 8.299 | 6.927 | 5.925 | 8.916 | 6.939 | 5.417 | 5.521 | 5.458 | 30.257 |
| 9/3/99 | 22:35:06 | 2037.952 | 8.299 | 6.932 | 5.925 | 8.916 | 6.942 | 5.417 | 5.521 | 5.458 | 30.255 |
| 9/3/99 | 22:45:06 | 2047.952 | 8.299 | 6.932 | 5.922 | 8.916 | 6.942 | 5.417 | 5.521 | 5.465 | 30.253 |
| 9/3/99 | 22:55:06 | 2057.952 | 8.299 | 6.932 | 5.925 | 8.919 | 6.942 | 5.417 | 5.521 | 5.472 | 30.251 |
| 9/3/99 | 23:05:06 | 2067.952 | 8.299 | 6.932 | 5.925 | 8.919 | 6.942 | 5.42 | 5.524 | 5.472 | 30.255 |
| 9/3/99 | 23:15:06 | 2077.952 | 8.299 | 6.932 | 5.925 | 8.919 | 6.942 | 5.42 | 5.521 | 5.479 | 30.253 |
| 9/3/99 | 23:25:06 | 2087.952 | 8.299 | 6.932 | 5.925 | 8.922 | 6.945 | 5.42 | 5.524 | 5.479 | 30.255 |
| 9/3/99 | 23:35:06 | 2097.952 | 8.297 | 6.932 | 5.928 | 8.922 | 6.945 | 5.423 | 5.527 | 5.486 | 30.257 |
| 9/3/99 | 23:45:06 | 2107.952 | 8.297 | 6.936 | 5.931 | 8.925 | 6.948 | 5.423 | 5.527 | 5.486 | 30.263 |
| 9/3/99 | 23:55:06 | 2117.952 | 8.297 | 6.936 | 5.931 | 8.925 | 6.948 | 5.423 | 5.527 | 5.486 | 30.261 |
| 9/4/99 | 0:05:06 | 2127.952 | 8.297 | 6.936 | 5.931 | 8.925 | 6.948 | 5.425 | 5.532 | 5.486 | 30.259 |
| 9/4/99 | 0:15:06 | 2137.952 | 8.297 | 6.945 | 5.934 | 8.928 | 6.951 | 5.428 | 5.532 | 5.486 | 30.263 |
| 9/4/99 | 0:25:06 | 2147.952 | 8.297 | 6.945 | 5.934 | 8.931 | 6.951 | 5.428 | 5.535 | 5.493 | 30.261 |
| 9/4/99 | 0:35:06 | 2157.952 | 8.297 | 6.945 | 5.937 | 8.934 | 6.951 | 5.428 | 5.535 | 5.493 | 30.263 |
| 9/4/99 | 0:45:06 | 2167.952 | 8.297 | 6.945 | 5.937 | 8.934 | 6.954 | 5.428 | 5.535 | 5.493 | 30.267 |
| 9/4/99 | 0:55:06 | 2177.952 | 8.297 | 6.949 | 5.94 | 8.934 | 6.954 | 5.431 | 5.538 | 5.493 | 30.263 |
| 9/4/99 | 1:05:06 | 2187.952 | 8.297 | 6.949 | 5.94 | 8.934 | 6.957 | 5.431 | 5.538 | 5.493 | 30.265 |
| 9/4/99 | 1:15:06 | 2197.952 | 8.297 | 6.949 | 5.94 | 8.937 | 6.957 | 5.434 | 5.538 | 5.493 | 30.267 |
| 9/4/99 | 1:25:06 | 2207.952 | 8.297 | 6.949 | 5.94 | 8.937 | 6.957 | 5.434 | 5.541 | 5.493 | 30.265 |
| 9/4/99 | 1:35:06 | 2217.952 | 8.297 | 6.953 | 5.942 | 8.939 | 6.96 | 5.434 | 5.541 | 5.493 | 30.265 |
| 9/4/99 | 1:45:06 | 2227.952 | 8.297 | 6.953 | 5.942 | 8.939 | 6.96 | 5.434 | 5.541 | 5.493 | 30.265 |
| 9/4/99 | 1:55:06 | 2237.952 | 8.297 | 6.953 | 5.942 | 8.942 | 6.965 | 5.437 | 5.544 | 5.493 | 30.271 |
| 9/4/99 | 2:05:06 | 2247.952 | 8.297 | 6.953 | 5.945 | 8.942 | 6.965 | 5.434 | 5.544 | 5.493 | 30.267 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/4/99 | 2:15:06 | 2257.952 | 8.297 | 6.953 | 5.945 | 8.945 | 6.965 | 5.437 | 5.547 | 5.493 | 30.269 |
| 9/4/99 | 2:25:06 | 2267.952 | 8.297 | 6.958 | 5.948 | 8.945 | 6.965 | 5.437 | 5.547 | 5.493 | 30.263 |
| 9/4/99 | 2:35:06 | 2277.952 | 8.297 | 6.958 | 5.948 | 8.945 | 6.968 | 5.44 | 5.547 | 5.501 | 30.267 |
| 9/4/99 | 2:45:06 | 2287.952 | 8.297 | 6.958 | 5.948 | 8.948 | 6.968 | 5.443 | 5.547 | 5.493 | 30.265 |
| 9/4/99 | 2:55:06 | 2297.952 | 8.297 | 6.958 | 5.951 | 8.948 | 6.971 | 5.443 | 5.55 | 5.493 | 30.263 |
| 9/4/99 | 3:05:06 | 2307.952 | 8.297 | 6.962 | 5.951 | 8.951 | 6.971 | 5.443 | 5.55 | 5.486 | 30.267 |
| 9/4/99 | 3:15:06 | 2317.952 | 8.297 | 6.962 | 5.954 | 8.951 | 6.974 | 5.448 | 5.553 | 5.486 | 30.269 |
| 9/4/99 | 3:25:06 | 2327.952 | 8.297 | 6.962 | 5.954 | 8.951 | 6.974 | 5.448 | 5.553 | 5.486 | 30.273 |
| 9/4/99 | 3:35:06 | 2337.952 | 8.297 | 6.966 | 5.957 | 8.954 | 6.974 | 5.448 | 5.553 | 5.479 | 30.271 |
| 9/4/99 | 3:45:06 | 2347.952 | 8.297 | 6.962 | 5.957 | 8.954 | 6.974 | 5.448 | 5.553 | 5.479 | 30.275 |
| 9/4/99 | 3:55:06 | 2357.952 | 8.297 | 6.962 | 5.957 | 8.954 | 6.977 | 5.448 | 5.553 | 5.472 | 30.273 |
| 9/4/99 | 4:05:06 | 2367.952 | 8.297 | 6.966 | 5.957 | 8.954 | 6.977 | 5.451 | 5.555 | 5.465 | 30.269 |
| 9/4/99 | 4:15:06 | 2377.952 | 8.297 | 6.966 | 5.96 | 8.96 | 6.977 | 5.451 | 5.553 | 5.465 | 30.273 |
| 9/4/99 | 4:25:06 | 2387.952 | 8.297 | 6.966 | 5.96 | 8.96 | 6.977 | 5.451 | 5.555 | 5.458 | 30.271 |
| 9/4/99 | 4:35:06 | 2397.952 | 8.297 | 6.971 | 5.96 | 8.96 | 6.98 | 5.451 | 5.555 | 5.451 | 30.275 |
| 9/4/99 | 4:45:06 | 2407.952 | 8.297 | 6.971 | 5.96 | 8.96 | 6.98 | 5.451 | 5.555 | 5.451 | 30.275 |
| 9/4/99 | 4:55:06 | 2417.952 | 8.297 | 6.971 | 5.963 | 8.96 | 6.98 | 5.451 | 5.555 | 5.437 | 30.285 |
| 9/4/99 | 5:05:06 | 2427.952 | 8.297 | 6.966 | 5.96 | 8.96 | 6.98 | 5.451 | 5.553 | 5.437 | 30.283 |
| 9/4/99 | 5:15:06 | 2437.952 | 8.297 | 6.971 | 5.963 | 8.962 | 6.98 | 5.451 | 5.553 | 5.43 | 30.283 |
| 9/4/99 | 5:25:06 | 2447.952 | 8.297 | 6.971 | 5.96 | 8.96 | 6.977 | 5.451 | 5.553 | 5.43 | 30.285 |
| 9/4/99 | 5:35:06 | 2457.952 | 8.297 | 6.971 | 5.96 | 8.96 | 6.98 | 5.451 | 5.553 | 5.423 | 30.292 |
| 9/4/99 | 5:45:06 | 2467.952 | 8.297 | 6.971 | 5.963 | 8.96 | 6.98 | 5.454 | 5.553 | 5.423 | 30.296 |
| 9/4/99 | 5:55:06 | 2477.952 | 8.297 | 6.971 | 5.963 | 8.96 | 6.98 | 5.451 | 5.553 | 5.416 | 30.3 |
| 9/4/99 | 6:05:06 | 2487.952 | 8.297 | 6.971 | 5.96 | 8.962 | 6.98 | 5.454 | 5.553 | 5.416 | 30.304 |
| 9/4/99 | 6:15:06 | 2497.952 | 8.297 | 6.971 | 5.963 | 8.96 | 6.98 | 5.451 | 5.553 | 5.416 | 30.31 |
| 9/4/99 | 6:25:06 | 2507.952 | 8.297 | 6.971 | 5.963 | 8.96 | 6.977 | 5.451 | 5.55 | 5.416 | 30.312 |
| 9/4/99 | 6:35:06 | 2517.952 | 8.297 | 6.966 | 5.96 | 8.954 | 6.977 | 5.451 | 5.55 | 5.409 | 30.312 |
| 9/4/99 | 6:45:06 | 2527.952 | 8.297 | 6.966 | 5.96 | 8.954 | 6.977 | 5.451 | 5.55 | 5.409 | 30.318 |
| 9/4/99 | 6:55:06 | 2537.952 | 8.297 | 6.966 | 5.96 | 8.951 | 6.977 | 5.448 | 5.547 | 5.409 | 30.322 |
| 9/4/99 | 7:05:06 | 2547.952 | 8.297 | 6.966 | 5.96 | 8.954 | 6.977 | 5.451 | 5.547 | 5.409 | 30.326 |
| 9/4/99 | 7:15:06 | 2557.952 | 8.297 | 6.966 | 5.96 | 8.951 | 6.977 | 5.448 | 5.547 | 5.409 | 30.328 |
| 9/4/99 | 7:25:06 | 2567.952 | 8.297 | 6.966 | 5.957 | 8.948 | 6.974 | 5.448 | 5.547 | 5.409 | 30.326 |
| 9/4/99 | 7:35:06 | 2577.952 | 8.297 | 6.962 | 5.954 | 8.948 | 6.974 | 5.446 | 5.544 | 5.409 | 30.326 |
| 9/4/99 | 7:45:06 | 2587.952 | 8.297 | 6.966 | 5.954 | 8.948 | 6.971 | 5.446 | 5.544 | 5.416 | 30.328 |
| 9/4/99 | 7:55:06 | 2597.952 | 8.297 | 6.962 | 5.954 | 8.948 | 6.971 | 5.448 | 5.544 | 5.416 | 30.338 |
| 9/4/99 | 8:05:06 | 2607.952 | 8.297 | 6.958 | 5.951 | 8.942 | 6.968 | 5.44 | 5.541 | 5.416 | 30.332 |
| 9/4/99 | 8:15:06 | 2617.952 | 8.297 | 6.962 | 5.951 | 8.942 | 6.971 | 5.44 | 5.541 | 5.416 | 30.33 |
| 9/4/99 | 8:25:06 | 2627.952 | 8.297 | 6.962 | 5.951 | 8.942 | 6.968 | 5.446 | 5.541 | 5.423 | 30.338 |
| 9/4/99 | 8:35:06 | 2637.952 | 8.297 | 6.962 | 5.951 | 8.942 | 6.968 | 5.44 | 5.541 | 5.43 | 30.343 |
| 9/4/99 | 8:45:06 | 2647.952 | 8.297 | 6.958 | 5.951 | 8.942 | 6.968 | 5.446 | 5.541 | 5.43 | 30.347 |
| 9/4/99 | 8:55:06 | 2657.952 | 8.297 | 6.958 | 5.948 | 8.939 | 6.968 | 5.44 | 5.538 | 5.444 | 30.34 |
| 9/4/99 | 9:05:06 | 2667.952 | 8.297 | 6.958 | 5.951 | 8.942 | 6.968 | 5.44 | 5.538 | 5.444 | 30.347 |
| 9/4/99 | 9:15:06 | 2677.952 | 8.297 | 6.958 | 5.948 | 8.939 | 6.965 | 5.44 | 5.538 | 5.451 | 30.347 |
| 9/4/99 | 9:25:06 | 2687.952 | 8.297 | 6.958 | 5.951 | 8.939 | 6.968 | 5.44 | 5.541 | 5.458 | 30.349 |
| 9/4/99 | 9:35:06 | 2697.952 | 8.297 | 6.958 | 5.948 | 8.939 | 6.968 | 5.44 | 5.538 | 5.458 | 30.351 |
| 9/4/99 | 9:45:06 | 2707.952 | 8.297 | 6.958 | 5.948 | 8.939 | 6.968 | 5.44 | 5.538 | 5.465 | 30.349 |
| 9/4/99 | 9:55:06 | 2717.952 | 8.297 | 6.958 | 5.948 | 8.939 | 6.965 | 5.44 | 5.538 | 5.465 | 30.351 |
| 9/4/99 | 10:05:06 | 2727.952 | 8.297 | 6.958 | 5.948 | 8.939 | 6.968 | 5.44 | 5.538 | 5.465 | 30.353 |
| 9/4/99 | 10:15:06 | 2737.952 | 8.297 | 6.958 | 5.948 | 8.939 | 6.968 | 5.44 | 5.541 | 5.472 | 30.357 |
| 9/4/99 | 10:25:06 | 2747.952 | 8.297 | 6.958 | 5.948 | 8.939 | 6.965 | 5.44 | 5.541 | 5.479 | 30.351 |
| 9/4/99 | 10:35:06 | 2757.952 | 8.297 | 6.958 | 5.951 | 8.939 | 6.968 | 5.44 | 5.541 | 5.479 | 30.353 |
| 9/4/99 | 10:45:06 | 2767.952 | 8.297 | 6.958 | 5.948 | 8.939 | 6.968 | 5.443 | 5.541 | 5.486 | 30.351 |
| 9/4/99 | 10:55:06 | 2777.952 | 8.297 | 6.958 | 5.951 | 8.939 | 6.968 | 5.443 | 5.541 | 5.493 | 30.353 |
| 9/4/99 | 11:05:06 | 2787.952 | 8.297 | 6.958 | 5.951 | 8.942 | 6.968 | 5.443 | 5.541 | 5.493 | 30.357 |
| 9/4/99 | 11:15:06 | 2797.952 | 8.297 | 6.962 | 5.951 | 8.942 | 6.971 | 5.443 | 5.544 | 5.501 | 30.357 |
| 9/4/99 | 11:25:06 | 2807.952 | 8.297 | 6.962 | 5.954 | 8.942 | 6.971 | 5.446 | 5.547 | 5.501 | 30.361 |
| 9/4/99 | 11:35:06 | 2817.952 | 8.297 | 6.962 | 5.954 | 8.945 | 6.971 | 5.446 | 5.547 | 5.508 | 30.363 |
| 9/4/99 | 11:45:06 | 2827.952 | 8.297 | 6.962 | 5.954 | 8.945 | 6.974 | 5.446 | 5.547 | 5.508 | 30.363 |
| 9/4/99 | 11:55:06 | 2837.952 | 8.297 | 6.962 | 5.957 | 8.948 | 6.974 | 5.448 | 5.55 | 5.508 | 30.365 |
| 9/4/99 | 12:05:06 | 2847.952 | 8.297 | 6.966 | 5.954 | 8.948 | 6.974 | 5.448 | 5.55 | 5.508 | 30.363 |
| 9/4/99 | 12:15:06 | 2857.952 | 8.297 | 6.966 | 5.957 | 8.951 | 6.974 | 5.448 | 5.55 | 5.508 | 30.359 |
| 9/4/99 | 12:25:06 | 2867.952 | 8.297 | 6.966 | 5.96 | 8.951 | 6.977 | 5.451 | 5.553 | 5.515 | 30.361 |
| 9/4/99 | 12:35:06 | 2877.952 | 8.297 | 6.971 | 5.96 | 8.951 | 6.977 | 5.451 | 5.553 | 5.508 | 30.359 |
| 9/4/99 | 12:45:06 | 2887.952 | 8.297 | 6.971 | 5.96 | 8.954 | 6.98 | 5.451 | 5.553 | 5.515 | 30.359 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/4/99 | 12:55:06 | 2897.952 | 8.297 | 6.971 | 5.96 | 8.954 | 6.98 | 5.454 | 5.553 | 5.515 | 30.359 |
| 9/4/99 | 13:05:06 | 2907.952 | 8.299 | 6.971 | 5.963 | 8.954 | 6.98 | 5.454 | 5.555 | 5.515 | 30.361 |
| 9/4/99 | 13:15:06 | 2917.952 | 8.299 | 6.971 | 5.963 | 8.957 | 6.983 | 5.454 | 5.555 | 5.515 | 30.361 |
| 9/4/99 | 13:25:06 | 2927.952 | 8.299 | 6.971 | 5.963 | 8.954 | 6.983 | 5.454 | 5.555 | 5.515 | 30.353 |
| 9/4/99 | 13:35:06 | 2937.952 | 8.299 | 6.975 | 5.963 | 8.957 | 6.983 | 5.457 | 5.555 | 5.515 | 30.355 |
| 9/4/99 | 13:45:06 | 2947.952 | 8.299 | 6.975 | 5.965 | 8.957 | 6.986 | 5.457 | 5.558 | 5.515 | 30.353 |
| 9/4/99 | 13:55:06 | 2957.952 | 8.299 | 6.975 | 5.965 | 8.96 | 6.986 | 5.457 | 5.558 | 5.515 | 30.349 |
| 9/4/99 | 14:05:06 | 2967.952 | 8.299 | 6.975 | 5.965 | 8.96 | 6.986 | 5.457 | 5.558 | 5.515 | 30.347 |
| 9/4/99 | 14:15:06 | 2977.952 | 8.299 | 6.975 | 5.965 | 8.96 | 6.986 | 5.457 | 5.558 | 5.522 | 30.345 |
| 9/4/99 | 14:25:06 | 2987.952 | 8.299 | 6.979 | 5.968 | 8.962 | 6.986 | 5.457 | 5.558 | 5.515 | 30.345 |
| 9/4/99 | 14:35:06 | 2997.952 | 8.299 | 6.975 | 5.968 | 8.962 | 6.986 | 5.457 | 5.561 | 5.515 | 30.343 |
| 9/4/99 | 14:45:06 | 3007.952 | 8.299 | 6.979 | 5.968 | 8.965 | 6.988 | 5.46 | 5.561 | 5.508 | 30.338 |
| 9/4/99 | 14:55:06 | 3017.952 | 8.299 | 6.979 | 5.971 | 8.965 | 6.988 | 5.46 | 5.561 | 5.515 | 30.345 |
| 9/4/99 | 15:05:06 | 3027.952 | 8.299 | 6.984 | 5.971 | 8.965 | 6.988 | 5.46 | 5.564 | 5.508 | 30.34 |
| 9/4/99 | 15:15:06 | 3037.952 | 8.299 | 6.984 | 5.971 | 8.965 | 6.991 | 5.463 | 5.561 | 5.508 | 30.34 |
| 9/4/99 | 15:25:06 | 3047.952 | 8.299 | 6.984 | 5.971 | 8.968 | 6.991 | 5.463 | 5.564 | 5.501 | 30.338 |
| 9/4/99 | 15:35:06 | 3057.952 | 8.299 | 6.984 | 5.971 | 8.965 | 6.991 | 5.463 | 5.564 | 5.493 | 30.338 |
| 9/4/99 | 15:45:06 | 3067.952 | 8.299 | 6.984 | 5.971 | 8.968 | 6.991 | 5.463 | 5.564 | 5.486 | 30.336 |
| 9/4/99 | 15:55:06 | 3077.952 | 8.299 | 6.984 | 5.974 | 8.968 | 6.991 | 5.463 | 5.564 | 5.479 | 30.343 |
| 9/4/99 | 16:05:06 | 3087.952 | 8.299 | 6.988 | 5.974 | 8.968 | 6.994 | 5.463 | 5.564 | 5.472 | 30.338 |
| 9/4/99 | 16:15:06 | 3097.952 | 8.299 | 6.988 | 5.974 | 8.968 | 6.994 | 5.463 | 5.564 | 5.472 | 30.34 |
| 9/4/99 | 16:25:06 | 3107.952 | 8.299 | 6.988 | 5.974 | 8.971 | 6.994 | 5.463 | 5.564 | 5.465 | 30.336 |
| 9/4/99 | 16:35:06 | 3117.952 | 8.299 | 6.988 | 5.974 | 8.968 | 6.991 | 5.463 | 5.564 | 5.458 | 30.34 |
| 9/4/99 | 16:45:06 | 3127.952 | 8.299 | 6.984 | 5.974 | 8.968 | 6.994 | 5.463 | 5.561 | 5.458 | 30.336 |
| 9/4/99 | 16:55:06 | 3137.952 | 8.299 | 6.988 | 5.974 | 8.968 | 6.991 | 5.463 | 5.561 | 5.451 | 30.334 |
| 9/4/99 | 17:05:06 | 3147.952 | 8.299 | 6.984 | 5.974 | 8.968 | 6.991 | 5.46 | 5.561 | 5.444 | 30.332 |
| 9/4/99 | 17:15:06 | 3157.952 | 8.299 | 6.984 | 5.974 | 8.965 | 6.991 | 5.46 | 5.558 | 5.444 | 30.334 |
| 9/4/99 | 17:25:06 | 3167.952 | 8.299 | 6.988 | 5.971 | 8.968 | 6.986 | 5.46 | 5.558 | 5.437 | 30.334 |
| 9/4/99 | 17:35:06 | 3177.952 | 8.299 | 6.984 | 5.974 | 8.965 | 6.991 | 5.46 | 5.558 | 5.43 | 30.332 |
| 9/4/99 | 17:45:06 | 3187.952 | 8.299 | 6.984 | 5.971 | 8.965 | 6.991 | 5.46 | 5.558 | 5.43 | 30.332 |
| 9/4/99 | 17:55:06 | 3197.952 | 8.299 | 6.984 | 5.971 | 8.965 | 6.991 | 5.46 | 5.555 | 5.423 | 30.338 |
| 9/4/99 | 18:05:06 | 3207.952 | 8.299 | 6.984 | 5.971 | 8.965 | 6.986 | 5.457 | 5.555 | 5.423 | 30.336 |
| 9/4/99 | 18:15:06 | 3217.952 | 8.299 | 6.975 | 5.968 | 8.962 | 6.986 | 5.457 | 5.553 | 5.416 | 30.336 |
| 9/4/99 | 18:25:06 | 3227.952 | 8.299 | 6.975 | 5.968 | 8.96 | 6.983 | 5.454 | 5.553 | 5.416 | 30.336 |
| 9/4/99 | 18:35:06 | 3237.952 | 8.299 | 6.975 | 5.968 | 8.96 | 6.983 | 5.454 | 5.553 | 5.409 | 30.338 |
| 9/4/99 | 18:45:06 | 3247.952 | 8.299 | 6.975 | 5.965 | 8.957 | 6.98 | 5.454 | 5.55 | 5.409 | 30.336 |
| 9/4/99 | 18:55:06 | 3257.952 | 8.299 | 6.971 | 5.965 | 8.954 | 6.98 | 5.454 | 5.55 | 5.402 | 30.336 |
| 9/4/99 | 19:05:06 | 3267.952 | 8.299 | 6.975 | 5.965 | 8.954 | 6.977 | 5.451 | 5.547 | 5.402 | 30.338 |
| 9/4/99 | 19:15:06 | 3277.952 | 8.299 | 6.971 | 5.963 | 8.954 | 6.977 | 5.451 | 5.547 | 5.402 | 30.34 |
| 9/4/99 | 19:25:06 | 3287.952 | 8.299 | 6.971 | 5.963 | 8.951 | 6.977 | 5.448 | 5.544 | 5.402 | 30.336 |
| 9/4/99 | 19:35:06 | 3297.952 | 8.299 | 6.971 | 5.963 | 8.951 | 6.974 | 5.448 | 5.544 | 5.402 | 30.345 |
| 9/4/99 | 19:45:06 | 3307.952 | 8.299 | 6.966 | 5.96 | 8.948 | 6.974 | 5.448 | 5.544 | 5.402 | 30.345 |
| 9/4/99 | 19:55:06 | 3317.952 | 8.299 | 6.966 | 5.96 | 8.948 | 6.974 | 5.446 | 5.541 | 5.402 | 30.349 |
| 9/4/99 | 20:05:06 | 3327.952 | 8.299 | 6.966 | 5.96 | 8.948 | 6.974 | 5.446 | 5.541 | 5.402 | 30.353 |
| 9/4/99 | 20:15:06 | 3337.952 | 8.299 | 6.966 | 5.957 | 8.945 | 6.971 | 5.443 | 5.538 | 5.402 | 30.353 |
| 9/4/99 | 20:25:06 | 3347.952 | 8.299 | 6.966 | 5.957 | 8.945 | 6.971 | 5.443 | 5.538 | 5.409 | 30.353 |
| 9/4/99 | 20:35:06 | 3357.952 | 8.299 | 6.962 | 5.957 | 8.942 | 6.968 | 5.443 | 5.538 | 5.416 | 30.355 |
| 9/4/99 | 20:45:06 | 3367.952 | 8.299 | 6.958 | 5.954 | 8.939 | 6.968 | 5.44 | 5.532 | 5.416 | 30.355 |
| 9/4/99 | 20:55:06 | 3377.952 | 8.299 | 6.958 | 5.954 | 8.939 | 6.965 | 5.44 | 5.532 | 5.423 | 30.357 |
| 9/4/99 | 21:05:06 | 3387.952 | 8.299 | 6.958 | 5.951 | 8.937 | 6.965 | 5.44 | 5.532 | 5.423 | 30.355 |
| 9/4/99 | 21:15:06 | 3397.952 | 8.299 | 6.958 | 5.951 | 8.937 | 6.965 | 5.44 | 5.53 | 5.423 | 30.357 |
| 9/4/99 | 21:25:06 | 3407.952 | 8.299 | 6.958 | 5.948 | 8.934 | 6.962 | 5.437 | 5.53 | 5.43 | 30.355 |
| 9/4/99 | 21:35:06 | 3417.952 | 8.299 | 6.953 | 5.948 | 8.937 | 6.962 | 5.44 | 5.53 | 5.43 | 30.357 |
| 9/4/99 | 21:45:06 | 3427.952 | 8.299 | 6.953 | 5.948 | 8.934 | 6.962 | 5.437 | 5.53 | 5.437 | 30.351 |
| 9/4/99 | 21:55:06 | 3437.952 | 8.299 | 6.953 | 5.945 | 8.931 | 6.96 | 5.434 | 5.527 | 5.437 | 30.351 |
| 9/4/99 | 22:05:06 | 3447.952 | 8.299 | 6.953 | 5.945 | 8.931 | 6.96 | 5.434 | 5.527 | 5.444 | 30.353 |
| 9/4/99 | 22:15:06 | 3457.952 | 8.299 | 6.953 | 5.945 | 8.931 | 6.96 | 5.434 | 5.527 | 5.451 | 30.355 |
| 9/4/99 | 22:25:06 | 3467.952 | 8.299 | 6.953 | 5.942 | 8.931 | 6.96 | 5.434 | 5.527 | 5.451 | 30.351 |
| 9/4/99 | 22:35:06 | 3477.952 | 8.299 | 6.949 | 5.945 | 8.931 | 6.96 | 5.434 | 5.527 | 5.458 | 30.353 |
| 9/4/99 | 22:45:06 | 3487.952 | 8.299 | 6.953 | 5.945 | 8.931 | 6.96 | 5.434 | 5.527 | 5.465 | 30.361 |
| 9/4/99 | 22:55:06 | 3497.952 | 8.299 | 6.949 | 5.945 | 8.931 | 6.96 | 5.434 | 5.527 | 5.465 | 30.357 |
| 9/4/99 | 23:05:06 | 3507.952 | 8.299 | 6.949 | 5.945 | 8.931 | 6.96 | 5.434 | 5.527 | 5.472 | 30.353 |
| 9/4/99 | 23:15:06 | 3517.952 | 8.299 | 6.949 | 5.942 | 8.931 | 6.96 | 5.434 | 5.527 | 5.472 | 30.353 |
| 9/4/99 | 23:25:06 | 3527.952 | 8.299 | 6.949 | 5.945 | 8.931 | 6.96 | 5.434 | 5.53 | 5.479 | 30.355 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/4/99 | 23:35:06 | 3537.952 | 8.299 | 6.953 | 5.945 | 8.931 | 6.96 | 5.434 | 5.53 | 5.493 | 30.355 |
| 9/4/99 | 23:45:06 | 3547.952 | 8.299 | 6.953 | 5.945 | 8.934 | 6.96 | 5.437 | 5.53 | 5.493 | 30.355 |
| 9/4/99 | 23:55:06 | 3557.952 | 8.299 | 6.949 | 5.945 | 8.931 | 6.96 | 5.437 | 5.53 | 5.501 | 30.353 |
| 9/5/99 | 0:05:06 | 3567.952 | 8.299 | 6.953 | 5.948 | 8.934 | 6.962 | 5.437 | 5.535 | 5.501 | 30.355 |
| 9/5/99 | 0:15:06 | 3577.952 | 8.299 | 6.953 | 5.948 | 8.934 | 6.962 | 5.437 | 5.535 | 5.508 | 30.355 |
| 9/5/99 | 0:25:06 | 3587.952 | 8.299 | 6.953 | 5.948 | 8.937 | 6.962 | 5.437 | 5.538 | 5.508 | 30.357 |
| 9/5/99 | 0:35:06 | 3597.952 | 8.299 | 6.958 | 5.948 | 8.937 | 6.965 | 5.44 | 5.535 | 5.508 | 30.357 |
| 9/5/99 | 0:45:06 | 3607.952 | 8.299 | 6.953 | 5.951 | 8.937 | 6.965 | 5.44 | 5.535 | 5.508 | 30.353 |
| 9/5/99 | 0:55:06 | 3617.952 | 8.299 | 6.958 | 5.951 | 8.939 | 6.965 | 5.44 | 5.538 | 5.515 | 30.353 |
| 9/5/99 | 1:05:06 | 3627.952 | 8.299 | 6.958 | 5.951 | 8.939 | 6.965 | 5.44 | 5.541 | 5.508 | 30.353 |
| 9/5/99 | 1:15:06 | 3637.952 | 8.299 | 6.958 | 5.954 | 8.942 | 6.968 | 5.446 | 5.541 | 5.515 | 30.351 |
| 9/5/99 | 1:25:06 | 3647.952 | 8.299 | 6.958 | 5.954 | 8.942 | 6.968 | 5.443 | 5.541 | 5.515 | 30.349 |
| 9/5/99 | 1:35:06 | 3657.952 | 8.299 | 6.966 | 5.954 | 8.942 | 6.968 | 5.446 | 5.544 | 5.515 | 30.355 |
| 9/5/99 | 1:45:06 | 3667.952 | 8.299 | 6.966 | 5.954 | 8.945 | 6.971 | 5.446 | 5.544 | 5.515 | 30.351 |
| 9/5/99 | 1:55:06 | 3677.952 | 8.299 | 6.966 | 5.957 | 8.948 | 6.971 | 5.446 | 5.544 | 5.515 | 30.347 |
| 9/5/99 | 2:05:06 | 3687.952 | 8.299 | 6.971 | 5.96 | 8.948 | 6.974 | 5.448 | 5.547 | 5.515 | 30.353 |
| 9/5/99 | 2:15:06 | 3697.952 | 8.299 | 6.971 | 5.96 | 8.951 | 6.974 | 5.448 | 5.547 | 5.515 | 30.353 |
| 9/5/99 | 2:25:06 | 3707.952 | 8.299 | 6.971 | 5.96 | 8.951 | 6.974 | 5.448 | 5.55 | 5.515 | 30.349 |
| 9/5/99 | 2:35:06 | 3717.952 | 8.299 | 6.971 | 5.963 | 8.951 | 6.98 | 5.451 | 5.55 | 5.515 | 30.353 |
| 9/5/99 | 2:45:06 | 3727.952 | 8.299 | 6.971 | 5.963 | 8.954 | 6.98 | 5.451 | 5.55 | 5.522 | 30.351 |
| 9/5/99 | 2:55:06 | 3737.952 | 8.299 | 6.975 | 5.963 | 8.954 | 6.98 | 5.451 | 5.553 | 5.522 | 30.351 |
| 9/5/99 | 3:05:06 | 3747.952 | 8.299 | 6.975 | 5.965 | 8.957 | 6.983 | 5.454 | 5.553 | 5.522 | 30.349 |
| 9/5/99 | 3:15:06 | 3757.952 | 8.299 | 6.979 | 5.965 | 8.957 | 6.986 | 5.454 | 5.553 | 5.522 | 30.349 |
| 9/5/99 | 3:25:06 | 3767.952 | 8.299 | 6.979 | 5.965 | 8.957 | 6.986 | 5.454 | 5.555 | 5.522 | 30.351 |
| 9/5/99 | 3:35:06 | 3777.952 | 8.299 | 6.979 | 5.965 | 8.96 | 6.986 | 5.457 | 5.555 | 5.515 | 30.349 |
| 9/5/99 | 3:45:06 | 3787.952 | 8.299 | 6.979 | 5.968 | 8.96 | 6.988 | 5.457 | 5.555 | 5.522 | 30.347 |
| 9/5/99 | 3:55:06 | 3797.952 | 8.299 | 6.979 | 5.968 | 8.962 | 6.988 | 5.457 | 5.558 | 5.515 | 30.347 |
| 9/5/99 | 4:05:06 | 3807.952 | 8.299 | 6.979 | 5.968 | 8.962 | 6.988 | 5.457 | 5.555 | 5.515 | 30.349 |
| 9/5/99 | 4:15:06 | 3817.952 | 8.299 | 6.984 | 5.971 | 8.962 | 6.991 | 5.457 | 5.558 | 5.508 | 30.345 |
| 9/5/99 | 4:25:06 | 3827.952 | 8.299 | 6.984 | 5.971 | 8.965 | 6.991 | 5.46 | 5.558 | 5.508 | 30.347 |
| 9/5/99 | 4:35:06 | 3837.952 | 8.299 | 6.988 | 5.974 | 8.965 | 6.991 | 5.46 | 5.558 | 5.501 | 30.345 |
| 9/5/99 | 4:45:06 | 3847.952 | 8.299 | 6.984 | 5.974 | 8.965 | 6.991 | 5.46 | 5.558 | 5.493 | 30.343 |
| 9/5/99 | 4:55:06 | 3857.952 | 8.299 | 6.988 | 5.974 | 8.965 | 6.991 | 5.46 | 5.558 | 5.493 | 30.345 |
| 9/5/99 | 5:05:06 | 3867.952 | 8.297 | 6.988 | 5.974 | 8.971 | 6.991 | 5.463 | 5.561 | 5.486 | 30.34 |
| 9/5/99 | 5:15:06 | 3877.952 | 8.297 | 6.988 | 5.98 | 8.971 | 6.994 | 5.466 | 5.561 | 5.486 | 30.345 |
| 9/5/99 | 5:25:06 | 3887.952 | 8.297 | 6.992 | 5.98 | 8.971 | 6.994 | 5.466 | 5.561 | 5.479 | 30.347 |
| 9/5/99 | 5:35:06 | 3897.952 | 8.297 | 6.988 | 5.974 | 8.971 | 6.994 | 5.463 | 5.558 | 5.465 | 30.347 |
| 9/5/99 | 5:45:06 | 3907.952 | 8.297 | 6.988 | 5.98 | 8.971 | 6.994 | 5.463 | 5.558 | 5.465 | 30.347 |
| 9/5/99 | 5:55:06 | 3917.952 | 8.297 | 6.988 | 5.98 | 8.971 | 6.994 | 5.466 | 5.561 | 5.458 | 30.353 |
| 9/5/99 | 6:05:06 | 3927.952 | 8.297 | 6.988 | 5.98 | 8.971 | 6.994 | 5.463 | 5.558 | 5.451 | 30.351 |
| 9/5/99 | 6:15:06 | 3937.952 | 8.297 | 6.988 | 5.98 | 8.971 | 6.994 | 5.463 | 5.558 | 5.451 | 30.347 |
| 9/5/99 | 6:25:06 | 3947.952 | 8.297 | 6.992 | 5.98 | 8.971 | 6.994 | 5.463 | 5.558 | 5.444 | 30.353 |
| 9/5/99 | 6:35:06 | 3957.952 | 8.297 | 6.988 | 5.98 | 8.965 | 6.994 | 5.463 | 5.558 | 5.437 | 30.357 |
| 9/5/99 | 6:45:06 | 3967.952 | 8.297 | 6.988 | 5.974 | 8.965 | 6.991 | 5.463 | 5.555 | 5.437 | 30.357 |
| 9/5/99 | 6:55:06 | 3977.952 | 8.297 | 6.988 | 5.974 | 8.968 | 6.991 | 5.463 | 5.555 | 5.437 | 30.355 |
| 9/5/99 | 7:05:06 | 3987.952 | 8.297 | 6.988 | 5.98 | 8.968 | 6.991 | 5.463 | 5.555 | 5.43 | 30.357 |
| 9/5/99 | 7:15:06 | 3997.952 | 8.297 | 6.988 | 5.977 | 8.968 | 6.991 | 5.463 | 5.555 | 5.43 | 30.359 |
| 9/5/99 | 7:25:06 | 4007.952 | 8.297 | 6.988 | 5.977 | 8.962 | 6.991 | 5.463 | 5.553 | 5.423 | 30.363 |
| 9/5/99 | 7:35:06 | 4017.952 | 8.297 | 6.984 | 5.977 | 8.96 | 6.988 | 5.46 | 5.553 | 5.423 | 30.363 |
| 9/5/99 | 7:45:06 | 4027.952 | 8.297 | 6.988 | 5.971 | 8.96 | 6.988 | 5.454 | 5.55 | 5.416 | 30.367 |
| 9/5/99 | 7:55:06 | 4037.952 | 8.297 | 6.984 | 5.971 | 8.96 | 6.988 | 5.454 | 5.55 | 5.423 | 30.365 |
| 9/5/99 | 8:05:06 | 4047.952 | 8.297 | 6.984 | 5.971 | 8.957 | 6.986 | 5.454 | 5.55 | 5.416 | 30.365 |
| 9/5/99 | 8:15:06 | 4057.952 | 8.297 | 6.984 | 5.971 | 8.957 | 6.986 | 5.454 | 5.55 | 5.423 | 30.363 |
| 9/5/99 | 8:25:06 | 4067.952 | 8.297 | 6.984 | 5.968 | 8.954 | 6.986 | 5.451 | 5.547 | 5.423 | 30.365 |
| 9/5/99 | 8:35:06 | 4077.952 | 8.297 | 6.979 | 5.968 | 8.954 | 6.986 | 5.454 | 5.547 | 5.423 | 30.369 |
| 9/5/99 | 8:45:06 | 4087.952 | 8.297 | 6.979 | 5.965 | 8.954 | 6.983 | 5.451 | 5.544 | 5.423 | 30.367 |
| 9/5/99 | 8:55:06 | 4097.952 | 8.297 | 6.979 | 5.965 | 8.951 | 6.983 | 5.448 | 5.541 | 5.43 | 30.365 |
| 9/5/99 | 9:05:06 | 4107.952 | 8.297 | 6.975 | 5.963 | 8.948 | 6.98 | 5.448 | 5.541 | 5.43 | 30.369 |
| 9/5/99 | 9:15:06 | 4117.952 | 8.297 | 6.975 | 5.963 | 8.948 | 6.98 | 5.448 | 5.541 | 5.43 | 30.365 |
| 9/5/99 | 9:25:06 | 4127.952 | 8.297 | 6.975 | 5.963 | 8.945 | 6.98 | 5.446 | 5.541 | 5.43 | 30.367 |
| 9/5/99 | 9:35:06 | 4137.952 | 8.297 | 6.975 | 5.96 | 8.942 | 6.977 | 5.446 | 5.538 | 5.437 | 30.363 |
| 9/5/99 | 9:45:06 | 4147.952 | 8.297 | 6.971 | 5.96 | 8.945 | 6.977 | 5.443 | 5.538 | 5.437 | 30.359 |
| 9/5/99 | 9:55:06 | 4157.952 | 8.297 | 6.971 | 5.96 | 8.945 | 6.977 | 5.446 | 5.538 | 5.444 | 30.365 |
| 9/5/99 | 10:05:06 | 4167.952 | 8.297 | 6.971 | 5.96 | 8.942 | 6.974 | 5.443 | 5.538 | 5.444 | 30.361 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/5/99 | 10:15:06 | 4177.952 | 8.297 | 6.971 | 5.957 | 8.942 | 6.974 | 5.443 | 5.535 | 5.451 | 30.359 |
| 9/5/99 | 10:25:06 | 4187.952 | 8.299 | 6.966 | 5.954 | 8.942 | 6.968 | 5.44 | 5.535 | 5.451 | 30.355 |
| 9/5/99 | 10:35:06 | 4197.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.968 | 5.44 | 5.535 | 5.451 | 30.359 |
| 9/5/99 | 10:45:06 | 4207.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.968 | 5.44 | 5.53 | 5.458 | 30.359 |
| 9/5/99 | 10:55:06 | 4217.952 | 8.299 | 6.966 | 5.951 | 8.937 | 6.968 | 5.437 | 5.53 | 5.465 | 30.353 |
| 9/5/99 | 11:05:06 | 4227.952 | 8.299 | 6.966 | 5.954 | 8.937 | 6.968 | 5.44 | 5.53 | 5.465 | 30.353 |
| 9/5/99 | 11:15:06 | 4237.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.968 | 5.44 | 5.535 | 5.472 | 30.357 |
| 9/5/99 | 11:25:06 | 4247.952 | 8.299 | 6.966 | 5.954 | 8.937 | 6.965 | 5.437 | 5.53 | 5.472 | 30.357 |
| 9/5/99 | 11:35:06 | 4257.952 | 8.299 | 6.966 | 5.954 | 8.937 | 6.968 | 5.44 | 5.535 | 5.486 | 30.359 |
| 9/5/99 | 11:45:06 | 4267.952 | 8.299 | 6.966 | 5.954 | 8.937 | 6.965 | 5.44 | 5.53 | 5.486 | 30.355 |
| 9/5/99 | 11:55:06 | 4277.952 | 8.299 | 6.966 | 5.954 | 8.937 | 6.968 | 5.44 | 5.535 | 5.493 | 30.355 |
| 9/5/99 | 12:05:06 | 4287.952 | 8.299 | 6.966 | 5.951 | 8.937 | 6.968 | 5.44 | 5.535 | 5.493 | 30.353 |
| 9/5/99 | 12:15:06 | 4297.952 | 8.299 | 6.966 | 5.954 | 8.937 | 6.968 | 5.44 | 5.535 | 5.501 | 30.347 |
| 9/5/99 | 12:25:06 | 4307.952 | 8.299 | 6.966 | 5.954 | 8.942 | 6.968 | 5.44 | 5.538 | 5.508 | 30.347 |
| 9/5/99 | 12:35:06 | 4317.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.968 | 5.44 | 5.535 | 5.508 | 30.345 |
| 9/5/99 | 12:45:06 | 4327.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.971 | 5.44 | 5.538 | 5.508 | 30.347 |
| 9/5/99 | 12:55:06 | 4337.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.971 | 5.44 | 5.538 | 5.508 | 30.343 |
| 9/5/99 | 13:05:06 | 4347.952 | 8.299 | 6.971 | 5.957 | 8.942 | 6.971 | 5.443 | 5.538 | 5.515 | 30.343 |
| 9/5/99 | 13:15:06 | 4357.952 | 8.299 | 6.966 | 5.957 | 8.942 | 6.971 | 5.443 | 5.538 | 5.515 | 30.345 |
| 9/5/99 | 13:25:06 | 4367.952 | 8.299 | 6.971 | 5.957 | 8.942 | 6.974 | 5.443 | 5.541 | 5.515 | 30.347 |
| 9/5/99 | 13:35:06 | 4377.952 | 8.299 | 6.971 | 5.957 | 8.945 | 6.971 | 5.443 | 5.541 | 5.515 | 30.34 |
| 9/5/99 | 13:45:06 | 4387.952 | 8.299 | 6.975 | 5.96 | 8.945 | 6.974 | 5.446 | 5.541 | 5.522 | 30.338 |
| 9/5/99 | 13:55:06 | 4397.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.974 | 5.446 | 5.541 | 5.522 | 30.343 |
| 9/5/99 | 14:05:06 | 4407.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.974 | 5.446 | 5.544 | 5.522 | 30.334 |
| 9/5/99 | 14:15:06 | 4417.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.977 | 5.446 | 5.544 | 5.522 | 30.334 |
| 9/5/99 | 14:25:06 | 4427.952 | 8.299 | 6.979 | 5.963 | 8.951 | 6.977 | 5.446 | 5.544 | 5.515 | 30.33 |
| 9/5/99 | 14:35:06 | 4437.952 | 8.299 | 6.975 | 5.963 | 8.951 | 6.977 | 5.448 | 5.547 | 5.522 | 30.332 |
| 9/5/99 | 14:45:06 | 4447.952 | 8.299 | 6.975 | 5.963 | 8.951 | 6.977 | 5.446 | 5.547 | 5.522 | 30.33 |
| 9/5/99 | 14:55:06 | 4457.952 | 8.299 | 6.975 | 5.965 | 8.951 | 6.983 | 5.448 | 5.547 | 5.522 | 30.324 |
| 9/5/99 | 15:05:06 | 4467.952 | 8.299 | 6.979 | 5.965 | 8.954 | 6.983 | 5.448 | 5.547 | 5.522 | 30.322 |
| 9/5/99 | 15:15:06 | 4477.952 | 8.299 | 6.979 | 5.965 | 8.954 | 6.983 | 5.448 | 5.55 | 5.522 | 30.322 |
| 9/5/99 | 15:25:06 | 4487.952 | 8.299 | 6.979 | 5.965 | 8.954 | 6.983 | 5.451 | 5.55 | 5.522 | 30.32 |
| 9/5/99 | 15:35:06 | 4497.952 | 8.299 | 6.979 | 5.968 | 8.954 | 6.986 | 5.448 | 5.547 | 5.515 | 30.316 |
| 9/5/99 | 15:45:06 | 4507.952 | 8.299 | 6.979 | 5.968 | 8.957 | 6.986 | 5.448 | 5.55 | 5.515 | 30.318 |
| 9/5/99 | 15:55:06 | 4517.952 | 8.299 | 6.984 | 5.968 | 8.957 | 6.986 | 5.448 | 5.55 | 5.508 | 30.314 |
| 9/5/99 | 16:05:06 | 4527.952 | 8.299 | 6.984 | 5.968 | 8.96 | 6.986 | 5.451 | 5.55 | 5.508 | 30.31 |
| 9/5/99 | 16:15:06 | 4537.952 | 8.299 | 6.984 | 5.968 | 8.96 | 6.986 | 5.451 | 5.55 | 5.501 | 30.312 |
| 9/5/99 | 16:25:06 | 4547.952 | 8.299 | 6.984 | 5.968 | 8.96 | 6.988 | 5.451 | 5.55 | 5.501 | 30.304 |
| 9/5/99 | 16:35:06 | 4557.952 | 8.299 | 6.984 | 5.968 | 8.962 | 6.986 | 5.448 | 5.55 | 5.493 | 30.308 |
| 9/5/99 | 16:45:06 | 4567.952 | 8.299 | 6.984 | 5.968 | 8.962 | 6.986 | 5.451 | 5.547 | 5.493 | 30.304 |
| 9/5/99 | 16:55:06 | 4577.952 | 8.299 | 6.984 | 5.971 | 8.96 | 6.986 | 5.451 | 5.547 | 5.479 | 30.3 |
| 9/5/99 | 17:05:06 | 4587.952 | 8.299 | 6.984 | 5.968 | 8.96 | 6.986 | 5.448 | 5.55 | 5.472 | 30.3 |
| 9/5/99 | 17:15:06 | 4597.952 | 8.299 | 6.984 | 5.968 | 8.962 | 6.986 | 5.451 | 5.55 | 5.472 | 30.306 |
| 9/5/99 | 17:25:06 | 4607.952 | 8.299 | 6.984 | 5.971 | 8.96 | 6.986 | 5.448 | 5.547 | 5.465 | 30.294 |
| 9/5/99 | 17:35:06 | 4617.952 | 8.299 | 6.984 | 5.968 | 8.96 | 6.986 | 5.448 | 5.547 | 5.458 | 30.294 |
| 9/5/99 | 17:45:06 | 4627.952 | 8.299 | 6.984 | 5.971 | 8.96 | 6.986 | 5.448 | 5.547 | 5.458 | 30.294 |
| 9/5/99 | 17:55:06 | 4637.952 | 8.299 | 6.984 | 5.971 | 8.96 | 6.986 | 5.451 | 5.547 | 5.451 | 30.294 |
| 9/5/99 | 18:05:06 | 4647.952 | 8.299 | 6.984 | 5.968 | 8.96 | 6.988 | 5.451 | 5.547 | 5.444 | 30.296 |
| 9/5/99 | 18:15:06 | 4657.952 | 8.299 | 6.984 | 5.971 | 8.96 | 6.986 | 5.448 | 5.547 | 5.444 | 30.296 |
| 9/5/99 | 18:25:06 | 4667.952 | 8.299 | 6.984 | 5.968 | 8.957 | 6.986 | 5.448 | 5.547 | 5.437 | 30.296 |
| 9/5/99 | 18:35:06 | 4677.952 | 8.299 | 6.984 | 5.968 | 8.957 | 6.986 | 5.446 | 5.544 | 5.437 | 30.292 |
| 9/5/99 | 18:45:06 | 4687.952 | 8.299 | 6.984 | 5.968 | 8.957 | 6.986 | 5.448 | 5.544 | 5.43 | 30.29 |
| 9/5/99 | 18:55:06 | 4697.952 | 8.299 | 6.979 | 5.968 | 8.954 | 6.983 | 5.446 | 5.544 | 5.43 | 30.29 |
| 9/5/99 | 19:05:06 | 4707.952 | 8.299 | 6.984 | 5.968 | 8.954 | 6.983 | 5.446 | 5.541 | 5.423 | 30.29 |
| 9/5/99 | 19:15:06 | 4717.952 | 8.299 | 6.979 | 5.965 | 8.954 | 6.983 | 5.443 | 5.541 | 5.416 | 30.288 |
| 9/5/99 | 19:25:06 | 4727.952 | 8.299 | 6.979 | 5.965 | 8.954 | 6.977 | 5.443 | 5.541 | 5.416 | 30.294 |
| 9/5/99 | 19:35:06 | 4737.952 | 8.299 | 6.979 | 5.965 | 8.951 | 6.977 | 5.443 | 5.538 | 5.409 | 30.296 |
| 9/5/99 | 19:45:06 | 4747.952 | 8.299 | 6.979 | 5.965 | 8.951 | 6.977 | 5.443 | 5.541 | 5.409 | 30.298 |
| 9/5/99 | 19:55:06 | 4757.952 | 8.299 | 6.979 | 5.963 | 8.948 | 6.977 | 5.443 | 5.535 | 5.409 | 30.3 |
| 9/5/99 | 20:05:06 | 4767.952 | 8.299 | 6.979 | 5.963 | 8.948 | 6.974 | 5.44 | 5.535 | 5.409 | 30.302 |
| 9/5/99 | 20:15:06 | 4777.952 | 8.299 | 6.979 | 5.963 | 8.948 | 6.974 | 5.44 | 5.535 | 5.409 | 30.306 |
| 9/5/99 | 20:25:06 | 4787.952 | 8.299 | 6.975 | 5.96 | 8.945 | 6.974 | 5.437 | 5.53 | 5.402 | 30.3 |
| 9/5/99 | 20:35:06 | 4797.952 | 8.299 | 6.971 | 5.96 | 8.945 | 6.971 | 5.437 | 5.53 | 5.402 | 30.304 |
| 9/5/99 | 20:45:06 | 4807.952 | 8.299 | 6.975 | 5.957 | 8.942 | 6.971 | 5.437 | 5.527 | 5.402 | 30.306 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/5/99 | 20:55:06 | 4817.952 | 8.299 | 6.975 | 5.96 | 8.942 | 6.971 | 5.434 | 5.527 | 5.402 | 30.304 |
| 9/5/99 | 21:05:06 | 4827.952 | 8.299 | 6.971 | 5.957 | 8.942 | 6.968 | 5.434 | 5.527 | 5.402 | 30.304 |
| 9/5/99 | 21:15:06 | 4837.952 | 8.299 | 6.971 | 5.957 | 8.937 | 6.968 | 5.434 | 5.524 | 5.409 | 30.304 |
| 9/5/99 | 21:25:06 | 4847.952 | 8.299 | 6.966 | 5.954 | 8.934 | 6.965 | 5.434 | 5.524 | 5.409 | 30.308 |
| 9/5/99 | 21:35:06 | 4857.952 | 8.299 | 6.966 | 5.951 | 8.934 | 6.965 | 5.431 | 5.521 | 5.409 | 30.3 |
| 9/5/99 | 21:45:06 | 4867.952 | 8.299 | 6.966 | 5.951 | 8.934 | 6.962 | 5.428 | 5.521 | 5.416 | 30.3 |
| 9/5/99 | 21:55:06 | 4877.952 | 8.299 | 6.962 | 5.948 | 8.931 | 6.962 | 5.428 | 5.518 | 5.416 | 30.302 |
| 9/5/99 | 22:05:06 | 4887.952 | 8.299 | 6.962 | 5.945 | 8.931 | 6.962 | 5.428 | 5.518 | 5.423 | 30.304 |
| 9/5/99 | 22:15:06 | 4897.952 | 8.299 | 6.962 | 5.948 | 8.928 | 6.96 | 5.425 | 5.518 | 5.423 | 30.302 |
| 9/5/99 | 22:25:06 | 4907.952 | 8.299 | 6.962 | 5.945 | 8.928 | 6.96 | 5.425 | 5.515 | 5.43 | 30.304 |
| 9/5/99 | 22:35:06 | 4917.952 | 8.299 | 6.962 | 5.945 | 8.928 | 6.96 | 5.425 | 5.515 | 5.43 | 30.302 |
| 9/5/99 | 22:45:06 | 4927.952 | 8.299 | 6.953 | 5.945 | 8.925 | 6.957 | 5.425 | 5.515 | 5.43 | 30.302 |
| 9/5/99 | 22:55:06 | 4937.952 | 8.299 | 6.953 | 5.942 | 8.925 | 6.957 | 5.425 | 5.515 | 5.437 | 30.304 |
| 9/5/99 | 23:05:06 | 4947.952 | 8.299 | 6.949 | 5.942 | 8.922 | 6.957 | 5.423 | 5.515 | 5.444 | 30.304 |
| 9/5/99 | 23:15:06 | 4957.952 | 8.299 | 6.958 | 5.942 | 8.925 | 6.957 | 5.423 | 5.515 | 5.444 | 30.302 |
| 9/5/99 | 23:25:06 | 4967.952 | 8.299 | 6.949 | 5.942 | 8.922 | 6.954 | 5.423 | 5.512 | 5.451 | 30.3 |
| 9/5/99 | 23:35:06 | 4977.952 | 8.299 | 6.949 | 5.942 | 8.922 | 6.954 | 5.42 | 5.512 | 5.458 | 30.296 |
| 9/5/99 | 23:45:06 | 4987.952 | 8.299 | 6.949 | 5.94 | 8.922 | 6.954 | 5.42 | 5.512 | 5.458 | 30.29 |
| 9/5/99 | 23:55:06 | 4997.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.954 | 5.42 | 5.512 | 5.465 | 30.29 |
| 9/6/99 | 0:05:06 | 5007.952 | 8.299 | 6.949 | 5.94 | 8.919 | 6.951 | 5.42 | 5.512 | 5.472 | 30.292 |
| 9/6/99 | 0:15:06 | 5017.952 | 8.299 | 6.949 | 5.94 | 8.919 | 6.951 | 5.42 | 5.512 | 5.472 | 30.285 |
| 9/6/99 | 0:25:06 | 5027.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.954 | 5.417 | 5.512 | 5.472 | 30.277 |
| 9/6/99 | 0:35:06 | 5037.952 | 8.299 | 6.949 | 5.937 | 8.922 | 6.954 | 5.42 | 5.512 | 5.486 | 30.273 |
| 9/6/99 | 0:45:06 | 5047.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.42 | 5.512 | 5.486 | 30.275 |
| 9/6/99 | 0:55:06 | 5057.952 | 8.299 | 6.945 | 5.937 | 8.922 | 6.951 | 5.417 | 5.512 | 5.493 | 30.267 |
| 9/6/99 | 1:05:06 | 5067.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.954 | 5.42 | 5.515 | 5.501 | 30.269 |
| 9/6/99 | 1:15:06 | 5077.952 | 8.299 | 6.949 | 5.94 | 8.922 | 6.954 | 5.42 | 5.515 | 5.501 | 30.269 |
| 9/6/99 | 1:25:06 | 5087.952 | 8.299 | 6.949 | 5.94 | 8.922 | 6.954 | 5.42 | 5.515 | 5.501 | 30.267 |
| 9/6/99 | 1:35:06 | 5097.952 | 8.299 | 6.949 | 5.937 | 8.922 | 6.954 | 5.42 | 5.515 | 5.501 | 30.261 |
| 9/6/99 | 1:45:06 | 5107.952 | 8.299 | 6.949 | 5.94 | 8.925 | 6.954 | 5.42 | 5.515 | 5.501 | 30.263 |
| 9/6/99 | 1:55:06 | 5117.952 | 8.299 | 6.949 | 5.94 | 8.925 | 6.957 | 5.423 | 5.515 | 5.501 | 30.253 |
| 9/6/99 | 2:05:06 | 5127.952 | 8.299 | 6.949 | 5.942 | 8.925 | 6.957 | 5.423 | 5.518 | 5.508 | 30.251 |
| 9/6/99 | 2:15:06 | 5137.952 | 8.299 | 6.958 | 5.942 | 8.928 | 6.957 | 5.423 | 5.518 | 5.508 | 30.255 |
| 9/6/99 | 2:25:06 | 5147.952 | 8.299 | 6.958 | 5.942 | 8.928 | 6.957 | 5.423 | 5.518 | 5.508 | 30.247 |
| 9/6/99 | 2:35:06 | 5157.952 | 8.299 | 6.958 | 5.942 | 8.931 | 6.96 | 5.423 | 5.518 | 5.508 | 30.245 |
| 9/6/99 | 2:45:06 | 5167.952 | 8.299 | 6.958 | 5.945 | 8.931 | 6.957 | 5.425 | 5.518 | 5.508 | 30.243 |
| 9/6/99 | 2:55:06 | 5177.952 | 8.299 | 6.953 | 5.945 | 8.931 | 6.96 | 5.425 | 5.521 | 5.508 | 30.241 |
| 9/6/99 | 3:05:06 | 5187.952 | 8.299 | 6.962 | 5.945 | 8.934 | 6.962 | 5.428 | 5.524 | 5.508 | 30.243 |
| 9/6/99 | 3:15:06 | 5197.952 | 8.299 | 6.962 | 5.948 | 8.934 | 6.962 | 5.428 | 5.521 | 5.508 | 30.245 |
| 9/6/99 | 3:25:06 | 5207.952 | 8.299 | 6.962 | 5.948 | 8.934 | 6.962 | 5.428 | 5.524 | 5.508 | 30.245 |
| 9/6/99 | 3:35:06 | 5217.952 | 8.299 | 6.962 | 5.948 | 8.937 | 6.962 | 5.428 | 5.524 | 5.508 | 30.243 |
| 9/6/99 | 3:45:06 | 5227.952 | 8.299 | 6.966 | 5.951 | 8.937 | 6.965 | 5.431 | 5.527 | 5.515 | 30.241 |
| 9/6/99 | 3:55:06 | 5237.952 | 8.299 | 6.966 | 5.951 | 8.939 | 6.965 | 5.431 | 5.527 | 5.508 | 30.235 |
| 9/6/99 | 4:05:06 | 5247.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.965 | 5.431 | 5.527 | 5.515 | 30.237 |
| 9/6/99 | 4:15:06 | 5257.952 | 8.299 | 6.966 | 5.954 | 8.942 | 6.968 | 5.434 | 5.527 | 5.515 | 30.237 |
| 9/6/99 | 4:25:06 | 5267.952 | 8.299 | 6.971 | 5.957 | 8.942 | 6.971 | 5.434 | 5.53 | 5.515 | 30.241 |
| 9/6/99 | 4:35:06 | 5277.952 | 8.299 | 6.971 | 5.957 | 8.945 | 6.971 | 5.44 | 5.53 | 5.515 | 30.241 |
| 9/6/99 | 4:45:06 | 5287.952 | 8.299 | 6.975 | 5.96 | 8.945 | 6.971 | 5.437 | 5.535 | 5.515 | 30.247 |
| 9/6/99 | 4:55:06 | 5297.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.974 | 5.437 | 5.535 | 5.508 | 30.245 |
| 9/6/99 | 5:05:06 | 5307.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.974 | 5.437 | 5.538 | 5.515 | 30.241 |
| 9/6/99 | 5:15:06 | 5317.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.974 | 5.44 | 5.538 | 5.508 | 30.239 |
| 9/6/99 | 5:25:06 | 5327.952 | 8.299 | 6.975 | 5.96 | 8.951 | 6.98 | 5.44 | 5.538 | 5.501 | 30.237 |
| 9/6/99 | 5:35:06 | 5337.952 | 8.299 | 6.975 | 5.963 | 8.951 | 6.98 | 5.44 | 5.538 | 5.501 | 30.235 |
| 9/6/99 | 5:45:06 | 5347.952 | 8.299 | 6.975 | 5.963 | 8.951 | 6.98 | 5.44 | 5.538 | 5.493 | 30.233 |
| 9/6/99 | 5:55:06 | 5357.952 | 8.299 | 6.979 | 5.963 | 8.954 | 6.977 | 5.44 | 5.538 | 5.493 | 30.235 |
| 9/6/99 | 6:05:06 | 5367.952 | 8.299 | 6.979 | 5.963 | 8.951 | 6.977 | 5.443 | 5.538 | 5.472 | 30.228 |
| 9/6/99 | 6:15:06 | 5377.952 | 8.299 | 6.979 | 5.963 | 8.954 | 6.977 | 5.44 | 5.538 | 5.472 | 30.235 |
| 9/6/99 | 6:25:06 | 5387.952 | 8.299 | 6.979 | 5.963 | 8.951 | 6.977 | 5.443 | 5.538 | 5.465 | 30.228 |
| 9/6/99 | 6:35:06 | 5397.952 | 8.299 | 6.979 | 5.965 | 8.954 | 6.983 | 5.44 | 5.538 | 5.465 | 30.233 |
| 9/6/99 | 6:45:06 | 5407.952 | 8.299 | 6.984 | 5.965 | 8.954 | 6.983 | 5.443 | 5.541 | 5.458 | 30.235 |
| 9/6/99 | 6:55:06 | 5417.952 | 8.299 | 6.984 | 5.965 | 8.954 | 6.983 | 5.443 | 5.538 | 5.451 | 30.231 |
| 9/6/99 | 7:05:06 | 5427.952 | 8.299 | 6.984 | 5.965 | 8.954 | 6.983 | 5.443 | 5.541 | 5.451 | 30.235 |
| 9/6/99 | 7:15:06 | 5437.952 | 8.299 | 6.984 | 5.965 | 8.954 | 6.983 | 5.443 | 5.538 | 5.444 | 30.241 |
| 9/6/99 | 7:25:06 | 5447.952 | 8.299 | 6.984 | 5.965 | 8.954 | 6.983 | 5.443 | 5.538 | 5.437 | 30.239 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/6/99 | 7:35:06 | 5457.952 | 8.299 | 6.979 | 5.965 | 8.954 | 6.977 | 5.443 | 5.538 | 5.437 | 30.239 |
| 9/6/99 | 7:45:06 | 5467.952 | 8.299 | 6.979 | 5.965 | 8.951 | 6.977 | 5.44 | 5.535 | 5.43 | 30.239 |
| 9/6/99 | 7:55:06 | 5477.952 | 8.299 | 6.979 | 5.963 | 8.951 | 6.983 | 5.44 | 5.535 | 5.423 | 30.239 |
| 9/6/99 | 8:05:06 | 5487.952 | 8.299 | 6.979 | 5.963 | 8.951 | 6.977 | 5.44 | 5.535 | 5.423 | 30.237 |
| 9/6/99 | 8:15:06 | 5497.952 | 8.299 | 6.979 | 5.963 | 8.948 | 6.974 | 5.437 | 5.53 | 5.423 | 30.237 |
| 9/6/99 | 8:25:06 | 5507.952 | 8.299 | 6.979 | 5.96 | 8.948 | 6.974 | 5.437 | 5.53 | 5.416 | 30.237 |
| 9/6/99 | 8:35:06 | 5517.952 | 8.299 | 6.979 | 5.96 | 8.945 | 6.974 | 5.437 | 5.527 | 5.416 | 30.235 |
| 9/6/99 | 8:45:06 | 5527.952 | 8.299 | 6.975 | 5.96 | 8.945 | 6.974 | 5.437 | 5.527 | 5.409 | 30.241 |
| 9/6/99 | 8:55:06 | 5537.952 | 8.299 | 6.975 | 5.96 | 8.945 | 6.974 | 5.434 | 5.527 | 5.409 | 30.239 |
| 9/6/99 | 9:05:06 | 5547.952 | 8.299 | 6.975 | 5.957 | 8.942 | 6.971 | 5.434 | 5.524 | 5.409 | 30.235 |
| 9/6/99 | 9:15:06 | 5557.952 | 8.299 | 6.975 | 5.957 | 8.942 | 6.971 | 5.434 | 5.524 | 5.409 | 30.235 |
| 9/6/99 | 9:25:06 | 5567.952 | 8.299 | 6.971 | 5.957 | 8.939 | 6.968 | 5.431 | 5.524 | 5.409 | 30.241 |
| 9/6/99 | 9:35:06 | 5577.952 | 8.299 | 6.971 | 5.954 | 8.939 | 6.968 | 5.431 | 5.521 | 5.409 | 30.243 |
| 9/6/99 | 9:45:06 | 5587.952 | 8.299 | 6.971 | 5.954 | 8.939 | 6.968 | 5.431 | 5.518 | 5.409 | 30.241 |
| 9/6/99 | 9:55:06 | 5597.952 | 8.299 | 6.971 | 5.951 | 8.937 | 6.965 | 5.428 | 5.518 | 5.416 | 30.237 |
| 9/6/99 | 10:05:06 | 5607.952 | 8.299 | 6.962 | 5.951 | 8.934 | 6.965 | 5.428 | 5.518 | 5.416 | 30.243 |
| 9/6/99 | 10:15:06 | 5617.952 | 8.299 | 6.962 | 5.951 | 8.934 | 6.962 | 5.425 | 5.515 | 5.416 | 30.241 |
| 9/6/99 | 10:25:06 | 5627.952 | 8.299 | 6.958 | 5.948 | 8.931 | 6.962 | 5.425 | 5.515 | 5.423 | 30.237 |
| 9/6/99 | 10:35:06 | 5637.952 | 8.299 | 6.958 | 5.948 | 8.931 | 6.96 | 5.423 | 5.515 | 5.423 | 30.241 |
| 9/6/99 | 10:45:06 | 5647.952 | 8.299 | 6.958 | 5.945 | 8.928 | 6.96 | 5.42 | 5.512 | 5.43 | 30.237 |
| 9/6/99 | 10:55:06 | 5657.952 | 8.299 | 6.958 | 5.945 | 8.928 | 6.957 | 5.42 | 5.509 | 5.43 | 30.235 |
| 9/6/99 | 11:05:06 | 5667.952 | 8.299 | 6.953 | 5.942 | 8.925 | 6.957 | 5.42 | 5.509 | 5.43 | 30.237 |
| 9/6/99 | 11:15:06 | 5677.952 | 8.299 | 6.953 | 5.942 | 8.925 | 6.957 | 5.42 | 5.509 | 5.437 | 30.235 |
| 9/6/99 | 11:25:06 | 5687.952 | 8.299 | 6.953 | 5.942 | 8.925 | 6.954 | 5.417 | 5.509 | 5.437 | 30.239 |
| 9/6/99 | 11:35:06 | 5697.952 | 8.299 | 6.953 | 5.942 | 8.922 | 6.954 | 5.417 | 5.509 | 5.444 | 30.233 |
| 9/6/99 | 11:45:06 | 5707.952 | 8.299 | 6.953 | 5.94 | 8.922 | 6.954 | 5.417 | 5.507 | 5.451 | 30.226 |
| 9/6/99 | 11:55:06 | 5717.952 | 8.299 | 6.953 | 5.94 | 8.922 | 6.954 | 5.414 | 5.507 | 5.451 | 30.224 |
| 9/6/99 | 12:05:06 | 5727.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.504 | 5.451 | 30.22 |
| 9/6/99 | 12:15:06 | 5737.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.504 | 5.458 | 30.218 |
| 9/6/99 | 12:25:06 | 5747.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.507 | 5.465 | 30.216 |
| 9/6/99 | 12:35:06 | 5757.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.504 | 5.465 | 30.214 |
| 9/6/99 | 12:45:06 | 5767.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.504 | 5.472 | 30.216 |
| 9/6/99 | 12:55:06 | 5777.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.504 | 5.479 | 30.21 |
| 9/6/99 | 13:05:06 | 5787.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.507 | 5.479 | 30.212 |
| 9/6/99 | 13:15:06 | 5797.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.507 | 5.486 | 30.21 |
| 9/6/99 | 13:25:06 | 5807.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.507 | 5.486 | 30.21 |
| 9/6/99 | 13:35:06 | 5817.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.417 | 5.507 | 5.486 | 30.206 |
| 9/6/99 | 13:45:06 | 5827.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.507 | 5.486 | 30.204 |
| 9/6/99 | 13:55:06 | 5837.952 | 8.299 | 6.949 | 5.937 | 8.922 | 6.951 | 5.417 | 5.509 | 5.493 | 30.196 |
| 9/6/99 | 14:05:06 | 5847.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.951 | 5.414 | 5.509 | 5.493 | 30.192 |
| 9/6/99 | 14:15:06 | 5857.952 | 8.299 | 6.953 | 5.937 | 8.922 | 6.951 | 5.417 | 5.509 | 5.493 | 30.188 |
| 9/6/99 | 14:25:06 | 5867.952 | 8.299 | 6.949 | 5.937 | 8.922 | 6.954 | 5.417 | 5.509 | 5.493 | 30.186 |
| 9/6/99 | 14:35:06 | 5877.952 | 8.299 | 6.949 | 5.937 | 8.922 | 6.954 | 5.417 | 5.509 | 5.493 | 30.184 |
| 9/6/99 | 14:45:06 | 5887.952 | 8.299 | 6.953 | 5.94 | 8.925 | 6.954 | 5.417 | 5.512 | 5.501 | 30.182 |
| 9/6/99 | 14:55:06 | 5897.952 | 8.299 | 6.953 | 5.94 | 8.925 | 6.954 | 5.417 | 5.512 | 5.501 | 30.18 |
| 9/6/99 | 15:05:06 | 5907.952 | 8.299 | 6.953 | 5.94 | 8.925 | 6.957 | 5.417 | 5.509 | 5.501 | 30.18 |
| 9/6/99 | 15:15:06 | 5917.952 | 8.299 | 6.953 | 5.942 | 8.928 | 6.957 | 5.42 | 5.512 | 5.501 | 30.176 |
| 9/6/99 | 15:25:06 | 5927.952 | 8.299 | 6.958 | 5.942 | 8.928 | 6.96 | 5.42 | 5.515 | 5.501 | 30.174 |
| 9/6/99 | 15:35:06 | 5937.952 | 8.299 | 6.953 | 5.942 | 8.931 | 6.96 | 5.423 | 5.512 | 5.501 | 30.171 |
| 9/6/99 | 15:45:06 | 5947.952 | 8.299 | 6.958 | 5.942 | 8.931 | 6.96 | 5.423 | 5.518 | 5.501 | 30.176 |
| 9/6/99 | 15:55:06 | 5957.952 | 8.299 | 6.958 | 5.942 | 8.931 | 6.96 | 5.423 | 5.515 | 5.501 | 30.167 |
| 9/6/99 | 16:05:06 | 5967.952 | 8.299 | 6.958 | 5.945 | 8.934 | 6.962 | 5.423 | 5.518 | 5.501 | 30.169 |
| 9/6/99 | 16:15:06 | 5977.952 | 8.299 | 6.958 | 5.945 | 8.934 | 6.962 | 5.423 | 5.518 | 5.508 | 30.165 |
| 9/6/99 | 16:25:06 | 5987.952 | 8.299 | 6.962 | 5.945 | 8.937 | 6.962 | 5.425 | 5.518 | 5.501 | 30.165 |
| 9/6/99 | 16:35:06 | 5997.952 | 8.299 | 6.962 | 5.948 | 8.937 | 6.965 | 5.425 | 5.518 | 5.508 | 30.167 |
| 9/6/99 | 16:45:06 | 6007.952 | 8.299 | 6.962 | 5.948 | 8.937 | 6.965 | 5.425 | 5.521 | 5.501 | 30.161 |
| 9/6/99 | 16:55:06 | 6017.952 | 8.299 | 6.966 | 5.951 | 8.939 | 6.965 | 5.428 | 5.521 | 5.501 | 30.161 |
| 9/6/99 | 17:05:06 | 6027.952 | 8.299 | 6.966 | 5.951 | 8.939 | 6.965 | 5.428 | 5.521 | 5.501 | 30.165 |
| 9/6/99 | 17:15:06 | 6037.952 | 8.299 | 6.966 | 5.951 | 8.939 | 6.968 | 5.428 | 5.521 | 5.501 | 30.159 |
| 9/6/99 | 17:25:06 | 6047.952 | 8.299 | 6.966 | 5.954 | 8.942 | 6.968 | 5.431 | 5.524 | 5.493 | 30.161 |
| 9/6/99 | 17:35:06 | 6057.952 | 8.299 | 6.971 | 5.954 | 8.942 | 6.968 | 5.431 | 5.524 | 5.486 | 30.157 |
| 9/6/99 | 17:45:06 | 6067.952 | 8.299 | 6.971 | 5.954 | 8.945 | 6.971 | 5.431 | 5.524 | 5.479 | 30.163 |
| 9/6/99 | 17:55:06 | 6077.952 | 8.299 | 6.971 | 5.954 | 8.945 | 6.971 | 5.434 | 5.524 | 5.479 | 30.161 |
| 9/6/99 | 18:05:06 | 6087.952 | 8.299 | 6.971 | 5.957 | 8.945 | 6.971 | 5.434 | 5.527 | 5.479 | 30.161 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/6/99 | 18:15:06 | 6097.952 | 8.299 | 6.971 | 5.954 | 8.945 | 6.971 | 5.434 | 5.527 | 5.472 | 30.153 |
| 9/6/99 | 18:25:06 | 6107.952 | 8.299 | 6.971 | 5.957 | 8.945 | 6.971 | 5.434 | 5.527 | 5.465 | 30.151 |
| 9/6/99 | 18:35:06 | 6117.952 | 8.299 | 6.971 | 5.96 | 8.948 | 6.974 | 5.434 | 5.527 | 5.458 | 30.161 |
| 9/6/99 | 18:45:06 | 6127.952 | 8.299 | 6.971 | 5.96 | 8.948 | 6.974 | 5.434 | 5.527 | 5.458 | 30.165 |
| 9/6/99 | 18:55:06 | 6137.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.974 | 5.434 | 5.524 | 5.451 | 30.159 |
| 9/6/99 | 19:05:06 | 6147.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.974 | 5.434 | 5.527 | 5.444 | 30.165 |
| 9/6/99 | 19:15:06 | 6157.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.974 | 5.434 | 5.527 | 5.444 | 30.169 |
| 9/6/99 | 19:25:06 | 6167.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.974 | 5.437 | 5.527 | 5.437 | 30.171 |
| 9/6/99 | 19:35:06 | 6177.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.977 | 5.434 | 5.527 | 5.43 | 30.178 |
| 9/6/99 | 19:45:06 | 6187.952 | 8.299 | 6.975 | 5.96 | 8.948 | 6.974 | 5.434 | 5.527 | 5.43 | 30.176 |
| 9/6/99 | 19:55:06 | 6197.952 | 8.299 | 6.975 | 5.96 | 8.945 | 6.974 | 5.434 | 5.527 | 5.423 | 30.18 |
| 9/6/99 | 20:05:06 | 6207.952 | 8.299 | 6.975 | 5.96 | 8.945 | 6.974 | 5.431 | 5.521 | 5.423 | 30.174 |
| 9/6/99 | 20:15:06 | 6217.952 | 8.299 | 6.971 | 5.957 | 8.942 | 6.971 | 5.431 | 5.521 | 5.416 | 30.176 |
| 9/6/99 | 20:25:06 | 6227.952 | 8.299 | 6.971 | 5.957 | 8.945 | 6.971 | 5.431 | 5.521 | 5.409 | 30.178 |
| 9/6/99 | 20:35:06 | 6237.952 | 8.299 | 6.971 | 5.96 | 8.942 | 6.971 | 5.431 | 5.518 | 5.409 | 30.182 |
| 9/6/99 | 20:45:06 | 6247.952 | 8.299 | 6.971 | 5.957 | 8.942 | 6.968 | 5.428 | 5.518 | 5.409 | 30.178 |
| 9/6/99 | 20:55:06 | 6257.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.968 | 5.428 | 5.515 | 5.402 | 30.174 |
| 9/6/99 | 21:05:06 | 6267.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.965 | 5.425 | 5.515 | 5.395 | 30.178 |
| 9/6/99 | 21:15:06 | 6277.952 | 8.299 | 6.966 | 5.951 | 8.937 | 6.965 | 5.425 | 5.515 | 5.402 | 30.18 |
| 9/6/99 | 21:25:06 | 6287.952 | 8.299 | 6.966 | 5.951 | 8.934 | 6.962 | 5.423 | 5.512 | 5.402 | 30.174 |
| 9/6/99 | 21:35:06 | 6297.952 | 8.299 | 6.962 | 5.948 | 8.931 | 6.962 | 5.423 | 5.509 | 5.395 | 30.176 |
| 9/6/99 | 21:45:06 | 6307.952 | 8.299 | 6.962 | 5.948 | 8.931 | 6.96 | 5.42 | 5.507 | 5.395 | 30.167 |
| 9/6/99 | 21:55:06 | 6317.952 | 8.299 | 6.958 | 5.948 | 8.928 | 6.96 | 5.42 | 5.507 | 5.395 | 30.171 |
| 9/6/99 | 22:05:06 | 6327.952 | 8.299 | 6.958 | 5.945 | 8.928 | 6.96 | 5.42 | 5.507 | 5.395 | 30.174 |
| 9/6/99 | 22:15:06 | 6337.952 | 8.299 | 6.958 | 5.945 | 8.928 | 6.957 | 5.414 | 5.504 | 5.402 | 30.176 |
| 9/6/99 | 22:25:06 | 6347.952 | 8.299 | 6.953 | 5.942 | 8.925 | 6.957 | 5.414 | 5.501 | 5.402 | 30.174 |
| 9/6/99 | 22:35:06 | 6357.952 | 8.299 | 6.953 | 5.942 | 8.925 | 6.954 | 5.414 | 5.501 | 5.402 | 30.176 |
| 9/6/99 | 22:45:06 | 6367.952 | 8.299 | 6.953 | 5.94 | 8.916 | 6.951 | 5.411 | 5.501 | 5.409 | 30.174 |
| 9/6/99 | 22:55:06 | 6377.952 | 8.299 | 6.953 | 5.94 | 8.916 | 6.951 | 5.408 | 5.498 | 5.409 | 30.174 |
| 9/6/99 | 23:05:06 | 6387.952 | 8.299 | 6.949 | 5.937 | 8.914 | 6.948 | 5.408 | 5.498 | 5.416 | 30.174 |
| 9/6/99 | 23:15:06 | 6397.952 | 8.299 | 6.949 | 5.934 | 8.914 | 6.948 | 5.408 | 5.495 | 5.416 | 30.171 |
| 9/6/99 | 23:25:06 | 6407.952 | 8.299 | 6.949 | 5.937 | 8.914 | 6.948 | 5.405 | 5.498 | 5.423 | 30.169 |
| 9/6/99 | 23:35:06 | 6417.952 | 8.299 | 6.945 | 5.934 | 8.911 | 6.948 | 5.405 | 5.495 | 5.43 | 30.174 |
| 9/6/99 | 23:45:06 | 6427.952 | 8.299 | 6.945 | 5.931 | 8.908 | 6.945 | 5.405 | 5.495 | 5.43 | 30.163 |
| 9/6/99 | 23:55:06 | 6437.952 | 8.299 | 6.945 | 5.931 | 8.908 | 6.942 | 5.402 | 5.492 | 5.43 | 30.161 |
| 9/7/99 | 0:05:06 | 6447.952 | 8.299 | 6.94 | 5.931 | 8.908 | 6.945 | 5.402 | 5.492 | 5.437 | 30.157 |
| 9/7/99 | 0:15:06 | 6457.952 | 8.299 | 6.945 | 5.931 | 8.908 | 6.942 | 5.402 | 5.492 | 5.444 | 30.159 |
| 9/7/99 | 0:25:06 | 6467.952 | 8.299 | 6.94 | 5.928 | 8.905 | 6.942 | 5.402 | 5.492 | 5.444 | 30.157 |
| 9/7/99 | 0:35:06 | 6477.952 | 8.299 | 6.94 | 5.928 | 8.905 | 6.942 | 5.4 | 5.492 | 5.451 | 30.159 |
| 9/7/99 | 0:45:06 | 6487.952 | 8.299 | 6.936 | 5.928 | 8.905 | 6.942 | 5.402 | 5.492 | 5.451 | 30.153 |
| 9/7/99 | 0:55:06 | 6497.952 | 8.299 | 6.94 | 5.928 | 8.905 | 6.939 | 5.4 | 5.489 | 5.458 | 30.151 |
| 9/7/99 | 1:05:06 | 6507.952 | 8.299 | 6.94 | 5.928 | 8.905 | 6.942 | 5.4 | 5.489 | 5.458 | 30.149 |
| 9/7/99 | 1:15:06 | 6517.952 | 8.299 | 6.94 | 5.922 | 8.905 | 6.939 | 5.4 | 5.489 | 5.465 | 30.149 |
| 9/7/99 | 1:25:06 | 6527.952 | 8.299 | 6.94 | 5.922 | 8.905 | 6.939 | 5.4 | 5.489 | 5.472 | 30.147 |
| 9/7/99 | 1:35:06 | 6537.952 | 8.299 | 6.94 | 5.928 | 8.905 | 6.942 | 5.4 | 5.489 | 5.472 | 30.143 |
| 9/7/99 | 1:45:06 | 6547.952 | 8.299 | 6.936 | 5.928 | 8.905 | 6.939 | 5.4 | 5.492 | 5.479 | 30.141 |
| 9/7/99 | 1:55:06 | 6557.952 | 8.299 | 6.936 | 5.928 | 8.905 | 6.939 | 5.402 | 5.489 | 5.479 | 30.143 |
| 9/7/99 | 2:05:06 | 6567.952 | 8.299 | 6.94 | 5.928 | 8.905 | 6.942 | 5.402 | 5.492 | 5.486 | 30.143 |
| 9/7/99 | 2:15:06 | 6577.952 | 8.299 | 6.94 | 5.928 | 8.908 | 6.942 | 5.402 | 5.495 | 5.486 | 30.141 |
| 9/7/99 | 2:25:06 | 6587.952 | 8.299 | 6.94 | 5.928 | 8.908 | 6.942 | 5.402 | 5.495 | 5.493 | 30.141 |
| 9/7/99 | 2:35:06 | 6597.952 | 8.299 | 6.94 | 5.928 | 8.908 | 6.942 | 5.402 | 5.495 | 5.493 | 30.137 |
| 9/7/99 | 2:45:06 | 6607.952 | 8.299 | 6.94 | 5.931 | 8.908 | 6.945 | 5.402 | 5.495 | 5.493 | 30.139 |
| 9/7/99 | 2:55:06 | 6617.952 | 8.299 | 6.94 | 5.931 | 8.911 | 6.945 | 5.405 | 5.498 | 5.493 | 30.137 |
| 9/7/99 | 3:05:06 | 6627.952 | 8.299 | 6.945 | 5.931 | 8.911 | 6.945 | 5.405 | 5.495 | 5.493 | 30.133 |
| 9/7/99 | 3:15:06 | 6637.952 | 8.299 | 6.945 | 5.934 | 8.911 | 6.945 | 5.405 | 5.498 | 5.493 | 30.131 |
| 9/7/99 | 3:25:06 | 6647.952 | 8.299 | 6.945 | 5.934 | 8.914 | 6.948 | 5.405 | 5.498 | 5.493 | 30.133 |
| 9/7/99 | 3:35:06 | 6657.952 | 8.299 | 6.949 | 5.934 | 8.914 | 6.948 | 5.411 | 5.501 | 5.501 | 30.135 |
| 9/7/99 | 3:45:06 | 6667.952 | 8.299 | 6.949 | 5.937 | 8.919 | 6.948 | 5.411 | 5.501 | 5.501 | 30.137 |
| 9/7/99 | 3:55:06 | 6677.952 | 8.299 | 6.949 | 5.937 | 8.922 | 6.951 | 5.411 | 5.501 | 5.501 | 30.133 |
| 9/7/99 | 4:05:06 | 6687.952 | 8.299 | 6.949 | 5.937 | 8.922 | 6.951 | 5.411 | 5.504 | 5.501 | 30.133 |
| 9/7/99 | 4:15:06 | 6697.952 | 8.299 | 6.949 | 5.94 | 8.922 | 6.951 | 5.411 | 5.504 | 5.501 | 30.133 |
| 9/7/99 | 4:25:06 | 6707.952 | 8.299 | 6.949 | 5.94 | 8.922 | 6.954 | 5.417 | 5.504 | 5.501 | 30.131 |
| 9/7/99 | 4:35:06 | 6717.952 | 8.299 | 6.953 | 5.94 | 8.925 | 6.954 | 5.417 | 5.507 | 5.501 | 30.131 |
| 9/7/99 | 4:45:06 | 6727.952 | 8.299 | 6.953 | 5.942 | 8.925 | 6.954 | 5.417 | 5.507 | 5.501 | 30.131 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |
| 9/7/99 | 4:55:06 | 6737.952 | 8.299 | 6.953 | 5.942 | 8.928 | 6.957 | 5.417 | 5.507 | 5.501 | 30.131 |
| 9/7/99 | 5:05:06 | 6747.952 | 8.299 | 6.958 | 5.945 | 8.931 | 6.957 | 5.42 | 5.509 | 5.501 | 30.125 |
| 9/7/99 | 5:15:06 | 6757.952 | 8.299 | 6.958 | 5.945 | 8.931 | 6.957 | 5.42 | 5.509 | 5.515 | 30.125 |
| 9/7/99 | 5:25:06 | 6767.952 | 8.299 | 6.958 | 5.945 | 8.931 | 6.96 | 5.42 | 5.512 | 5.515 | 30.121 |
| 9/7/99 | 5:35:06 | 6777.952 | 8.299 | 6.958 | 5.945 | 8.934 | 6.96 | 5.423 | 5.512 | 5.515 | 30.125 |
| 9/7/99 | 5:45:06 | 6787.952 | 8.299 | 6.958 | 5.945 | 8.934 | 6.962 | 5.423 | 5.512 | 5.501 | 30.131 |
| 9/7/99 | 5:55:06 | 6797.952 | 8.299 | 6.962 | 5.948 | 8.934 | 6.962 | 5.423 | 5.512 | 5.515 | 30.127 |
| 9/7/99 | 6:05:06 | 6807.952 | 8.299 | 6.962 | 5.948 | 8.934 | 6.962 | 5.423 | 5.515 | 5.501 | 30.123 |
| 9/7/99 | 6:15:06 | 6817.952 | 8.299 | 6.962 | 5.951 | 8.937 | 6.962 | 5.425 | 5.515 | 5.501 | 30.121 |
| 9/7/99 | 6:25:06 | 6827.952 | 8.299 | 6.966 | 5.951 | 8.937 | 6.965 | 5.423 | 5.515 | 5.493 | 30.123 |
| 9/7/99 | 6:35:06 | 6837.952 | 8.299 | 6.966 | 5.951 | 8.939 | 6.965 | 5.425 | 5.515 | 5.486 | 30.123 |
| 9/7/99 | 6:45:06 | 6847.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.965 | 5.425 | 5.515 | 5.479 | 30.119 |
| 9/7/99 | 6:55:06 | 6857.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.965 | 5.425 | 5.518 | 5.479 | 30.123 |
| 9/7/99 | 7:05:06 | 6867.952 | 8.299 | 6.966 | 5.954 | 8.942 | 6.968 | 5.428 | 5.518 | 5.472 | 30.127 |
| 9/7/99 | 7:15:06 | 6877.952 | 8.299 | 6.966 | 5.957 | 8.942 | 6.968 | 5.428 | 5.518 | 5.472 | 30.127 |
| 9/7/99 | 7:25:06 | 6887.952 | 8.299 | 6.966 | 5.954 | 8.942 | 6.968 | 5.425 | 5.515 | 5.465 | 30.127 |
| 9/7/99 | 7:35:06 | 6897.952 | 8.299 | 6.966 | 5.957 | 8.942 | 6.965 | 5.423 | 5.515 | 5.458 | 30.127 |
| 9/7/99 | 7:45:06 | 6907.952 | 8.299 | 6.966 | 5.954 | 8.942 | 6.965 | 5.425 | 5.515 | 5.451 | 30.127 |
| 9/7/99 | 7:55:06 | 6917.952 | 8.299 | 6.966 | 5.957 | 8.942 | 6.965 | 5.425 | 5.515 | 5.451 | 30.131 |
| 9/7/99 | 8:05:06 | 6927.952 | 8.299 | 6.966 | 5.954 | 8.942 | 6.968 | 5.425 | 5.515 | 5.444 | 30.129 |
| 9/7/99 | 8:15:06 | 6937.952 | 8.299 | 6.966 | 5.954 | 8.942 | 6.965 | 5.425 | 5.515 | 5.437 | 30.121 |
| 9/7/99 | 8:25:06 | 6947.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.965 | 5.425 | 5.515 | 5.437 | 30.121 |
| 9/7/99 | 8:35:06 | 6957.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.968 | 5.425 | 5.515 | 5.43 | 30.129 |
| 9/7/99 | 8:45:06 | 6967.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.968 | 5.423 | 5.515 | 5.43 | 30.123 |
| 9/7/99 | 8:55:06 | 6977.952 | 8.299 | 6.966 | 5.954 | 8.939 | 6.965 | 5.423 | 5.515 | 5.423 | 30.119 |
| 9/7/99 | 9:05:06 | 6987.952 | 8.299 | 6.966 | 5.951 | 8.939 | 6.965 | 5.423 | 5.512 | 5.416 | 30.121 |
| 9/7/99 | 9:15:06 | 6997.952 | 8.299 | 6.966 | 5.951 | 8.937 | 6.962 | 5.423 | 5.509 | 5.409 | 30.123 |
| 9/7/99 | 9:25:06 | 7007.952 | 8.299 | 6.966 | 5.951 | 8.934 | 6.962 | 5.42 | 5.509 | 5.409 | 30.117 |
| 9/7/99 | 9:35:06 | 7017.952 | 8.299 | 6.962 | 5.951 | 8.934 | 6.962 | 5.42 | 5.509 | 5.409 | 30.117 |
| 9/7/99 | 9:45:06 | 7027.952 | 8.299 | 6.962 | 5.948 | 8.934 | 6.962 | 5.417 | 5.507 | 5.402 | 30.119 |
| 9/7/99 | 9:55:06 | 7037.952 | 8.299 | 6.958 | 5.948 | 8.931 | 6.96 | 5.417 | 5.507 | 5.402 | 30.114 |
| 9/7/99 | 10:05:06 | 7047.952 | 8.299 | 6.958 | 5.948 | 8.928 | 6.96 | 5.417 | 5.504 | 5.402 | 30.117 |
| 9/7/99 | 10:15:06 | 7057.952 | 8.299 | 6.958 | 5.945 | 8.928 | 6.957 | 5.414 | 5.504 | 5.402 | 30.112 |
| 9/7/99 | 10:25:06 | 7067.952 | 8.299 | 6.958 | 5.945 | 8.928 | 6.957 | 5.414 | 5.504 | 5.402 | 30.114 |
| 9/7/99 | 10:35:06 | 7077.952 | 8.299 | 6.953 | 5.942 | 8.925 | 6.957 | 5.411 | 5.501 | 5.402 | 30.114 |
| 9/7/99 | 10:45:06 | 7087.952 | 8.299 | 6.953 | 5.942 | 8.922 | 6.954 | 5.411 | 5.498 | 5.402 | 30.112 |
| 9/7/99 | 10:55:06 | 7097.952 | 8.299 | 6.953 | 5.94 | 8.919 | 6.951 | 5.405 | 5.498 | 5.402 | 30.11 |
| 9/7/99 | 11:05:06 | 7107.952 | 8.299 | 6.949 | 5.94 | 8.919 | 6.951 | 5.405 | 5.495 | 5.402 | 30.104 |
| 9/7/99 | 11:15:06 | 7117.952 | 8.299 | 6.949 | 5.937 | 8.914 | 6.948 | 5.402 | 5.495 | 5.409 | 30.1 |
| 9/7/99 | 11:25:06 | 7127.952 | 8.299 | 6.949 | 5.937 | 8.914 | 6.948 | 5.402 | 5.492 | 5.409 | 30.098 |
| 9/7/99 | 11:35:06 | 7137.952 | 8.299 | 6.945 | 5.934 | 8.911 | 6.945 | 5.4 | 5.492 | 5.416 | 30.096 |
| 9/7/99 | 11:45:06 | 7147.952 | 8.299 | 6.949 | 5.934 | 8.908 | 6.945 | 5.4 | 5.489 | 5.416 | 30.094 |
| 9/7/99 | 11:55:06 | 7157.952 | 8.299 | 6.945 | 5.931 | 8.908 | 6.942 | 5.397 | 5.489 | 5.423 | 30.094 |
| 9/7/99 | 12:05:06 | 7167.952 | 8.299 | 6.945 | 5.931 | 8.908 | 6.942 | 5.397 | 5.486 | 5.423 | 30.088 |
| 9/7/99 | 12:15:06 | 7177.952 | 8.299 | 6.94 | 5.928 | 8.905 | 6.939 | 5.394 | 5.486 | 5.43 | 30.084 |
| 9/7/99 | 12:25:06 | 7187.952 | 8.299 | 6.94 | 5.925 | 8.902 | 6.939 | 5.394 | 5.486 | 5.43 | 30.078 |
| 9/7/99 | 12:35:06 | 7197.952 | 8.299 | 6.94 | 5.922 | 8.902 | 6.939 | 5.394 | 5.486 | 5.437 | 30.084 |
| 9/7/99 | 12:45:06 | 7207.952 | 8.299 | 6.94 | 5.925 | 8.902 | 6.939 | 5.394 | 5.486 | 5.437 | 30.082 |
| 9/7/99 | 12:55:06 | 7217.952 | 8.299 | 6.94 | 5.922 | 8.902 | 6.939 | 5.394 | 5.486 | 5.444 | 30.084 |
| 9/7/99 | 13:05:06 | 7227.952 | 8.299 | 6.94 | 5.922 | 8.902 | 6.939 | 5.394 | 5.484 | 5.451 | 30.08 |
| 9/7/99 | 13:15:06 | 7237.952 | 8.299 | 6.936 | 5.922 | 8.902 | 6.937 | 5.394 | 5.486 | 5.458 | 30.08 |
| 9/7/99 | 13:25:06 | 7247.952 | 8.299 | 6.936 | 5.922 | 8.902 | 6.937 | 5.394 | 5.484 | 5.458 | 30.084 |
| 9/7/99 | 13:35:06 | 7257.952 | 8.299 | 6.936 | 5.922 | 8.902 | 6.937 | 5.391 | 5.486 | 5.458 | 30.08 |
| 9/7/99 | 13:45:06 | 7267.952 | 8.299 | 6.936 | 5.922 | 8.899 | 6.937 | 5.391 | 5.484 | 5.465 | 30.072 |
| 9/7/99 | 13:55:06 | 7277.952 | 8.299 | 6.936 | 5.919 | 8.899 | 6.937 | 5.391 | 5.486 | 5.465 | 30.074 |
| 9/7/99 | 14:05:06 | 7287.952 | 8.299 | 6.936 | 5.919 | 8.899 | 6.937 | 5.391 | 5.484 | 5.472 | 30.066 |
| 9/7/99 | 14:15:06 | 7297.952 | 8.299 | 6.936 | 5.919 | 8.899 | 6.937 | 5.391 | 5.484 | 5.479 | 30.057 |
| 9/7/99 | 14:25:06 | 7307.952 | 8.299 | 6.932 | 5.919 | 8.899 | 6.934 | 5.391 | 5.486 | 5.479 | 30.057 |
| 9/7/99 | 14:35:06 | 7317.952 | 8.299 | 6.932 | 5.919 | 8.902 | 6.937 | 5.391 | 5.486 | 5.479 | 30.051 |
| 9/7/99 | 14:45:06 | 7327.952 | 8.299 | 6.932 | 5.919 | 8.902 | 6.937 | 5.391 | 5.486 | 5.479 | 30.049 |
| 9/7/99 | 14:55:06 | 7337.952 | 8.299 | 6.932 | 5.922 | 8.905 | 6.939 | 5.394 | 5.489 | 5.486 | 30.051 |
| 9/7/99 | 15:05:06 | 7347.952 | 8.302 | 6.94 | 5.925 | 8.899 | 6.937 | 5.394 | 5.498 | 5.493 | 30.037 |
| 9/7/99 | 15:15:06 | 7357.952 | 8.302 | 6.936 | 5.925 | 8.908 | 6.939 | 5.397 | 5.492 | 5.493 | 30.027 |

**EW-99-01 Constant Rate Pumping Test**
**Hermit 3000 - Transducer Data During Recovery Interval**

| Observation Point: | | | EW-99-01 Chan[1] | MCR-99-01 Chan[2] | PZ-99-01I Chan[3] | PZ-99-08I Chan[4] | MCWR-99- Chan[5] | PZ-99-01A Chan[6] | PZ-99-01B Chan[7] | PZ99-01C Chan[8] | Barometer Chan[0] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | ET (min) | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Feet H2O | Inches Hg |

Test name: RECOVERY

| | | |
|---|---|---|
| Test defined on: | 8/31/99 | 9:34:18 |
| Test started on: | 9/2/99 | 12:37:09 |
| Test stopped on: | 9/7/99 | 15:19:15 |
| Test extracted on: | 9/14/99 | 15:59:24 |

Data gathered using Logarithmic testing
Maximum time between data points: 10.00 Minutes.
Number of data samples: 832

TABLE J-6

EW-99-01 Constant Rate Pumping Test
PZ-99-02A – Transducer Data During Pumping and Recovery

**EW-99-01 Constant Rate Pumping Test**
**PZ-99-02A - Transducer Data During Pumping and Recovery**

| Minutes | Feet | Minutes | Feet | Minutes | Feet |
|---|---|---|---|---|---|
| 0 | 5.003 | 0.45 | 5.003 | 3.8 | 5.003 |
| 0.0083 | 5.003 | 0.4666 | 5.003 | 4 | 5.006 |
| 0.0166 | 5.003 | 0.4833 | 5.003 | 4.2 | 5.003 |
| 0.025 | 5 | 0.5 | 5.003 | 4.4 | 5.003 |
| 0.0333 | 5 | 0.5166 | 5.003 | 4.6 | 5 |
| 0.0416 | 5 | 0.5333 | 5.003 | 4.8 | 5.003 |
| 0.05 | 5 | 0.55 | 5.003 | 5 | 5.003 |
| 0.0583 | 5 | 0.5666 | 5.003 | 5.2 | 5.006 |
| 0.0666 | 5 | 0.5833 | 5.003 | 5.4 | 5.006 |
| 0.075 | 4.997 | 0.6 | 5.003 | 5.6 | 5.01 |
| 0.0833 | 4.997 | 0.6166 | 5.003 | 5.8 | 5.006 |
| 0.0916 | 5 | 0.6333 | 5.003 | 6 | 5.006 |
| 0.1 | 4.997 | 0.65 | 5.003 | 6.2 | 5.01 |
| 0.1083 | 4.997 | 0.6666 | 5.003 | 6.4 | 5.01 |
| 0.1166 | 5 | 0.6833 | 5.006 | 6.6 | 5.006 |
| 0.125 | 5 | 0.7 | 5.006 | 6.8 | 5.006 |
| 0.1333 | 4.997 | 0.7166 | 5.006 | 7 | 5.006 |
| 0.1416 | 5 | 0.7333 | 5.006 | 7.2 | 5.006 |
| 0.15 | 5 | 0.75 | 5.006 | 7.4 | 5.01 |
| 0.1583 | 5 | 0.7666 | 5.006 | 7.6 | 5.003 |
| 0.1666 | 5 | 0.7833 | 5.006 | 7.8 | 5.003 |
| 0.175 | 5 | 0.8 | 5.006 | 8 | 5.006 |
| 0.1833 | 5 | 0.8166 | 5.006 | 8.2 | 5.003 |
| 0.1916 | 5 | 0.8333 | 5.006 | 8.4 | 5 |
| 0.2 | 5 | 0.85 | 5.006 | 8.6 | 5.003 |
| 0.2083 | 5 | 0.8666 | 5.006 | 8.8 | 5.01 |
| 0.2166 | 5 | 0.8833 | 5.006 | 9 | 5.01 |
| 0.225 | 5 | 0.9 | 5.006 | 9.2 | 5.01 |
| 0.2333 | 5 | 0.9166 | 5.006 | 9.4 | 5.006 |
| 0.2416 | 5 | 0.9333 | 5.006 | 9.6 | 5.006 |
| 0.25 | 5 | 0.95 | 5.006 | 9.8 | 5.003 |
| 0.2583 | 5 | 0.9666 | 5.006 | 10 | 5.006 |
| 0.2666 | 5 | 0.9833 | 5.006 | 12 | 5.013 |
| 0.275 | 5 | 1 | 5.006 | 14 | 5.013 |
| 0.2833 | 5 | 1.2 | 5.003 | 16 | 5.01 |
| 0.2916 | 5 | 1.4 | 5.003 | 18 | 5.016 |
| 0.3 | 5 | 1.6 | 5.003 | 20 | 5.016 |
| 0.3083 | 5 | 1.8 | 5.006 | 22 | 5.013 |
| 0.3166 | 5 | 2 | 5.003 | 24 | 5.016 |
| 0.325 | 5 | 2.2 | 5 | 26 | 5.022 |
| 0.3333 | 5 | 2.4 | 5.003 | 28 | 5.003 |
| 0.35 | 5 | 2.6 | 5.003 | 30 | 5.016 |
| 0.3666 | 5 | 2.8 | 5.003 | 32 | 5.019 |
| 0.3833 | 5.003 | 3 | 5.01 | 34 | 5.022 |
| 0.4 | 5.003 | 3.2 | 5.006 | 36 | 5.013 |
| 0.4166 | 5.003 | 3.4 | 5.006 | 38 | 5.022 |
| 0.4333 | 5.003 | 3.6 | 5.003 | 40 | 5.013 |

**EW-99-01 Constant Rate Pumping Test**
**PZ-99-02A - Transducer Data During Pumping and Recovery**

| Minutes | Feet | Minutes | Feet | Minutes | Feet |
|---|---|---|---|---|---|
| 42 | 5.022 | 280 | 5.038 | 750 | 5.038 |
| 44 | 5.019 | 290 | 5.035 | 760 | 5.041 |
| 46 | 5.016 | 300 | 5.038 | 770 | 5.041 |
| 48 | 5.019 | 310 | 5.032 | 780 | 5.044 |
| 50 | 5.022 | 320 | 5.035 | 790 | 5.044 |
| 52 | 5.022 | 330 | 5.028 | 800 | 5.044 |
| 54 | 5.025 | 340 | 5.025 | 810 | 5.047 |
| 56 | 5.022 | 350 | 5.025 | 820 | 5.047 |
| 58 | 5.028 | 360 | 5.022 | 830 | 5.051 |
| 60 | 5.025 | 370 | 5.022 | 840 | 5.051 |
| 62 | 5.028 | 380 | 5.022 | 850 | 5.054 |
| 64 | 5.032 | 390 | 5.022 | 860 | 5.054 |
| 66 | 5.028 | 400 | 5.022 | 870 | 5.054 |
| 68 | 5.025 | 410 | 5.016 | 880 | 5.054 |
| 70 | 5.028 | 420 | 5.016 | 890 | 5.057 |
| 72 | 5.028 | 430 | 5.016 | 900 | 5.057 |
| 74 | 5.032 | 440 | 5.013 | 910 | 5.057 |
| 76 | 5.032 | 450 | 5.006 | 920 | 5.06 |
| 78 | 5.025 | 460 | 5.01 | 930 | 5.06 |
| 80 | 5.038 | 470 | 5.01 | 940 | 5.06 |
| 82 | 5.035 | 480 | 5.01 | 950 | 5.06 |
| 84 | 5.028 | 490 | 5.01 | 960 | 5.06 |
| 86 | 5.028 | 500 | 5.01 | 970 | 5.06 |
| 88 | 5.032 | 510 | 5.006 | 980 | 5.06 |
| 90 | 5.032 | 520 | 5.006 | 990 | 5.057 |
| 92 | 5.032 | 530 | 5.01 | 1000 | 5.057 |
| 94 | 5.038 | 540 | 5.006 | 1010 | 5.057 |
| 96 | 5.035 | 550 | 5.006 | 1020 | 5.054 |
| 98 | 5.032 | 560 | 5.01 | 1030 | 5.054 |
| 100 | 5.035 | 570 | 5.01 | 1040 | 5.051 |
| 110 | 5.041 | 580 | 5.01 | 1050 | 5.047 |
| 120 | 5.038 | 590 | 5.013 | 1060 | 5.051 |
| 130 | 5.038 | 600 | 5.013 | 1070 | 5.047 |
| 140 | 5.035 | 610 | 5.013 | 1080 | 5.044 |
| 150 | 5.035 | 620 | 5.016 | 1090 | 5.044 |
| 160 | 5.035 | 630 | 5.019 | 1100 | 5.041 |
| 170 | 5.032 | 640 | 5.019 | 1110 | 5.041 |
| 180 | 5.041 | 650 | 5.022 | 1120 | 5.038 |
| 190 | 5.047 | 660 | 5.022 | 1130 | 5.038 |
| 200 | 5.044 | 670 | 5.025 | 1140 | 5.035 |
| 210 | 5.044 | 680 | 5.025 | 1150 | 5.035 |
| 220 | 5.041 | 690 | 5.025 | 1160 | 5.035 |
| 230 | 5.038 | 700 | 5.028 | 1170 | 5.032 |
| 240 | 5.041 | 710 | 5.032 | 1180 | 5.032 |
| 250 | 5.038 | 720 | 5.035 | 1190 | 5.028 |
| 260 | 5.044 | 730 | 5.035 | 1200 | 5.028 |
| 270 | 5.041 | 740 | 5.035 | 1210 | 5.028 |

**EW-99-01 Constant Rate Pumping Test**
**PZ-99-02A - Transducer Data During Pumping and Recovery**

| Minutes | Feet | Minutes | Feet | Minutes | Feet |
|---|---|---|---|---|---|
| 1220 | 5.028 | 1690 | 5.079 | 2160 | 5.051 |
| 1230 | 5.032 | 1700 | 5.082 | 2170 | 5.054 |
| 1240 | 5.028 | 1710 | 5.076 | 2180 | 5.054 |
| 1250 | 5.032 | 1720 | 5.076 | 2190 | 5.057 |
| 1260 | 5.032 | 1730 | 5.076 | 2200 | 5.057 |
| 1270 | 5.032 | 1740 | 5.073 | 2210 | 5.06 |
| 1280 | 5.032 | 1750 | 5.066 | 2220 | 5.06 |
| 1290 | 5.032 | 1760 | 5.073 | 2230 | 5.06 |
| 1300 | 5.032 | 1770 | 5.069 | 2240 | 5.063 |
| 1310 | 5.032 | 1780 | 5.063 | 2250 | 5.063 |
| 1320 | 5.035 | 1790 | 5.063 | 2260 | 5.066 |
| 1330 | 5.038 | 1800 | 5.06 | 2270 | 5.066 |
| 1340 | 5.038 | 1810 | 5.06 | 2280 | 5.069 |
| 1350 | 5.041 | 1820 | 5.06 | 2290 | 5.069 |
| 1360 | 5.041 | 1830 | 5.06 | 2300 | 5.073 |
| 1370 | 5.044 | 1840 | 5.057 | 2310 | 5.073 |
| 1380 | 5.044 | 1850 | 5.054 | 2320 | 5.076 |
| 1390 | 5.047 | 1860 | 5.054 | 2330 | 5.076 |
| 1400 | 5.057 | 1870 | 5.051 | 2340 | 5.079 |
| 1410 | 5.054 | 1880 | 5.051 | 2350 | 5.079 |
| 1420 | 5.057 | 1890 | 5.047 | 2360 | 5.082 |
| 1430 | 5.054 | 1900 | 5.041 | 2370 | 5.082 |
| 1440 | 5.051 | 1910 | 5.044 | 2380 | 5.082 |
| 1450 | 5.054 | 1920 | 5.041 | 2390 | 5.082 |
| 1460 | 5.06 | 1930 | 5.044 | 2400 | 5.082 |
| 1470 | 5.06 | 1940 | 5.038 | 2410 | 5.085 |
| 1480 | 5.069 | 1950 | 5.038 | 2420 | 5.085 |
| 1490 | 5.06 | 1960 | 5.038 | 2430 | 5.085 |
| 1500 | 5.063 | 1970 | 5.038 | 2440 | 5.085 |
| 1510 | 5.069 | 1980 | 5.035 | 2450 | 5.085 |
| 1520 | 5.066 | 1990 | 5.035 | 2460 | 5.088 |
| 1530 | 5.063 | 2000 | 5.035 | 2470 | 5.088 |
| 1540 | 5.069 | 2010 | 5.035 | 2480 | 5.085 |
| 1550 | 5.066 | 2020 | 5.035 | 2490 | 5.085 |
| 1560 | 5.066 | 2030 | 5.035 | 2500 | 5.085 |
| 1570 | 5.069 | 2040 | 5.035 | 2510 | 5.085 |
| 1580 | 5.073 | 2050 | 5.038 | 2520 | 5.082 |
| 1590 | 5.076 | 2060 | 5.038 | 2530 | 5.079 |
| 1600 | 5.073 | 2070 | 5.038 | 2540 | 5.079 |
| 1610 | 5.076 | 2080 | 5.041 | 2550 | 5.079 |
| 1620 | 5.076 | 2090 | 5.041 | 2560 | 5.079 |
| 1630 | 5.069 | 2100 | 5.044 | 2570 | 5.076 |
| 1640 | 5.076 | 2110 | 5.044 | 2580 | 5.076 |
| 1650 | 5.076 | 2120 | 5.044 | 2590 | 5.073 |
| 1660 | 5.076 | 2130 | 5.047 | 2600 | 5.069 |
| 1670 | 5.076 | 2140 | 5.047 | 2610 | 5.073 |
| 1680 | 5.073 | 2150 | 5.051 | 2620 | 5.066 |

**EW-99-01 Constant Rate Pumping Test**
**PZ-99-02A - Transducer Data During Pumping and Recovery**

| Minutes | Feet | Minutes | Feet | Minutes | Feet |
|---|---|---|---|---|---|
| 2630 | 5.066 | 3060.025 | 5.079 | 3060.5 | 5.076 |
| 2640 | 5.066 | 3060.033 | 5.079 | 3060.517 | 5.076 |
| 2650 | 5.063 | 3060.042 | 5.079 | 3060.533 | 5.076 |
| 2660 | 5.063 | 3060.05 | 5.076 | 3060.55 | 5.076 |
| 2670 | 5.063 | 3060.058 | 5.079 | 3060.567 | 5.076 |
| 2680 | 5.063 | 3060.067 | 5.079 | 3060.583 | 5.073 |
| 2690 | 5.063 | 3060.075 | 5.079 | 3060.6 | 5.073 |
| 2700 | 5.06 | 3060.083 | 5.079 | 3060.617 | 5.073 |
| 2710 | 5.057 | 3060.092 | 5.079 | 3060.633 | 5.073 |
| 2720 | 5.057 | 3060.1 | 5.076 | 3060.65 | 5.073 |
| 2730 | 5.057 | 3060.108 | 5.079 | 3060.667 | 5.073 |
| 2740 | 5.057 | 3060.117 | 5.079 | 3060.683 | 5.073 |
| 2750 | 5.057 | 3060.125 | 5.079 | 3060.7 | 5.073 |
| 2760 | 5.057 | 3060.133 | 5.079 | 3060.717 | 5.073 |
| 2770 | 5.057 | 3060.142 | 5.076 | 3060.733 | 5.073 |
| 2780 | 5.06 | 3060.15 | 5.079 | 3060.75 | 5.073 |
| 2790 | 5.054 | 3060.158 | 5.079 | 3060.767 | 5.073 |
| 2800 | 5.06 | 3060.167 | 5.079 | 3060.783 | 5.073 |
| 2810 | 5.06 | 3060.175 | 5.079 | 3060.8 | 5.073 |
| 2820 | 5.06 | 3060.183 | 5.079 | 3060.817 | 5.073 |
| 2830 | 5.063 | 3060.192 | 5.079 | 3060.833 | 5.073 |
| 2840 | 5.063 | 3060.2 | 5.079 | 3060.85 | 5.076 |
| 2850 | 5.063 | 3060.208 | 5.079 | 3060.867 | 5.073 |
| 2860 | 5.066 | 3060.217 | 5.079 | 3060.883 | 5.076 |
| 2870 | 5.069 | 3060.225 | 5.079 | 3060.9 | 5.076 |
| 2880 | 5.066 | 3060.233 | 5.076 | 3060.917 | 5.076 |
| 2890 | 5.069 | 3060.242 | 5.079 | 3060.933 | 5.076 |
| 2900 | 5.069 | 3060.25 | 5.079 | 3060.95 | 5.076 |
| 2910 | 5.076 | 3060.258 | 5.079 | 3060.967 | 5.076 |
| 2920 | 5.073 | 3060.267 | 5.076 | 3060.983 | 5.076 |
| 2930 | 5.085 | 3060.275 | 5.079 | 3061 | 5.076 |
| 2940 | 5.079 | 3060.283 | 5.076 | 3061.2 | 5.079 |
| 2950 | 5.079 | 3060.292 | 5.076 | 3061.4 | 5.082 |
| 2960 | 5.076 | 3060.3 | 5.076 | 3061.6 | 5.085 |
| 2970 | 5.085 | 3060.308 | 5.076 | 3061.8 | 5.085 |
| 2980 | 5.076 | 3060.317 | 5.079 | 3062 | 5.085 |
| 2990 | 5.088 | 3060.325 | 5.079 | 3062.2 | 5.085 |
| 3000 | 5.085 | 3060.333 | 5.079 | 3062.4 | 5.082 |
| 3010 | 5.085 | 3060.35 | 5.079 | 3062.6 | 5.082 |
| 3020 | 5.085 | 3060.367 | 5.079 | 3062.8 | 5.076 |
| 3030 | 5.085 | 3060.383 | 5.076 | 3063 | 5.079 |
| 3040 | 5.088 | 3060.4 | 5.079 | 3063.2 | 5.076 |
| 3050 | 5.088 | 3060.417 | 5.079 | 3063.4 | 5.076 |
| 3060 | 5.088 | 3060.433 | 5.079 | 3063.6 | 5.079 |
| 3060.005 | 5.085 | 3060.45 | 5.076 | 3063.8 | 5.076 |
| 3060.008 | 5.079 | 3060.467 | 5.079 | 3064 | 5.082 |
| 3060.017 | 5.079 | 3060.483 | 5.079 | 3064.2 | 5.079 |

**EW-99-01 Constant Rate Pumping Test**
**PZ-99-02A - Transducer Data During Pumping and Recovery**

| Minutes | Feet | Minutes | Feet | Minutes | Feet |
|---|---|---|---|---|---|
| 3064.4 | 5.076 | 3108 | 5.088 | 3370 | 5.035 |
| 3064.6 | 5.079 | 3110 | 5.079 | 3380 | 5.035 |
| 3064.8 | 5.079 | 3112 | 5.085 | 3390 | 5.032 |
| 3065 | 5.082 | 3114 | 5.085 | 3400 | 5.028 |
| 3065.2 | 5.085 | 3116 | 5.082 | 3410 | 5.028 |
| 3065.4 | 5.085 | 3118 | 5.079 | 3420 | 5.025 |
| 3065.6 | 5.085 | 3120 | 5.082 | 3430 | 5.025 |
| 3065.8 | 5.082 | 3122 | 5.076 | 3440 | 5.022 |
| 3066 | 5.079 | 3124 | 5.079 | 3450 | 5.022 |
| 3066.2 | 5.082 | 3126 | 5.082 | 3460 | 5.019 |
| 3066.4 | 5.082 | 3128 | 5.082 | 3470 | 5.019 |
| 3066.6 | 5.082 | 3130 | 5.076 | 3480 | 5.019 |
| 3066.8 | 5.076 | 3132 | 5.079 | 3490 | 5.016 |
| 3067 | 5.076 | 3134 | 5.082 | 3500 | 5.016 |
| 3067.2 | 5.079 | 3136 | 5.076 | 3510 | 5.013 |
| 3067.4 | 5.079 | 3138 | 5.079 | 3520 | 5.016 |
| 3067.6 | 5.079 | 3140 | 5.079 | 3530 | 5.013 |
| 3067.8 | 5.076 | 3142 | 5.076 | 3540 | 5.013 |
| 3068 | 5.076 | 3144 | 5.082 | 3550 | 5.013 |
| 3068.2 | 5.073 | 3146 | 5.076 | 3560 | 5.013 |
| 3068.4 | 5.073 | 3148 | 5.076 | 3570 | 5.013 |
| 3068.6 | 5.073 | 3150 | 5.076 | 3580 | 5.016 |
| 3068.8 | 5.073 | 3152 | 5.079 | 3590 | 5.016 |
| 3069 | 5.076 | 3154 | 5.079 | 3600 | 5.016 |
| 3069.2 | 5.076 | 3156 | 5.073 | 3610 | 5.016 |
| 3069.4 | 5.079 | 3158 | 5.073 | 3620 | 5.016 |
| 3069.6 | 5.082 | 3160 | 5.073 | 3630 | 5.019 |
| 3069.8 | 5.079 | 3170 | 5.076 | 3640 | 5.019 |
| 3070 | 5.079 | 3180 | 5.069 | 3650 | 5.019 |
| 3072 | 5.085 | 3190 | 5.073 | 3660 | 5.022 |
| 3074 | 5.085 | 3200 | 5.066 | 3670 | 5.022 |
| 3076 | 5.085 | 3210 | 5.073 | 3680 | 5.022 |
| 3078 | 5.085 | 3220 | 5.066 | 3690 | 5.025 |
| 3080 | 5.079 | 3230 | 5.066 | 3700 | 5.025 |
| 3082 | 5.085 | 3240 | 5.063 | 3710 | 5.028 |
| 3084 | 5.092 | 3250 | 5.06 | 3720 | 5.032 |
| 3086 | 5.085 | 3260 | 5.06 | 3730 | 5.032 |
| 3088 | 5.088 | 3270 | 5.06 | 3740 | 5.035 |
| 3090 | 5.076 | 3280 | 5.054 | 3750 | 5.035 |
| 3092 | 5.082 | 3290 | 5.051 | 3760 | 5.035 |
| 3094 | 5.079 | 3300 | 5.051 | 3770 | 5.038 |
| 3096 | 5.085 | 3310 | 5.047 | 3780 | 5.038 |
| 3098 | 5.082 | 3320 | 5.044 | 3790 | 5.041 |
| 3100 | 5.082 | 3330 | 5.044 | 3800 | 5.041 |
| 3102 | 5.082 | 3340 | 5.041 | 3810 | 5.041 |
| 3104 | 5.076 | 3350 | 5.038 | 3820 | 5.044 |
| 3106 | 5.082 | 3360 | 5.035 | 3830 | 5.044 |

**EW-99-01 Constant Rate Pumping Test**
**PZ-99-02A - Transducer Data During Pumping and Recovery**

| Minutes | Feet | Minutes | Feet | Minutes | Feet |
|---|---|---|---|---|---|
| 3840 | 5.044 | 4310 | 5.025 | 4780 | 5.044 |
| 3850 | 5.047 | 4320 | 5.019 | 4790 | 5.041 |
| 3860 | 5.047 | 4330 | 5.022 | 4800 | 5.038 |
| 3870 | 5.047 | 4340 | 5.025 | 4810 | 5.038 |
| 3880 | 5.047 | 4350 | 5.025 | 4820 | 5.035 |
| 3890 | 5.051 | 4360 | 5.028 | 4830 | 5.035 |
| 3900 | 5.051 | 4370 | 5.019 | 4840 | 5.032 |
| 3910 | 5.054 | 4380 | 5.022 | 4850 | 5.032 |
| 3920 | 5.054 | 4390 | 5.028 | 4860 | 5.028 |
| 3930 | 5.054 | 4400 | 5.025 | 4870 | 5.028 |
| 3940 | 5.054 | 4410 | 5.032 | 4880 | 5.025 |
| 3950 | 5.054 | 4420 | 5.028 | 4890 | 5.022 |
| 3960 | 5.054 | 4430 | 5.032 | 4900 | 5.022 |
| 3970 | 5.051 | 4440 | 5.032 | 4910 | 5.019 |
| 3980 | 5.051 | 4450 | 5.035 | 4920 | 5.016 |
| 3990 | 5.051 | 4460 | 5.035 | 4930 | 5.016 |
| 4000 | 5.051 | 4470 | 5.038 | 4940 | 5.016 |
| 4010 | 5.051 | 4480 | 5.041 | 4950 | 5.016 |
| 4020 | 5.047 | 4490 | 5.035 | 4960 | 5.013 |
| 4030 | 5.047 | 4500 | 5.041 | 4970 | 5.013 |
| 4040 | 5.044 | 4510 | 5.041 | 4980 | 5.013 |
| 4050 | 5.044 | 4520 | 5.041 | 4990 | 5.013 |
| 4060 | 5.041 | 4530 | 5.044 | 5000 | 5.013 |
| 4070 | 5.041 | 4540 | 5.047 | 5010 | 5.013 |
| 4080 | 5.041 | 4550 | 5.047 | 5020 | 5.013 |
| 4090 | 5.038 | 4560 | 5.047 | 5030 | 5.013 |
| 4100 | 5.038 | 4570 | 5.051 | 5040 | 5.013 |
| 4110 | 5.038 | 4580 | 5.051 | 5050 | 5.013 |
| 4120 | 5.035 | 4590 | 5.051 | 5060 | 5.013 |
| 4130 | 5.035 | 4600 | 5.054 | 5070 | 5.013 |
| 4140 | 5.032 | 4610 | 5.051 | 5080 | 5.013 |
| 4150 | 5.032 | 4620 | 5.054 | 5090 | 5.016 |
| 4160 | 5.032 | 4630 | 5.051 | 5100 | 5.016 |
| 4170 | 5.028 | 4640 | 5.054 | 5110 | 5.016 |
| 4180 | 5.025 | 4650 | 5.057 | 5120 | 5.016 |
| 4190 | 5.025 | 4660 | 5.054 | 5130 | 5.019 |
| 4200 | 5.025 | 4670 | 5.054 | 5140 | 5.019 |
| 4210 | 5.025 | 4680 | 5.054 | 5150 | 5.022 |
| 4220 | 5.022 | 4690 | 5.054 | 5160 | 5.022 |
| 4230 | 5.022 | 4700 | 5.057 | 5170 | 5.025 |
| 4240 | 5.025 | 4710 | 5.054 | 5180 | 5.025 |
| 4250 | 5.022 | 4720 | 5.051 | 5190 | 5.028 |
| 4260 | 5.028 | 4730 | 5.047 | 5200 | 5.032 |
| 4270 | 5.019 | 4740 | 5.051 | 5210 | 5.032 |
| 4280 | 5.019 | 4750 | 5.051 | 5220 | 5.035 |
| 4290 | 5.022 | 4760 | 5.044 | 5230 | 5.035 |
| 4300 | 5.022 | 4770 | 5.041 | 5240 | 5.038 |

**EW-99-01 Constant Rate Pumping Test**
**PZ-99-02A - Transducer Data During Pumping and Recovery**

| Minutes | Feet | Minutes | Feet | Minutes | Feet |
|---|---|---|---|---|---|
| 5250 | 5.038 | 5720 | 5.041 | | |
| 5260 | 5.038 | 5730 | 5.044 | | |
| 5270 | 5.041 | 5740 | 5.051 | | |
| 5280 | 5.044 | 5750 | 5.032 | | |
| 5290 | 5.044 | 5760 | 5.038 | | |
| 5300 | 5.047 | 5770 | 5.041 | | |
| 5310 | 5.047 | 5780 | 5.047 | | |
| 5320 | 5.051 | 5790 | 5.038 | | |
| 5330 | 5.051 | 5800 | 5.044 | | |
| 5340 | 5.051 | 5810 | 5.041 | | |
| 5350 | 5.051 | 5820 | 5.044 | | |
| 5360 | 5.054 | 5830 | 5.038 | | |
| 5370 | 5.057 | 5840 | 5.038 | | |
| 5380 | 5.057 | 5850 | 5.054 | | |
| 5390 | 5.057 | 5860 | 5.047 | | |
| 5400 | 5.06 | 5870 | 5.044 | | |
| 5410 | 5.06 | 5880 | 5.051 | | |
| 5420 | 5.06 | 5890 | 5.051 | | |
| 5430 | 5.06 | 5900 | 5.054 | | |
| 5440 | 5.06 | 5910 | 5.054 | | |
| 5450 | 5.063 | 5920 | 5.054 | | |
| 5460 | 5.063 | 5930 | 5.06 | | |
| 5470 | 5.06 | 5940 | 5.06 | | |
| 5480 | 5.063 | 5950 | 5.057 | | |
| 5490 | 5.06 | 5960 | 5.063 | | |
| 5500 | 5.06 | 5970 | 5.06 | | |
| 5510 | 5.06 | 5980 | 5.063 | | |
| 5520 | 5.063 | 5990 | 5.063 | | |
| 5530 | 5.06 | 6000 | 5.063 | | |
| 5540 | 5.06 | 6010 | 5.063 | | |
| 5550 | 5.06 | 6020 | 5.066 | | |
| 5560 | 5.06 | 6030 | 5.069 | | |
| 5570 | 5.057 | 6040 | 5.066 | | |
| 5580 | 5.057 | 6050 | 5.069 | | |
| 5590 | 5.057 | 6060 | 5.066 | | |
| 5600 | 5.054 | 6070 | 5.069 | | |
| 5610 | 5.054 | 6080 | 5.069 | | |
| 5620 | 5.054 | 6090 | 5.069 | | |
| 5630 | 5.051 | 6100 | 5.073 | | |
| 5640 | 5.047 | 6110 | 5.076 | | |
| 5650 | 5.047 | 6120 | 5.073 | | |
| 5660 | 5.047 | | | | |
| 5670 | 5.044 | | | | |
| 5680 | 5.044 | | | | |
| 5690 | 5.044 | | | | |
| 5700 | 5.041 | | | | |
| 5710 | 5.044 | | | | |

TABLE J-7

TABLE J-8

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

| Time ***t*** since pump started (minutes) | Time ***t'*** since pump stopped (minutes) | Ratio ***t/t'*** | Residual Drawdown ***s'*** | Drawdown ***s*** from extended pumping curve |
|---|---|---|---|---|
| 3060 | 0 | - | 14.26 | 14.260 |
| 3060.0083 | 0.0083 | 368675.699 | 14.26 | 14.260 |
| 3060.0166 | 0.0166 | 184338.349 | 14.26 | 14.260 |
| 3060.025 | 0.025 | 122401.000 | 14.26 | 14.260 |
| 3060.0333 | 0.0333 | 91892.892 | 14.26 | 14.260 |
| 3060.0416 | 0.0416 | 73558.692 | 14.26 | 14.260 |
| 3060.05 | 0.05 | 61201.000 | 14.134 | 14.260 |
| 3060.0583 | 0.0583 | 52488.136 | 14.059 | 14.260 |
| 3060.0666 | 0.0666 | 45946.946 | 13.759 | 14.260 |
| 3060.075 | 0.075 | 40801.000 | 13.775 | 14.260 |
| 3060.0833 | 0.0833 | 36735.694 | 13.459 | 14.260 |
| 3060.0916 | 0.0916 | 33407.114 | 13.39 | 14.260 |
| 3060.1 | 0.1 | 30601.000 | 13.191 | 14.260 |
| 3060.1083 | 0.1083 | 28255.848 | 13.049 | 14.260 |
| 3060.1166 | 0.1166 | 26244.568 | 12.923 | 14.260 |
| 3060.125 | 0.125 | 24481.000 | 12.737 | 14.260 |
| 3060.1333 | 0.1333 | 22956.739 | 12.639 | 14.260 |
| 3060.1416 | 0.1416 | 21611.169 | 12.463 | 14.260 |
| 3060.15 | 0.15 | 20401.000 | 12.346 | 14.260 |
| 3060.1583 | 0.1583 | 19331.385 | 12.201 | 14.260 |
| 3060.1666 | 0.1666 | 18368.347 | 12.065 | 14.260 |
| 3060.175 | 0.175 | 17486.714 | 11.948 | 14.260 |
| 3060.1833 | 0.1833 | 16694.944 | 11.8 | 14.260 |
| 3060.1916 | 0.1916 | 15971.772 | 11.683 | 14.260 |
| 3060.2 | 0.2 | 15301.000 | 11.582 | 14.260 |
| 3060.2083 | 0.2083 | 14691.350 | 11.437 | 14.260 |
| 3060.2166 | 0.2166 | 14128.424 | 11.308 | 14.260 |
| 3060.225 | 0.225 | 13601.000 | 11.172 | 14.260 |
| 3060.2333 | 0.2333 | 13117.159 | 11.042 | 14.260 |
| 3060.2416 | 0.2416 | 12666.563 | 10.916 | 14.260 |
| 3060.25 | 0.25 | 12241.000 | 10.793 | 14.260 |
| 3060.2583 | 0.2583 | 11847.690 | 10.673 | 14.260 |
| 3060.2666 | 0.2666 | 11478.869 | 10.55 | 14.260 |
| 3060.275 | 0.275 | 11128.273 | 10.43 | 14.260 |
| 3060.2833 | 0.2833 | 10802.271 | 10.313 | 14.260 |
| 3060.2916 | 0.2916 | 10494.827 | 10.196 | 14.260 |
| 3060.3 | 0.3 | 10201.000 | 10.083 | 14.260 |
| 3060.3083 | 0.3083 | 9926.397 | 9.966 | 14.260 |
| 3060.3166 | 0.3166 | 9666.193 | 9.855 | 14.260 |
| 3060.325 | 0.325 | 9416.385 | 9.745 | 14.260 |
| 3060.3333 | 0.3333 | 9181.918 | 9.631 | 14.260 |
| 3060.35 | 0.35 | 8743.857 | 9.413 | 14.260 |
| 3060.3666 | 0.3666 | 8347.972 | 9.198 | 14.260 |
| 3060.3833 | 0.3833 | 7984.303 | 8.99 | 14.260 |
| 3060.4 | 0.4 | 7651.000 | 8.784 | 14.260 |
| 3060.4166 | 0.4166 | 7346.175 | 8.585 | 14.260 |
| 3060.4333 | 0.4333 | 7063.082 | 8.389 | 14.260 |

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

| Time ***t*** since pump started (minutes) | Time ***t'*** since pump stopped (minutes) | Ratio **t/t'** | Residual Drawdown ***s'*** | Drawdown ***s*** from extended pumping curve |
|---|---|---|---|---|
| 3060.45 | 0.45 | 6801.000 | 8.2 | 14.260 |
| 3060.4666 | 0.4666 | 6559.080 | 8.013 | 14.260 |
| 3060.4833 | 0.4833 | 6332.471 | 7.833 | 14.260 |
| 3060.5 | 0.5 | 6121.000 | 7.653 | 14.260 |
| 3060.5166 | 0.5166 | 5924.345 | 7.476 | 14.260 |
| 3060.5333 | 0.5333 | 5738.859 | 7.305 | 14.260 |
| 3060.55 | 0.55 | 5564.636 | 7.138 | 14.260 |
| 3060.5666 | 0.5666 | 5401.635 | 6.973 | 14.260 |
| 3060.5833 | 0.5833 | 5247.014 | 6.815 | 14.260 |
| 3060.6 | 0.6 | 5101.000 | 6.657 | 14.260 |
| 3060.6166 | 0.6166 | 4963.699 | 6.502 | 14.260 |
| 3060.6333 | 0.6333 | 4832.833 | 6.353 | 14.260 |
| 3060.65 | 0.65 | 4708.692 | 6.208 | 14.260 |
| 3060.6666 | 0.6666 | 4591.459 | 6.069 | 14.260 |
| 3060.6833 | 0.6833 | 4479.267 | 5.93 | 14.260 |
| 3060.7 | 0.7 | 4372.429 | 5.794 | 14.260 |
| 3060.7166 | 0.7166 | 4271.165 | 5.664 | 14.260 |
| 3060.7333 | 0.7333 | 4173.917 | 5.528 | 14.260 |
| 3060.75 | 0.75 | 4081.000 | 5.401 | 14.260 |
| 3060.7666 | 0.7666 | 3992.651 | 5.278 | 14.260 |
| 3060.7833 | 0.7833 | 3907.549 | 5.161 | 14.260 |
| 3060.8 | 0.8 | 3826.000 | 5.044 | 14.260 |
| 3060.8166 | 0.8166 | 3748.245 | 4.93 | 14.260 |
| 3060.8333 | 0.8333 | 3673.147 | 4.816 | 14.260 |
| 3060.85 | 0.85 | 3601.000 | 4.705 | 14.260 |
| 3060.8666 | 0.8666 | 3532.041 | 4.598 | 14.260 |
| 3060.8833 | 0.8833 | 3465.282 | 4.496 | 14.260 |
| 3060.9 | 0.9 | 3401.000 | 4.398 | 14.260 |
| 3060.9166 | 0.9166 | 3339.425 | 4.294 | 14.260 |
| 3060.9333 | 0.9333 | 3279.689 | 4.202 | 14.260 |
| 3060.95 | 0.95 | 3222.053 | 4.107 | 14.260 |
| 3060.9666 | 0.9666 | 3166.736 | 4.012 | 14.260 |
| 3060.9833 | 0.9833 | 3112.970 | 3.93 | 14.260 |
| 3061 | 1 | 3061.000 | 3.838 | 14.260 |
| 3061.2 | 1.2 | 2551.000 | 2.866 | 14.260 |
| 3061.4 | 1.4 | 2186.714 | 2.16 | 14.260 |
| 3061.6 | 1.6 | 1913.500 | 1.643 | 14.260 |
| 3061.8 | 1.8 | 1701.000 | 1.276 | 14.260 |
| 3062 | 2 | 1531.000 | 1 | 14.261 |
| 3062.2 | 2.2 | 1391.909 | 0.801 | 14.261 |
| 3062.4 | 2.4 | 1276.000 | 0.652 | 14.261 |
| 3062.6 | 2.6 | 1177.923 | 0.541 | 14.261 |
| 3062.8 | 2.8 | 1093.857 | 0.461 | 14.261 |
| 3063 | 3 | 1021.000 | 0.404 | 14.261 |
| 3063.2 | 3.2 | 957.250 | 0.36 | 14.261 |
| 3063.4 | 3.4 | 901.000 | 0.328 | 14.261 |
| 3063.6 | 3.6 | 851.000 | 0.306 | 14.261 |
| 3063.8 | 3.8 | 806.263 | 0.284 | 14.261 |

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

| Time ***t*** since pump started (minutes) | Time ***t'*** since pump stopped (minutes) | Ratio **t/t'** | Residual Drawdown ***s'*** | Drawdown ***s*** from extended pumping curve |
|---|---|---|---|---|
| 3064 | 4 | 766.000 | 0.271 | 14.261 |
| 3064.2 | 4.2 | 729.571 | 0.259 | 14.261 |
| 3064.4 | 4.4 | 696.455 | 0.249 | 14.261 |
| 3064.6 | 4.6 | 666.217 | 0.236 | 14.261 |
| 3064.8 | 4.8 | 638.500 | 0.227 | 14.261 |
| 3065 | 5 | 613.000 | 0.224 | 14.261 |
| 3065.2 | 5.2 | 589.462 | 0.211 | 14.261 |
| 3065.4 | 5.4 | 567.667 | 0.208 | 14.261 |
| 3065.6 | 5.6 | 547.429 | 0.201 | 14.261 |
| 3065.8 | 5.8 | 528.586 | 0.198 | 14.261 |
| 3066 | 6 | 511.000 | 0.192 | 14.262 |
| 3066.2 | 6.2 | 494.548 | 0.182 | 14.262 |
| 3066.4 | 6.4 | 479.125 | 0.179 | 14.262 |
| 3066.6 | 6.6 | 464.636 | 0.173 | 14.262 |
| 3066.8 | 6.8 | 451.000 | 0.167 | 14.262 |
| 3067 | 7 | 438.143 | 0.163 | 14.262 |
| 3067.2 | 7.2 | 426.000 | 0.16 | 14.262 |
| 3067.4 | 7.4 | 414.514 | 0.154 | 14.262 |
| 3067.6 | 7.6 | 403.632 | 0.154 | 14.262 |
| 3067.8 | 7.8 | 393.308 | 0.148 | 14.262 |
| 3068 | 8 | 383.500 | 0.148 | 14.262 |
| 3068.2 | 8.2 | 374.171 | 0.144 | 14.262 |
| 3068.4 | 8.4 | 365.286 | 0.151 | 14.262 |
| 3068.6 | 8.6 | 356.814 | 0.144 | 14.262 |
| 3068.8 | 8.8 | 348.727 | 0.144 | 14.262 |
| 3069 | 9 | 341.000 | 0.141 | 14.262 |
| 3069.2 | 9.2 | 333.609 | 0.138 | 14.262 |
| 3069.4 | 9.4 | 326.532 | 0.135 | 14.262 |
| 3069.6 | 9.6 | 319.750 | 0.135 | 14.262 |
| 3069.8 | 9.8 | 313.245 | 0.135 | 14.262 |
| 3070 | 10 | 307.000 | 0.132 | 14.263 |
| 3072 | 12 | 256.000 | 0.122 | 14.263 |
| 3074 | 14 | 219.571 | 0.116 | 14.264 |
| 3076 | 16 | 192.250 | 0.113 | 14.264 |
| 3078 | 18 | 171.000 | 0.11 | 14.265 |
| 3080 | 20 | 154.000 | 0.11 | 14.265 |
| 3082 | 22 | 140.091 | 0.106 | 14.266 |
| 3084 | 24 | 128.500 | 0.106 | 14.266 |
| 3086 | 26 | 118.692 | 0.103 | 14.267 |
| 3088 | 28 | 110.286 | 0.1 | 14.267 |
| 3090 | 30 | 103.000 | 0.1 | 14.268 |
| 3092 | 32 | 96.625 | 0.1 | 14.268 |
| 3094 | 34 | 91.000 | 0.097 | 14.269 |
| 3096 | 36 | 86.000 | 0.097 | 14.269 |
| 3098 | 38 | 81.526 | 0.097 | 14.270 |
| 3100 | 40 | 77.500 | 0.094 | 14.270 |
| 3102 | 42 | 73.857 | 0.094 | 14.271 |
| 3104 | 44 | 70.545 | 0.094 | 14.271 |

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

| Time ***t*** since pump started (minutes) | Time ***t'*** since pump stopped (minutes) | Ratio **t/t'** | Residual Drawdown ***s'*** | Drawdown ***s*** from extended pumping curve |
|---|---|---|---|---|
| 3106 | 46 | 67.522 | 0.094 | 14.272 |
| 3108 | 48 | 64.750 | 0.094 | 14.272 |
| 3110 | 50 | 62.200 | 0.091 | 14.273 |
| 3112 | 52 | 59.846 | 0.091 | 14.273 |
| 3114 | 54 | 57.667 | 0.091 | 14.274 |
| 3116 | 56 | 55.643 | 0.091 | 14.274 |
| 3118 | 58 | 53.759 | 0.087 | 14.275 |
| 3120 | 60 | 52.000 | 0.087 | 14.275 |
| 3122 | 62 | 50.355 | 0.087 | 14.276 |
| 3124 | 64 | 48.813 | 0.087 | 14.276 |
| 3126 | 66 | 47.364 | 0.084 | 14.277 |
| 3128 | 68 | 46.000 | 0.087 | 14.277 |
| 3130 | 70 | 44.714 | 0.087 | 14.278 |
| 3132 | 72 | 43.500 | 0.084 | 14.278 |
| 3134 | 74 | 42.351 | 0.084 | 14.279 |
| 3136 | 76 | 41.263 | 0.081 | 14.279 |
| 3138 | 78 | 40.231 | 0.081 | 14.280 |
| 3140 | 80 | 39.250 | 0.081 | 14.280 |
| 3142 | 82 | 38.317 | 0.081 | 14.281 |
| 3144 | 84 | 37.429 | 0.081 | 14.281 |
| 3146 | 86 | 36.581 | 0.081 | 14.282 |
| 3148 | 88 | 35.773 | 0.081 | 14.282 |
| 3150 | 90 | 35.000 | 0.078 | 14.283 |
| 3152 | 92 | 34.261 | 0.081 | 14.283 |
| 3154 | 94 | 33.553 | 0.078 | 14.284 |
| 3156 | 96 | 32.875 | 0.075 | 14.284 |
| 3158 | 98 | 32.224 | 0.075 | 14.285 |
| 3160 | 100 | 31.600 | 0.075 | 14.285 |
| 3170 | 110 | 28.818 | 0.075 | 14.288 |
| 3180 | 120 | 26.500 | 0.071 | 14.290 |
| 3190 | 130 | 24.538 | 0.071 | 14.293 |
| 3200 | 140 | 22.857 | 0.068 | 14.295 |
| 3210 | 150 | 21.400 | 0.065 | 14.298 |
| 3220 | 160 | 20.125 | 0.065 | 14.300 |
| 3230 | 170 | 19.000 | 0.062 | 14.303 |
| 3240 | 180 | 18.000 | 0.059 | 14.305 |
| 3250 | 190 | 17.105 | 0.056 | 14.308 |
| 3260 | 200 | 16.300 | 0.056 | 14.310 |
| 3270 | 210 | 15.571 | 0.052 | 14.313 |
| 3280 | 220 | 14.909 | 0.049 | 14.315 |
| 3290 | 230 | 14.304 | 0.046 | 14.318 |
| 3300 | 240 | 13.750 | 0.043 | 14.320 |
| 3310 | 250 | 13.240 | 0.043 | 14.323 |
| 3320 | 260 | 12.769 | 0.043 | 14.325 |
| 3330 | 270 | 12.333 | 0.04 | 14.328 |
| 3340 | 280 | 11.929 | 0.037 | 14.330 |
| 3350 | 290 | 11.552 | 0.037 | 14.333 |
| 3360 | 300 | 11.200 | 0.033 | 14.335 |

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

| Time ***t*** since pump started (minutes) | Time ***t'*** since pump stopped (minutes) | Ratio **t/t'** | Residual Drawdown ***s'*** | Drawdown ***s*** from extended pumping curve |
|---|---|---|---|---|
| 3370 | 310 | 10.871 | 0.033 | 14.338 |
| 3380 | 320 | 10.563 | 0.033 | 14.340 |
| 3390 | 330 | 10.273 | 0.03 | 14.343 |
| 3400 | 340 | 10.000 | 0.03 | 14.345 |
| 3410 | 350 | 9.743 | 0.03 | 14.348 |
| 3420 | 360 | 9.500 | 0.03 | 14.350 |
| 3430 | 370 | 9.270 | 0.03 | 14.353 |
| 3440 | 380 | 9.053 | 0.03 | 14.355 |
| 3450 | 390 | 8.846 | 0.03 | 14.358 |
| 3460 | 400 | 8.650 | 0.03 | 14.360 |
| 3470 | 410 | 8.463 | 0.03 | 14.363 |
| 3480 | 420 | 8.286 | 0.03 | 14.365 |
| 3490 | 430 | 8.116 | 0.03 | 14.368 |
| 3500 | 440 | 7.955 | 0.03 | 14.370 |
| 3510 | 450 | 7.800 | 0.03 | 14.373 |
| 3520 | 460 | 7.652 | 0.033 | 14.375 |
| 3530 | 470 | 7.511 | 0.033 | 14.378 |
| 3540 | 480 | 7.375 | 0.033 | 14.380 |
| 3550 | 490 | 7.245 | 0.033 | 14.383 |
| 3560 | 500 | 7.120 | 0.033 | 14.385 |
| 3570 | 510 | 7.000 | 0.037 | 14.388 |
| 3580 | 520 | 6.885 | 0.037 | 14.390 |
| 3590 | 530 | 6.774 | 0.037 | 14.393 |
| 3600 | 540 | 6.667 | 0.037 | 14.395 |
| 3610 | 550 | 6.564 | 0.037 | 14.398 |
| 3620 | 560 | 6.464 | 0.04 | 14.400 |
| 3630 | 570 | 6.368 | 0.04 | 14.403 |
| 3640 | 580 | 6.276 | 0.04 | 14.405 |
| 3650 | 590 | 6.186 | 0.043 | 14.408 |
| 3660 | 600 | 6.100 | 0.046 | 14.410 |
| 3670 | 610 | 6.016 | 0.046 | 14.413 |
| 3680 | 620 | 5.935 | 0.046 | 14.415 |
| 3690 | 630 | 5.857 | 0.046 | 14.418 |
| 3700 | 640 | 5.781 | 0.046 | 14.420 |
| 3710 | 650 | 5.708 | 0.049 | 14.423 |
| 3720 | 660 | 5.636 | 0.049 | 14.425 |
| 3730 | 670 | 5.567 | 0.052 | 14.428 |
| 3740 | 680 | 5.500 | 0.049 | 14.430 |
| 3750 | 690 | 5.435 | 0.052 | 14.433 |
| 3760 | 700 | 5.371 | 0.052 | 14.435 |
| 3770 | 710 | 5.310 | 0.052 | 14.438 |
| 3780 | 720 | 5.250 | 0.056 | 14.440 |
| 3790 | 730 | 5.192 | 0.056 | 14.443 |
| 3800 | 740 | 5.135 | 0.056 | 14.445 |
| 3810 | 750 | 5.080 | 0.056 | 14.448 |
| 3820 | 760 | 5.026 | 0.056 | 14.450 |
| 3830 | 770 | 4.974 | 0.059 | 14.453 |
| 3840 | 780 | 4.923 | 0.059 | 14.455 |

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

| Time ***t*** since pump started (minutes) | Time ***t'*** since pump stopped (minutes) | Ratio **t/t'** | Residual Drawdown ***s'*** | Drawdown ***s*** from extended pumping curve |
|---|---|---|---|---|
| 3850 | 790 | 4.873 | 0.059 | 14.458 |
| 3860 | 800 | 4.825 | 0.059 | 14.460 |
| 3870 | 810 | 4.778 | 0.059 | 14.463 |
| 3880 | 820 | 4.732 | 0.059 | 14.465 |
| 3890 | 830 | 4.687 | 0.059 | 14.468 |
| 3900 | 840 | 4.643 | 0.059 | 14.470 |
| 3910 | 850 | 4.600 | 0.059 | 14.473 |
| 3920 | 860 | 4.558 | 0.056 | 14.475 |
| 3930 | 870 | 4.517 | 0.059 | 14.478 |
| 3940 | 880 | 4.477 | 0.056 | 14.480 |
| 3950 | 890 | 4.438 | 0.056 | 14.483 |
| 3960 | 900 | 4.400 | 0.052 | 14.485 |
| 3970 | 910 | 4.363 | 0.052 | 14.488 |
| 3980 | 920 | 4.326 | 0.052 | 14.490 |
| 3990 | 930 | 4.290 | 0.049 | 14.493 |
| 4000 | 940 | 4.255 | 0.049 | 14.495 |
| 4010 | 950 | 4.221 | 0.049 | 14.498 |
| 4020 | 960 | 4.188 | 0.046 | 14.500 |
| 4030 | 970 | 4.155 | 0.043 | 14.503 |
| 4040 | 980 | 4.122 | 0.043 | 14.505 |
| 4050 | 990 | 4.091 | 0.043 | 14.508 |
| 4060 | 1000 | 4.060 | 0.04 | 14.510 |
| 4070 | 1010 | 4.030 | 0.04 | 14.513 |
| 4080 | 1020 | 4.000 | 0.037 | 14.515 |
| 4090 | 1030 | 3.971 | 0.037 | 14.518 |
| 4100 | 1040 | 3.942 | 0.037 | 14.520 |
| 4110 | 1050 | 3.914 | 0.037 | 14.523 |
| 4120 | 1060 | 3.887 | 0.033 | 14.525 |
| 4130 | 1070 | 3.860 | 0.037 | 14.528 |
| 4140 | 1080 | 3.833 | 0.033 | 14.530 |
| 4150 | 1090 | 3.807 | 0.033 | 14.533 |
| 4160 | 1100 | 3.782 | 0.033 | 14.535 |
| 4170 | 1110 | 3.757 | 0.033 | 14.538 |
| 4180 | 1120 | 3.732 | 0.03 | 14.540 |
| 4190 | 1130 | 3.708 | 0.033 | 14.543 |
| 4200 | 1140 | 3.684 | 0.033 | 14.545 |
| 4210 | 1150 | 3.661 | 0.033 | 14.548 |
| 4220 | 1160 | 3.638 | 0.033 | 14.550 |
| 4230 | 1170 | 3.615 | 0.033 | 14.553 |
| 4240 | 1180 | 3.593 | 0.033 | 14.555 |
| 4250 | 1190 | 3.571 | 0.037 | 14.558 |
| 4260 | 1200 | 3.550 | 0.037 | 14.560 |
| 4270 | 1210 | 3.529 | 0.04 | 14.563 |
| 4280 | 1220 | 3.508 | 0.04 | 14.565 |
| 4290 | 1230 | 3.488 | 0.04 | 14.568 |
| 4300 | 1240 | 3.468 | 0.04 | 14.570 |
| 4310 | 1250 | 3.448 | 0.043 | 14.573 |
| 4320 | 1260 | 3.429 | 0.043 | 14.575 |

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

| Time ***t*** since pump started (minutes) | Time ***t'*** since pump stopped (minutes) | Ratio ***t/t'*** | Residual Drawdown ***s'*** | Drawdown ***s*** from extended pumping curve |
|---|---|---|---|---|
| 4330 | 1270 | 3.409 | 0.043 | 14.578 |
| 4340 | 1280 | 3.391 | 0.043 | 14.580 |
| 4350 | 1290 | 3.372 | 0.043 | 14.583 |
| 4360 | 1300 | 3.354 | 0.049 | 14.585 |
| 4370 | 1310 | 3.336 | 0.046 | 14.588 |
| 4380 | 1320 | 3.318 | 0.049 | 14.590 |
| 4390 | 1330 | 3.301 | 0.049 | 14.593 |
| 4400 | 1340 | 3.284 | 0.049 | 14.595 |
| 4410 | 1350 | 3.267 | 0.049 | 14.598 |
| 4420 | 1360 | 3.250 | 0.049 | 14.600 |
| 4430 | 1370 | 3.234 | 0.049 | 14.603 |
| 4440 | 1380 | 3.217 | 0.052 | 14.605 |
| 4450 | 1390 | 3.201 | 0.052 | 14.608 |
| 4460 | 1400 | 3.186 | 0.056 | 14.610 |
| 4470 | 1410 | 3.170 | 0.056 | 14.613 |
| 4480 | 1420 | 3.155 | 0.056 | 14.615 |
| 4490 | 1430 | 3.140 | 0.056 | 14.618 |
| 4500 | 1440 | 3.125 | 0.059 | 14.620 |
| 4510 | 1450 | 3.110 | 0.059 | 14.623 |
| 4520 | 1460 | 3.096 | 0.059 | 14.625 |
| 4530 | 1470 | 3.082 | 0.059 | 14.628 |
| 4540 | 1480 | 3.068 | 0.062 | 14.630 |
| 4550 | 1490 | 3.054 | 0.062 | 14.633 |
| 4560 | 1500 | 3.040 | 0.062 | 14.635 |
| 4570 | 1510 | 3.026 | 0.062 | 14.638 |
| 4580 | 1520 | 3.013 | 0.062 | 14.640 |
| 4590 | 1530 | 3.000 | 0.065 | 14.643 |
| 4600 | 1540 | 2.987 | 0.065 | 14.645 |
| 4610 | 1550 | 2.974 | 0.065 | 14.648 |
| 4620 | 1560 | 2.962 | 0.062 | 14.650 |
| 4630 | 1570 | 2.949 | 0.062 | 14.653 |
| 4640 | 1580 | 2.937 | 0.062 | 14.655 |
| 4650 | 1590 | 2.925 | 0.059 | 14.658 |
| 4660 | 1600 | 2.913 | 0.062 | 14.660 |
| 4670 | 1610 | 2.901 | 0.059 | 14.663 |
| 4680 | 1620 | 2.889 | 0.059 | 14.665 |
| 4690 | 1630 | 2.877 | 0.056 | 14.668 |
| 4700 | 1640 | 2.866 | 0.056 | 14.670 |
| 4710 | 1650 | 2.855 | 0.052 | 14.673 |
| 4720 | 1660 | 2.843 | 0.052 | 14.675 |
| 4730 | 1670 | 2.832 | 0.049 | 14.678 |
| 4740 | 1680 | 2.821 | 0.049 | 14.680 |
| 4750 | 1690 | 2.811 | 0.046 | 14.683 |
| 4760 | 1700 | 2.800 | 0.043 | 14.685 |
| 4770 | 1710 | 2.789 | 0.043 | 14.688 |
| 4780 | 1720 | 2.779 | 0.043 | 14.690 |
| 4790 | 1730 | 2.769 | 0.04 | 14.693 |
| 4800 | 1740 | 2.759 | 0.04 | 14.695 |

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

| Time ***t*** since pump started (minutes) | Time ***t'*** since pump stopped (minutes) | Ratio **t/t'** | Residual Drawdown ***s'*** | Drawdown ***s*** from extended pumping curve |
|---|---|---|---|---|
| 4810 | 1750 | 2.749 | 0.037 | 14.698 |
| 4820 | 1760 | 2.739 | 0.037 | 14.700 |
| 4830 | 1770 | 2.729 | 0.033 | 14.703 |
| 4840 | 1780 | 2.719 | 0.033 | 14.705 |
| 4850 | 1790 | 2.709 | 0.033 | 14.708 |
| 4860 | 1800 | 2.700 | 0.03 | 14.710 |
| 4870 | 1810 | 2.691 | 0.03 | 14.713 |
| 4880 | 1820 | 2.681 | 0.03 | 14.715 |
| 4890 | 1830 | 2.672 | 0.027 | 14.718 |
| 4900 | 1840 | 2.663 | 0.027 | 14.720 |
| 4910 | 1850 | 2.654 | 0.024 | 14.723 |
| 4920 | 1860 | 2.645 | 0.027 | 14.725 |
| 4930 | 1870 | 2.636 | 0.027 | 14.728 |
| 4940 | 1880 | 2.628 | 0.027 | 14.730 |
| 4950 | 1890 | 2.619 | 0.03 | 14.733 |
| 4960 | 1900 | 2.611 | 0.03 | 14.735 |
| 4970 | 1910 | 2.602 | 0.03 | 14.738 |
| 4980 | 1920 | 2.594 | 0.03 | 14.740 |
| 4990 | 1930 | 2.585 | 0.03 | 14.743 |
| 5000 | 1940 | 2.577 | 0.03 | 14.745 |
| 5010 | 1950 | 2.569 | 0.033 | 14.748 |
| 5020 | 1960 | 2.561 | 0.03 | 14.750 |
| 5030 | 1970 | 2.553 | 0.033 | 14.753 |
| 5040 | 1980 | 2.545 | 0.033 | 14.755 |
| 5050 | 1990 | 2.538 | 0.037 | 14.758 |
| 5060 | 2000 | 2.530 | 0.037 | 14.760 |
| 5070 | 2010 | 2.522 | 0.037 | 14.763 |
| 5080 | 2020 | 2.515 | 0.037 | 14.765 |
| 5090 | 2030 | 2.507 | 0.04 | 14.768 |
| 5100 | 2040 | 2.500 | 0.04 | 14.770 |
| 5110 | 2050 | 2.493 | 0.04 | 14.773 |
| 5120 | 2060 | 2.485 | 0.043 | 14.775 |
| 5130 | 2070 | 2.478 | 0.043 | 14.778 |
| 5140 | 2080 | 2.471 | 0.043 | 14.780 |
| 5150 | 2090 | 2.464 | 0.046 | 14.783 |
| 5160 | 2100 | 2.457 | 0.046 | 14.785 |
| 5170 | 2110 | 2.450 | 0.049 | 14.788 |
| 5180 | 2120 | 2.443 | 0.049 | 14.790 |
| 5190 | 2130 | 2.437 | 0.052 | 14.793 |
| 5200 | 2140 | 2.430 | 0.052 | 14.795 |
| 5210 | 2150 | 2.423 | 0.052 | 14.798 |
| 5220 | 2160 | 2.417 | 0.056 | 14.800 |
| 5230 | 2170 | 2.410 | 0.056 | 14.803 |
| 5240 | 2180 | 2.404 | 0.056 | 14.805 |
| 5250 | 2190 | 2.397 | 0.059 | 14.808 |
| 5260 | 2200 | 2.391 | 0.059 | 14.810 |
| 5270 | 2210 | 2.385 | 0.059 | 14.813 |
| 5280 | 2220 | 2.378 | 0.062 | 14.815 |

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

| Time ***t*** since pump started (minutes) | Time ***t'*** since pump stopped (minutes) | Ratio **t/t'** | Residual Drawdown ***s'*** | Drawdown ***s*** from extended pumping curve |
|---|---|---|---|---|
| 5290 | 2230 | 2.372 | 0.062 | 14.818 |
| 5300 | 2240 | 2.366 | 0.062 | 14.820 |
| 5310 | 2250 | 2.360 | 0.062 | 14.823 |
| 5320 | 2260 | 2.354 | 0.065 | 14.825 |
| 5330 | 2270 | 2.348 | 0.065 | 14.828 |
| 5340 | 2280 | 2.342 | 0.065 | 14.830 |
| 5350 | 2290 | 2.336 | 0.065 | 14.833 |
| 5360 | 2300 | 2.330 | 0.068 | 14.835 |
| 5370 | 2310 | 2.325 | 0.068 | 14.838 |
| 5380 | 2320 | 2.319 | 0.068 | 14.840 |
| 5390 | 2330 | 2.313 | 0.068 | 14.843 |
| 5400 | 2340 | 2.308 | 0.068 | 14.845 |
| 5410 | 2350 | 2.302 | 0.068 | 14.848 |
| 5420 | 2360 | 2.297 | 0.068 | 14.850 |
| 5430 | 2370 | 2.291 | 0.065 | 14.853 |
| 5440 | 2380 | 2.286 | 0.065 | 14.855 |
| 5450 | 2390 | 2.280 | 0.065 | 14.858 |
| 5460 | 2400 | 2.275 | 0.065 | 14.860 |
| 5470 | 2410 | 2.270 | 0.065 | 14.863 |
| 5480 | 2420 | 2.264 | 0.065 | 14.865 |
| 5490 | 2430 | 2.259 | 0.062 | 14.868 |
| 5500 | 2440 | 2.254 | 0.062 | 14.870 |
| 5510 | 2450 | 2.249 | 0.062 | 14.873 |
| 5520 | 2460 | 2.244 | 0.062 | 14.875 |
| 5530 | 2470 | 2.239 | 0.059 | 14.878 |
| 5540 | 2480 | 2.234 | 0.059 | 14.880 |
| 5550 | 2490 | 2.229 | 0.059 | 14.883 |
| 5560 | 2500 | 2.224 | 0.059 | 14.885 |
| 5570 | 2510 | 2.219 | 0.056 | 14.888 |
| 5580 | 2520 | 2.214 | 0.056 | 14.890 |
| 5590 | 2530 | 2.209 | 0.056 | 14.893 |
| 5600 | 2540 | 2.205 | 0.056 | 14.895 |
| 5610 | 2550 | 2.200 | 0.056 | 14.898 |
| 5620 | 2560 | 2.195 | 0.056 | 14.900 |
| 5630 | 2570 | 2.191 | 0.049 | 14.903 |
| 5640 | 2580 | 2.186 | 0.049 | 14.905 |
| 5650 | 2590 | 2.181 | 0.052 | 14.908 |
| 5660 | 2600 | 2.177 | 0.052 | 14.910 |
| 5670 | 2610 | 2.172 | 0.049 | 14.913 |
| 5680 | 2620 | 2.168 | 0.049 | 14.915 |
| 5690 | 2630 | 2.163 | 0.052 | 14.918 |
| 5700 | 2640 | 2.159 | 0.052 | 14.920 |
| 5710 | 2650 | 2.155 | 0.052 | 14.923 |
| 5720 | 2660 | 2.150 | 0.052 | 14.925 |
| 5730 | 2670 | 2.146 | 0.052 | 14.928 |
| 5740 | 2680 | 2.142 | 0.052 | 14.930 |
| 5750 | 2690 | 2.138 | 0.052 | 14.933 |
| 5760 | 2700 | 2.133 | 0.052 | 14.935 |

EW-99-01 Constant Rate Pumping Test
Residual Drawdown and Recovery
Theis Recovery Method

| Time ***t*** since pump started (minutes) | Time ***t'*** since pump stopped (minutes) | Ratio **t/t'** | Residual Drawdown ***s'*** | Drawdown ***s*** from extended pumping curve |
|---|---|---|---|---|
| 5770 | 2710 | 2.129 | 0.056 | 14.938 |
| 5780 | 2720 | 2.125 | 0.056 | 14.940 |
| 5790 | 2730 | 2.121 | 0.056 | 14.943 |
| 5800 | 2740 | 2.117 | 0.059 | 14.945 |
| 5810 | 2750 | 2.113 | 0.059 | 14.948 |
| 5820 | 2760 | 2.109 | 0.059 | 14.950 |
| 5830 | 2770 | 2.105 | 0.059 | 14.953 |
| 5840 | 2780 | 2.101 | 0.062 | 14.955 |
| 5850 | 2790 | 2.097 | 0.062 | 14.958 |
| 5860 | 2800 | 2.093 | 0.065 | 14.960 |
| 5870 | 2810 | 2.089 | 0.068 | 14.963 |
| 5880 | 2820 | 2.085 | 0.068 | 14.965 |
| 5890 | 2830 | 2.081 | 0.068 | 14.968 |
| 5900 | 2840 | 2.077 | 0.071 | 14.970 |
| 5910 | 2850 | 2.074 | 0.068 | 14.973 |
| 5920 | 2860 | 2.070 | 0.071 | 14.975 |
| 5930 | 2870 | 2.066 | 0.071 | 14.978 |
| 5940 | 2880 | 2.063 | 0.071 | 14.980 |
| 5950 | 2890 | 2.059 | 0.075 | 14.983 |
| 5960 | 2900 | 2.055 | 0.075 | 14.985 |
| 5970 | 2910 | 2.052 | 0.075 | 14.988 |
| 5980 | 2920 | 2.048 | 0.075 | 14.990 |
| 5990 | 2930 | 2.044 | 0.075 | 14.993 |
| 6000 | 2940 | 2.041 | 0.078 | 14.995 |
| 6010 | 2950 | 2.037 | 0.078 | 14.998 |
| 6020 | 2960 | 2.034 | 0.078 | 15.000 |
| 6030 | 2970 | 2.030 | 0.078 | 15.003 |
| 6040 | 2980 | 2.027 | 0.081 | 15.005 |
| 6050 | 2990 | 2.023 | 0.081 | 15.008 |
| 6060 | 3000 | 2.020 | 0.081 | 15.010 |
| 6070 | 3010 | 2.017 | 0.081 | 15.013 |
| 6080 | 3020 | 2.013 | 0.081 | 15.015 |
| 6090 | 3030 | 2.010 | 0.081 | 15.018 |
| 6100 | 3040 | 2.007 | 0.081 | 15.020 |
| 6110 | 3050 | 2.003 | 0.081 | 15.023 |
| 6120 | 3060 | 2.000 | 0.081 | 15.025 |

# SURVEY DATA

**TABLE K-1**
**SURVEY DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | EASTING | NORTHING | GROUND SURFACE ELEVATION (ft,MSL) | CASING ELEVATION (ft,MSL) | REF_ELEV |
|---|---|---|---|---|---|
| C-1 | 897103.9095 | 623200.2768 | | | |
| C-10 | 897101.5458 | 623145.7723 | | | |
| C-11 | 897086.4209 | 623132.8712 | | | |
| C-12 | 897129.5096 | 623142.1208 | | | |
| C-13 | 897115.5136 | 623129.8204 | | | |
| C-14 | 897099.9345 | 623116.75 | | | |
| C-15 | 897140.8827 | 623125.9044 | | | |
| C-16 | 897127.5237 | 623114.9326 | | | |
| C-17 | 897112.2923 | 623101.9709 | | | |
| C-18 | 897156.1141 | 623138.8661 | | | |
| C-19 | 897169.0758 | 623123.6347 | | | |
| C-2 | 897088.6781 | 623187.3151 | | | |
| C-20 | 897153.8444 | 623110.6731 | | | |
| C-21 | 897140.4854 | 623099.7012 | | | |
| C-22 | 897125.254 | 623086.7395 | | | |
| C-23 | 897182.0374 | 623108.4033 | | | |
| C-24 | 897167.6026 | 623092.6054 | | | |
| C-25 | 897153.4471 | 623084.4698 | | | |
| C-26 | 897138.2157 | 623071.5081 | | | |
| C-27 | 897108.2875 | 623151.4283 | | | |
| C-28 | 897088.7281 | 623166.7024 | | | |
| C-29 | 897104.9663 | 623160.3123 | | | |
| C-3 | 897075.745 | 623176.2816 | | | |
| C-30 | 897092.9287 | 623176.0994 | | | |
| C-4 | 897060.3231 | 623163.2176 | | | |
| C-5 | 897116.8712 | 623185.0454 | | | |
| C-6 | 897106.9273 | 623170.3971 | | | |
| C-7 | 897088.7267 | 623161.067 | | | |
| C-8 | 897073.4593 | 623148.1026 | | | |
| C-9 | 897129.8329 | 623169.814 | | | |
| DP21 | 896898.89 | 623908.46 | 6.35 | | |
| DP22 | 897307.32 | 623607.11 | 6.42 | | |
| DP23 | 897649.48 | 623518.96 | 6.89 | | |
| DP24 | 898228.08 | 623362.65 | 7.38 | | |
| DP26 | 898161 | 623216.72 | 7.28 | | |
| DP27 | 897921.06 | 623315.04 | 7.68 | | |
| DP28 | 897929.17 | 623405.13 | 7.06 | | |
| DP29 | 898452.46 | 623217.41 | 8.45 | | |
| DP31 | 896737.4 | 622639.64 | 7.2 | | |
| DP32 | 896529.79 | 622467.86 | 6.16 | | |
| DP33 | 896413.43 | 622364.34 | 6.34 | | |
| DP34 | 896318 | 622279.77 | 6.62 | | |
| DP35 | 896400.4 | 622687.92 | 6.58 | | |
| DP36 | 896527.8 | 622863.82 | 7.46 | | |
| DP51 | 897599.89 | 623068.69 | 8.21 | | |
| DP510 | 897577.32 | 622831.24 | 8.25 | | |
| DP511 | 897514.65 | 622750.25 | 7.98 | | |
| DP52 | 897647.61 | 623158.61 | 8.15 | | |
| DP53 | 897693.79 | 623115.63 | 7.9 | | |
| DP54 | 897775.38 | 623019.67 | 7.93 | | |
| DP55 | 897826.74 | 622956.4 | 7.89 | | |

**TABLE K-1**
**SURVEY DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | EASTING | NORTHING | GROUND SURFACE ELEVATION (ft,MSL) | CASING ELEVATION (ft,MSL) | REF_ELEV |
|---|---|---|---|---|---|
| DP56 | 897703.36 | 622865.13 | 7.99 | | |
| DP57 | 897586.77 | 622856.38 | 7.95 | | |
| DP58 | 897612.36 | 622805.48 | 8.03 | | |
| DP59 | 897562.42 | 622797.9 | 8.09 | | |
| DP61 | 897866.39 | 622692.98 | 6.37 | | |
| DP62 | 897542.08 | 622599.45 | 7.54 | | |
| DP63 | 897931.29 | 622915.62 | 7.51 | | |
| DP64 | 898072.54 | 623012.18 | 7.7 | | |
| ECD-4 | 897242.87 | 623077.06 | 8.08 | 8.11 | 8.03 |
| EW-99-01 | 897089.07 | 623113.78 | 8 | 0 | 0 |
| LW-10D | 898129.42 | 622713.18 | 7.37 | 9.9 | 9.8 |
| LW-10I | 898121.56 | 622707.05 | 7.35 | 9.66 | 9.48 |
| LW-10S | 898130.51 | 622723.8 | 7.34 | 9.61 | 9.3 |
| LW-11 | 898327.68 | 621909.07 | 7.37 | 8.51 | 8.28 |
| LW-12 | 897503.06 | 622580.77 | 7.8 | 9.29 | 8.84 |
| LW-13 | 897911.82 | 621996.64 | 7.23 | | 6.85 |
| LW-1S | 898439.1 | 622516.32 | 6.88 | 8.75 | 8.37 |
| LW-1SI | 898443.58 | 622519.67 | 6.6 | 8.23 | 8.13 |
| LW-2 | 898359.45 | 622474.19 | 5.8 | 7.81 | 7.63 |
| LW-2S | 898359.77 | 622474.28 | 5.99 | 7.84 | 7.65 |
| LW-3S | 898290.54 | 622433.56 | 5.36 | 8.06 | 8.03 |
| LW-3SI | 898286.22 | 622429.93 | 5.35 | 7.55 | 7.16 |
| LW-4 | 897846.8 | 622400.87 | 8.35 | 9.63 | 9.63 |
| LW-5D | 898177.47 | 622164.34 | 5.61 | 7.99 | 7.89 |
| LW-5DI | 898172.66 | 622172.44 | 5.62 | 7.5 | 7.38 |
| LW-5S | 898182.13 | 622172.68 | 4.99 | 7.37 | 7.14 |
| LW-5SI | 898179.56 | 622178.84 | 4.85 | 7.17 | 7.14 |
| LW-6 | 897405.16 | 622086.81 | 6.88 | 9.59 | 9.25 |
| LW-7 | 897186.22 | 622306.46 | 7.26 | 9.8 | 9.58 |
| LW-8 | 898561.07 | 622778.51 | 4.41 | 9.69 | 9.48 |
| LW-9D | 898873.96 | 622325.24 | 8.74 | 11.56 | 11.25 |
| LW-9I | 898862.7 | 622328.93 | 8.49 | 10.64 | 10.45 |
| LW-9S | 898870.68 | 622324.07 | 8.59 | 10.6 | 10.45 |
| MW-1 | 897975.6 | 623284.99 | 7.64 | 7.64 | 7.42 |
| MW-2 | 897828.1 | 623326.41 | 7.14 | 7.14 | 7.05 |
| MW-3 | 897866.45 | 623428.81 | 6.66 | 6.66 | |
| MW-4 | 897962.74 | 623429.78 | 13.58 | 13.58 | 13.29 |
| MWCD-99-01A | 897891.74 | 623755.52 | 6 | 8.37 | 7.95 |
| MWCD-99-01B | 897893.68 | 623750.98 | 6 | 8.54 | 8.14 |
| MWCD-99-02A | 898187.48 | 624162.44 | 8.2 | 10.84 | 10.47 |
| MWCD-99-02B | 898188.42 | 624167.56 | 8.2 | 10.73 | 10.33 |
| MWCR-99-01 | 897094.35 | 623116.65 | 8.1 | 8.05 | 9.28 |
| MWCR-99-02 | 897132.32 | 623110.38 | 8 | 8.02 | 9.25 |
| OF-001 | 896649 | 624076.21 | | | |
| OF-002 | 897104.89 | 623780.06 | | | |
| OF-003 | 897119.04 | 623771.89 | | | |
| OF-004 | 897294.36 | 623705.89 | | | |
| OF-005 | 897892.29 | 623518.1 | | | |
| OF-006 | 898068.82 | 623442.26 | | | |
| OF-007 | 897244.67 | 623707.35 | | | |
| OF-008 | 898108.32 | 622280.17 | | | |

**TABLE K-1**
**SURVEY DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | EASTING | NORTHING | GROUND SURFACE ELEVATION (ft,MSL) | CASING ELEVATION (ft,MSL) | REF_ELEV |
|---|---|---|---|---|---|
| PZ-11D | 896592.8 | 622966.46 | | 7.73 | 7.01 |
| PZ-13D | 897755.69 | 623177.74 | | 7.42 | 6.81 |
| PZ-16D | 896826.33 | 623651.08 | 7.3 | 7.31 | 6.59 |
| PZ-17D | 896301.31 | 623829.98 | | 6.33 | 5.58 |
| PZ-1D | 898313.5 | 623355.95 | 7.94 | 7.98 | 7.25 |
| PZ-4D | 897328.79 | 623597.84 | | 5.93 | 5.08 |
| PZ-5D | 897021.38 | 623753.54 | | 5.98 | 5.14 |
| PZ-7D | 896539.38 | 623993.74 | | 6.72 | 6.54 |
| PZ-8D | 897334.29 | 623369.54 | 7.43 | 7.49 | 6.79 |
| PZ-99-01 | 897146.6 | 623080.58 | 8 | | |
| PZ-99-01A | 897146.6 | 623080.58 | 8 | 8.01 | 7.78 |
| PZ-99-01B | 897146.6 | 623080.58 | 8 | 8.01 | 7.83 |
| PZ-99-01C | 897146.6 | 623080.58 | 8 | 8.01 | 7.78 |
| PZ-99-01I | 897093.76 | 623114.94 | 8 | 8.03 | 8.39 |
| PZ-99-02 | 897125.88 | 623220.97 | 7.6 | | |
| PZ-99-02A | 897125.88 | 623220.97 | 7.6 | 7.56 | 7.36 |
| PZ-99-02B | 897125.88 | 623220.97 | 7.6 | 7.56 | 7.37 |
| PZ-99-02C | 897125.88 | 623220.97 | 7.6 | 7.56 | 7.38 |
| PZ-99-03 | 897012.48 | 623323.94 | 7.6 | 7.63 | 7.35 |
| PZ-99-04I | 897246.07 | 623078.64 | 7.9 | 7.88 | 7.5 |
| PZ-99-08I | 897095.79 | 623178.47 | 8 | 8.04 | 11.22 |
| PZ-99-12I | 897050.96 | 623330.23 | 8.2 | 8.17 | 7.7 |
| PZ-9D | 896104.29 | 623552.5 | | 8.64 | 7.67 |
| PZ-PILOT-01 | 897097.3125 | 623167.8469 | | | |
| PZ-PILOT-02 | 897099.5844 | 623173.3042 | | | |
| PZ-PILOT-03 | 897100.5183 | 63175.5313 | | | |
| PZ-PILOT-04 | 897102.2664 | 623180.2975 | | | |
| PZ-PILOT-05 | 897104.04 | 623184.9723 | | | |
| SG-99-01 | 896465.86 | 623540.92 | | | |
| SG-99-02 | 896307.34 | 623541.8 | | | |
| SG-99-03 | 896714.86 | 623636.65 | | | |
| SG-99-04 | 896650.25 | 623356.9 | | | |
| SG-99-05 | 896542 | 623197.3 | | | |
| SG-99-06 | 896665.29 | 623161.65 | | | |
| SG-99-07 | 896785.67 | 623189.97 | | | |
| SG-99-08 | 896940.24 | 622932.04 | | | |
| SG-99-09 | 896713.68 | 623276.21 | | | |
| SG-99-10 | 896889.86 | 623284.63 | | | |
| SG-99-11 | 896908.68 | 622763.65 | | | |
| SG-99-12 | 897078.33 | 623040.15 | | | |
| SG-99-13 | 896743.07 | 623430.73 | | | |
| SG-99-14 | 896949.9 | 623587.31 | | | |
| SG-99-15 | 897097.57 | 623638.59 | | | |
| SG-99-16 | 897352.48 | 623173.36 | | | |
| SG-99-17 | 897382.05 | 623259.29 | | | |
| SG-99-18 | 897257.58 | 623331.89 | | | |
| SG-99-19 | 897102.3 | 623139.89 | | | |
| SG-99-20 | 897147.76 | 623083.97 | | | |
| SG-99-21 | 897745.88 | 623287.15 | | | |
| SG-99-22 | 897775.19 | 623151.15 | | | |
| SG-99-23 | 897694.39 | 623120.7 | | | |

**TABLE K-1**
**SURVEY DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | EASTING | NORTHING | GROUND SURFACE ELEVATION (ft,MSL) | CASING ELEVATION (ft,MSL) | REF_ELEV |
|---|---|---|---|---|---|
| SG-99-24 | 897472.74 | 622992.38 | | | |
| SG-99-25 | 897316.45 | 623464.69 | | | |
| SG-99-26 | 897449.84 | 623367.59 | | | |
| SG-99-27 | 897116.5398 | 623536.1092 | | | |
| SG-99-28 | 898166.47 | 623231.73 | | | |
| SG-99-29 | 897052.25 | 623328.75 | | | |
| SG-99-30 | 896879.01 | 623660.26 | | | |
| SG-99-31 | 897058.9 | 622891.04 | | | |
| SG-99-32 | 897386.18 | 623508.01 | | | |
| SG-99-33 | 896979.49 | 623544.72 | | | |
| SG-99-34 | 897611.2605 | 623421.9056 | | | |
| SG-99-35 | 897344.9 | 622899.09 | | | |
| SG-99-36 | 897558.96 | 623124.8 | | | |
| SG-99-37 | 897654.3 | 622908.01 | | | |
| SG-99-38 | 897826.52 | 623239.67 | | | |
| SG-99-39 | 897996.9637 | 623100.9595 | | | |
| SG-99-40 | 896961.62 | 623421.99 | | | |
| SG-99-41 | 897026.99 | 623453.28 | | | |
| SG-99-42 | 896501.9417 | 623904.0212 | | | |
| SG-99-43 | 896405.7279 | 623809.4898 | | | |
| SG-99-44 | 896208.823 | 623647.2318 | | | |
| SG-99-45 | 896694.33 | 623955.42 | | | |
| SG-99-46 | 896805.97 | 623896.46 | | | |
| SG-99-47 | 896911.58 | 623680.36 | | | |
| SG-99-48 | 897496.22 | 623279.92 | | | |
| SG-99-49 | 897163.71 | 623314.24 | | | |
| SG-99-50 | 897123.1713 | 623358.6545 | | | |
| SG-99-51 | 897104.1028 | 622716.7974 | | | |
| SG-99-52 | 898361.82 | 623305.53 | | | |
| SP-98-01 | 897104.41 | 623190.9 | | | |
| SP-98-02 | 897107.67 | 623144.93 | | | |
| SP-98-03 | 897150.8 | 623074.38 | | | |
| SP-98-04 | 897155.5 | 623130.42 | | | |
| SP-98-05 | 897060.41 | 623156.79 | | | |
| SP-98-06 | 897203.09 | 623040.14 | | | |
| SP-99-01 | 897047.37 | 623142.62 | | | |
| SP-99-02 | 897078.66 | 623107.18 | | | |
| SP-99-03 | 897114.99 | 623060.8 | | | |
| SP-99-04 | 897141.79 | 623026.91 | | | |
| SP-99-05 | 897186.26 | 623023.62 | | | |
| SP-99-07 | 897094.82 | 623115.61 | | | |
| SP-99-08 | 897176.73 | 623059.62 | | | |
| SP-99-09 | 897132.25 | 623110.39 | | | |
| SP-99-11 | 897047.62 | 623181.41 | | | |
| SP-99-12 | 897067.65 | 623176.32 | | | |
| SP-99-13 | 897082.87 | 623189.01 | | | |
| SP-99-14 | 897099.26 | 623200.13 | | | |
| SP-99-17 | 897129.16 | 623180.01 | | | |
| SP-99-18 | 897150.19 | 623150.48 | | | |
| SP-99-19 | 897162.78 | 623135.47 | | | |
| SP-99-20 | 897188.01 | 623135.06 | | | |

**TABLE K-1**
**SURVEY DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | EASTING | NORTHING | GROUND SURFACE ELEVATION (ft,MSL) | CASING ELEVATION (ft,MSL) | REF_ELEV |
|---|---|---|---|---|---|
| WC-10S | 896842.24 | 623520.35 | | 7.47 | 6.95 |
| WC-11S | 896590.17 | 622969.49 | | 7.74 | 7.24 |
| WC1-1S | 895884.72 | 623902.31 | | 8.04 | 7.81 |
| WC-12S | 897056.88 | 623329.68 | | 8.28 | 7.67 |
| WC-13S | 897753.95 | 623179.53 | | 7.44 | 6.74 |
| WC-14S | 897992.27 | 622946.41 | | 7.73 | 7.1 |
| WC-15S | 898292.51 | 622987.86 | 7.62 | 7.72 | 7.01 |
| WC-18D1 | 895948.31 | 624041.8 | 7.6 | 7.64 | 7.38 |
| WC-18S | 895954.03 | 624046.06 | 7.6 | 7.69 | 7.39 |
| WC-19D1 | 896210.8 | 622445.37 | 6.77 | 6.77 | 6.22 |
| WC-19S | 896206.75 | 622441.63 | 6.97 | | 6.65 |
| WC-1S | 898309.21 | 623356.61 | 7.9 | 7.96 | 7.33 |
| WC-20D1 | 896051.45 | 623351.87 | 8 | 7.92 | 7.5 |
| WC-20D2 | 896056.43 | 623357.05 | 8 | 7.92 | 7.65 |
| WC-20S | 896048.2 | 623348.37 | 8 | 7.89 | 7.46 |
| WC2-1D | 896765.59 | 623986.28 | 6.69 | | 6.43 |
| WC-21D1 | 895766.32 | 623038.38 | 7.5 | 7.63 | 7.28 |
| WC-21D2 | 895768.65 | 623040.7 | 7.5 | 7.65 | 7.29 |
| WC2-1I | 896770.52 | 623976.38 | 6.83 | | 6.66 |
| WC-21S | 895763.27 | 623034.93 | 7.5 | 7.62 | 7.19 |
| WC2-1S | 896856.84 | 623874.02 | 6.27 | | 6.03 |
| WC2-2D | 898301.18 | 623355.38 | 7.78 | | 7.49 |
| WC2-2I | 897548.2 | 623548.68 | 7.47 | | 6.97 |
| WC2-3D | 897343.96 | 623378.07 | 7.73 | | 7.48 |
| WC2-3I | 897711.02 | 623497.65 | 6.17 | | 5.99 |
| WC2-3S | 897540.14 | 623550.59 | 7.4 | | 7.02 |
| WC2-4I | 898175.9946 | 623113.7374 | 7.6079 | 7.0775 | |
| WC2-4S | 898178.73 | 623110.21 | | 7.56 | 7.32 |
| WC2-5I | 898537.1209 | 623315.7042 | 9.33587 | 8.97398 | |
| WC2-5S | 898543.33 | 623316.25 | | 9.43 | 9.19 |
| WC2-6I | 897960.7015 | 623400.9401 | 6.96029 | 6.64577 | |
| WC-2D | 897868.6 | 623438.45 | | 6.9 | 6.09 |
| WC3-1D | 896529.3671 | 622462.1349 | 6.2828 | 5.8312 | |
| WC3-1I | 896532.7814 | 622466.3758 | 6.276 | 5.8758 | |
| WC3-2D | 896698.991 | 622618.6411 | 6.6753 | 6.14129 | |
| WC3-2I | 896703.2738 | 622622.0689 | 6.7707 | 6.37972 | |
| WC-3S | 897729.16 | 623489.93 | | 6.34 | 5.75 |
| WC-4S | 897331.76 | 623598.56 | | 5.78 | 4.98 |
| WC5-1D | 897018.49 | 622471.27 | 7.75 | | 7.33 |
| WC5-1S | 896319.77 | 623786.94 | 4.89 | | 4.67 |
| WC5-2I | 897030.69 | 622459.97 | 7.7 | | 7.43 |
| WC5-2S | 896325.95 | 623262.91 | 8.53 | | 8.33 |
| WC5-3S | 897038.05 | 622452.81 | 7.72 | | 7.53 |
| WC-5S | 897024.38 | 623756.98 | | 6.17 | 5.49 |
| WC6-1I | 897903.44 | 621987.73 | 7.09 | | 6.61 |
| WC-6S | 896792.24 | 624010.89 | | 7.47 | 7.1 |
| WC-7S | 896534.22 | 623990.72 | | 7.3 | 6.82 |
| WC-8S | 897335.27 | 623373.77 | 7.48 | 7.52 | 6.89 |
| WC-9D2 | 896096.08 | 623550.96 | | 8.23 | 8.05 |
| WC-9S | 896100.26 | 623555.51 | | 8.58 | 8.09 |
| WP-98-01 | 897104.41 | 623190.9 | 8.1 | | |

**TABLE K-1**
**SURVEY DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | EASTING | NORTHING | GROUND SURFACE ELEVATION (ft,MSL) | CASING ELEVATION (ft,MSL) | REF_ELEV |
|---|---|---|---|---|---|
| WP-98-02 | 897155.5 | 623130.42 | 8 | | |
| WP-99-01 | 897047.37 | 623142.62 | 7.9 | | |
| WP-99-02 | 897158.92 | 623259.72 | 7.9 | | |
| WP-99-03 | 897184.87 | 623025.42 | 8 | | |
| WP-99-04 | 897155.1 | 623204.99 | 7.2 | | |
| WP-99-05 | 897264.04 | 623348.78 | 7.8 | | |
| WP-99-06 | 897205.56 | 623376.72 | 7.7 | | |
| WP-99-07 | 897131.22 | 623179.92 | 7.9 | | |
| WP-99-08 | 897095.79 | 623178.47 | 8 | | |
| WP-99-09 | 897187.19 | 623134.43 | 8 | | |
| WP-99-10 | 897053.1 | 623327.07 | 8.1 | | |
| WP-99-11 | 897092.92 | 623289.24 | 8 | | |
| WP-99-12 | 897255.55 | 623128.68 | 7.7 | | |
| WP-99-13 | 897303.13 | 623071.09 | 7.9 | | |
| WP-99-14 | 897370.71 | 623302.91 | 7.9 | | |
| WP-99-15 | 897125.31 | 623217.63 | 7.5 | | |
| WP-99-16 | 897172.32 | 623388.8 | 7.8 | | |
| WP-99-17 | 897104.64 | 623419.56 | 7.8 | | |
| WP-99-18 | 897245.52 | 623079.28 | 7.9 | | |
| WP-99-19 | 897029.44 | 623453.16 | 7.2 | | |
| WP-99-20 | 897058.3 | 623221.82 | 8 | | |
| WP-99-21 | 897010.87 | 623284.32 | 8 | | |
| WP-99-22 | 897272.76 | 623025.17 | 8 | | |
| WP-99-23 | 897022.86 | 623188.62 | 8 | | |
| WP-99-24 | 896999.5 | 623323.06 | 7.7 | | |
| WP-99-25 | 897123.17 | 623358.65 | 8.5 | | |
| WP-99-26 | 897163.71 | 623314.24 | 8.4 | | |
| WP-99-27 | 897223.34 | 623224.03 | 8 | | |
| WP-99-28 | 897175.4434 | 623105.3689 | | | |
| WP-99-29 | 897190.76 | 622991.72 | 8 | | |
| WP-99-30 | 896968.34 | 623178.31 | 7.9 | | |
| WP-99-31 | 897252.97 | 623247.16 | 7.9 | | |
| WP-99-32 | 897177.61 | 622952.4 | 8.2 | | |
| WP-99-33 | 897145 | 623081.29 | 8 | | |
| WP-99-34 | 897176.99 | 623094.62 | 8 | | |
| WP-99-35 | 896926.34 | 623190.1 | 8 | | |
| WP-99-36 | 897132.75 | 623008.61 | 8 | | |
| WP-99-37 | 897076.19 | 623040.33 | 7.9 | | |
| WP-99-38 | 897009.86 | 622990.29 | 7.9 | | |
| WP-99-39 | 896939.61 | 622933.43 | 7.9 | | |
| WP-99-40 | 897014.94 | 623150.8 | 7.9 | | |
| WP-99-41 | 897259.5 | 623333.35 | 7.9 | | |
| WP-99-42 | 897336.28 | 623227.88 | 7.9 | | |
| WP-99-43 | 897380.93 | 623260.82 | 7.9 | | |
| WP-99-44 | 897182.88 | 623382.6 | | | |
| WP-99-45 | 897316.1 | 623466.21 | 8 | | |
| WP-99-46 | 897326.13 | 623599.41 | 5.9 | | |
| WP-99-47 | 897182.88 | 623382.67 | 7.8 | | |
| WP-99-48 | 897002.29 | 623330.12 | 0 | | |
| WP-99-49 | 896932.68 | 623462 | 7.5 | | |
| WP-99-50 | 897351.14 | 623056.16 | 7.6 | | |

**TABLE K-1**
**SURVEY DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | EASTING | NORTHING | GROUND SURFACE ELEVATION (ft,MSL) | CASING ELEVATION (ft,MSL) | REF_ELEV |
|---|---|---|---|---|---|
| WP-99-51 | 897096.15 | 623629.62 | 7.3 | | |
| WP-99-52 | 897116.92 | 623681.75 | 7.1 | | |
| WP-99-53 | 897450.77 | 623368.75 | 8.1 | | |
| WP-99-54 | 897583.53 | 623125.71 | 7.9 | | |
| WP-99-55 | 897372.51 | 622741.87 | 7 | | |
| WP-99-56 | 897384.46 | 623001.03 | 8 | | |
| WP-99-57 | 897489.56 | 623568.73 | 7.2 | | |
| WP-99-58 | 896831.9922 | 623382.7264 | | | |
| WP-99-59 | 897018.79 | 623760.68 | 6 | | |
| WP-99-60 | 897737.63 | 623487.65 | 6.4 | | |
| WP-99-61 | 896853.4 | 623580.04 | 7 | | |
| WP-99-62 | 897776.25 | 623228.38 | 6.9 | | |
| WP-99-63 | 896926.11 | 622886.3 | 8 | | |
| WP-99-64 | 896734.9032 | 623030.3632 | | | |
| WP-99-65 | 896910.53 | 622762.51 | 7.9 | | |
| WP-99-66 | 897587.24 | 622635.42 | 7.2 | | |
| WP-99-67 | 897142.5 | 623083.53 | 8 | | |
| WP-99-68 | 896665.43 | 623567.04 | 8 | | |
| WP-99-69 | 896504.42 | 623571.92 | 8 | | |
| WP-99-70 | 896306.93 | 623542.92 | 7.9 | | |
| WP-99-71 | 896201.42 | 623707.78 | 5.3 | | |
| WP-99-72 | 896444.5986 | 623323.964 | | | |

## ANALYTICAL DATA QUALITY EVALUATIONS

| | |
|---|---|
| **APPENDIX L-1** | 1998 PRELIMINARY INVESTIGATIONS |
| **APPENDIX L-2** | 1999 ON-SITE ANALYTICAL PROGRAM, CHROMIUM-FOCUSED AND VOC-FOCUSED GROUNDWATER INVESTIGATIONS |
| **APPENDIX L-3** | DATA VALIDATION 1999 OFF-SITE ANALYTICAL PROGRAM |
| **APPENDIX L-4** | 1999 ON-SITE LABORATORY SOIL VAPOR SURVEY DATA QUALITY SUMMARY |
| **APPENDIX L-5** | 1999 OU 2 SOIL BORING TREATABILITY TESTING DATA VALIDATION SUMMARY REPORT |

# L-1 1998 PRELIMINARY INVESTIGATIONS

# APPENDIX L-1
# 1998 PRELIMINARY INVESTIGATION DATA QUALITY SUMMARY REPORT
# OU2 NCRA PRE-DESIGN INVESTIGATION REPORT
# STRATFORD ARMY ENGINE PLANT

## 1.0 INTRODUCTION

The purpose of this report is to summarize chemist review evaluations completed for a subset of analytical data collected during preliminary investigations at the Stratford Army Engine Plant (SAEP) Operable Unit 2. Soil and water samples were collected by HLA in August 1998 and analyzed by Quanterra analytical laboratories in North Canton, Ohio. Laboratory deliverables included summary results for samples and associated QC. Samples and associated QC results were reviewed by the HLA project chemist.

### 1.1 Analytical Methods

The analytical program included the following methods:

- Chromium, iron, manganese, and nickel by USEPA Method 6010B
- Hexavalent chromium by USEPA Method 7196A
- Ferrous Iron by SM 3500
- Cyanide by USEPA 335.2
- Sulfate by USEPA 375.4
- Total Organic Carbon by SM Walkley-Black
- SPLP Chromium by 1312/6010B

## 2.0 DATA QUALITY EVALUATION

Analytical reports provided by the laboratory included sample summary results, samples collection and custody records, and results of associated QC tests including laboratory control sample (LCS), method blank results, and matrix spike/matrix spike duplicate results (MS/MSD).

The majority of the results provided by the laboratory were determined to be adequate for use in contamination evaluations. A subset of results were qualified as estimated J values based on the general USEPA validation guidance procedures or professional judgment. A subset of results have also been qualified rejected R and are considered to be unusable. Unless noted below quality control measurements associated with these data sets were within method specifications. A summary of data qualification actions is provided below:

1. Results for hexavalent chromium in aqueous samples WP01XX and WP02XX were qualified estimated J due to low recoveries in the associated matrix spike samples. Recoveries ranged from 56% to 59% indicating a possible low bias.

2. A data anomaly was observed in chromium results for sample WP01XX at 5' to 7'. The concentration for hexavalent chromium (10.4 mg/L) was greater than total chromium (5.2 mg/L). Both sets of results were qualified estimated J.

3. Manganese results in all soil samples were qualified estimated J due to high recoveries in the associated MS/MSD sample. Recoveries ranged from 206% to 245% indicating a possible high bias.

4. Hexavalent chromium results for all soil samples were qualified due to low recovery in the associated MS/MSD sample. A recovery of 0% was reported in both the MS and MSD. The MS sample was a batch spike and not a sample from the SAEP site. However, it does indicate a potential problem with the soil analysis and all positive detections were qualified estimated J, and results may be biased low. All non-detect results were rejected R (SP0100 and SP0607), and are considered non-usable.

# L-2 1999 ON-SITE ANALYTICAL PROGRAM,CHROMIUM-FOCUSED AND VOC - FOCUSED GROUNDWATER INVESTIGATIONS

# APPENDIX L-2
# 1999 ON-SITE ANALYTICAL PROGRAM DATA QUALITY REPORT
# CHROMIUM FOCUSED AND VOC FOCUSED GROUNDWATER INVESTIGATION
# OU2 NCRA PRE-DESIGN INVESTIGATION REPORT
# STRATFORD ARMY ENGINE PLANT

## 1.0 INTRODUCTION:

On-site analyses were completed on groundwater samples collected during investigations in January and March 1999. Groundwater samples were analyzed on-site for Hexavalent Chromium by the Hach™ Color disc/Diphenylcarbazide, Hypobromite oxidation method. The test kit has a lower limit of reporting of 0.1 mg/L. Quality control measurements included the analysis of off-site laboratory confirmation samples. Approximately 10% of the samples analyzed with the kits were split and submitted for off-site laboratory analysis for hexavalent chromium by USEPA Method 218.4. Results of the field duplicates and split samples are presented in Section 2.

Groundwater samples were also analyzed on-site by modified U.S. Environmental Protection Agency (USEPA) Method 8021B, using an HP 5890 GC with an electrolytic conductivity detector (ELCD) for the following chlorinated VOCs:

- Tetrachloroethylene (PCE)
- Trichloroethylene (TCE)
- cis- and trans-1,2-Dichloroethylene (cis-1,2-DCE and trans-1,2-DCE)
- Vinyl chloride (VC)
- 1,1-dichloroethylene (1,1-DCE)
- 1,1,1-Trichloroethane (1,1,1-TCA)

Approximately 10% of the samples were split and submitted for off-site laboratory analysis for VOCs using USEPA Method 8260B. Results of the split samples are presented in Section 3.

## 2.0 Hexavalent Chromium Spilt Sample Evaluation

Results of the hexavalent chromium split samples are presented on Table 1. Results are also presented on Figure 1 using a logarithmic scale from 0.01 mg/L to 1000 mg/L. Results showed complete agreement for the presence or absence of hexavalent chromium indicating the screening results consistently identified hexavalent chromium when present in the samples. Positive detections were reported in 7 split samples with relative percent difference average of 17. The split sample data indicate excellent comparability of on-site data to off-site results. Based on this comparison Cr(VI) data are interpreted to be usable for the purposes of this investigation including contamination assessments, field program decision and direction of explorations, and assessment of contamimation concentrations to applicable standards.

## 3.0 VOC Split Sample Results

Off-site split samples were analyzed for VOCs by USEPA Method 8260B to provide definitive confirmation of the on-site laboratory screening data set (USEPA, 1993). Samples were split in the field at the time of sample collection and submitted to both laboratories. It is noted that

different levels of sample dilution at the two laboratories caused different reporting limits to be reported by the two laboratories, creating some limitations to the comparability of the two data sets. The on-site/off-site split sample data were evaluated using two types of comparisons.

Comparison 1

In Comparison 1 results from the on-site and off-site laboratories are compared to applicable standards being used as action levels to make decisions in the investigation. Action levels were defined as the Connecticut Department of Environmental Protection Remediation Standard Regulation (CTDEP RSR) for Groundwater W/Potential to Discharge to Surface Water (CTDEP, 1996). Five compounds on the on-site laboratory screening list have Standards including vinyl chloride, 1,1-dichloroethene, 1,1,1-trichloroethane, trichloroethene, and tetrachloroethene. The split sample results were organized into four categories defined below:

1. Both on-site and off-site analyses had the target compounds at concentrations less than the action levels
2. Both on-site and off-site analyses had the target analytes detected at concentrations greater than action levels
3. The target compounds were reported above action levels for on-site and the off-site data results were less than action levels
4. The target compounds were reported above the action level off-site and the on-site results were less than action levels

A primary assumption of the comparison is that the off-site data represents the accurate, definitive data when comparing results as follows:

- Category 1 and 2 results indicate agreement between the on-site and off-site laboratories
- Category 3 results suggests a high bias to the on-site date results
- Category 4 results suggests a low bias to the on-site data results

Based upon split sample results presented in Table 2, 100 percent of the on-site/off-site comparison data that were comparable to RSRs fell into categories 1 or 2. Comparisons were not available for a subset of results due to variability between concentrations reported in one lab set and the quantitation limits reported in the other laboratory data. No results fell into category 4 indicating that low bias results at the on-site laboratory did not occur. These results indicate that the screening data are adequate for the evaluation of site conditions using RSRs.

Comparison 2

In Comparison 2 the quantitative comparability of split sample results is assessed. On-site and off-site results are evaluated using USEPA Region I field duplicate precision goals (USEPA, 1996). The relative percent differences (RPDs) are calculated for split sample results and compared to the Region I criterion for aqueous field duplicate data of 30 percent. In some split samples the concentration reported by on laboratory was less than the quantitation limits reports by the other laboratory. The RPDs in these split results were reported as 0. For example, in sample WP-99-33 at 76' - 80' 1,1,1-trichloroethane was reported at 6 µg/L in the on-site data and 50 U (non-detect) in the off-site. The RPD is reported as 0 with the assumption that the results show quantitative agreement.

Split results are presented for detected target compounds on Table 2. Those target compounds listed above for the on-site lab that are not listed on Table 2 were not detected in either samples.

With the exception of three results from site ID WP-99-47, all results have good agreement with the presence and absence of contaminants and the relative concentrations reported. Of the 54 split sample results reported for the 9 split samples including non-detected results, 87 percent of the split data met USEPA Region I field duplicate criteria of 30 percent. These results indicate good quantitative agreement between the data sets.

Split results for trichloroethene and tetrachlorethene in sample WP-99-47 at 17-21', and 1,1-dichloroethene in WP-99-47 at 6-10' had no RPDs calculated. Reported concentrations in the on-site data were greater than the off-site quantitation limits. All three results were near the reporting limits. In general, higher results are reported in on-site data set for results with RPDs exceeding 30. These results are interpreted to indicate that the on-site laboratory had a potential high bias.

Comparison Conclusions

- The data comparison study indicates good correlation between on-site results and off-site results confirming that the screening data set is adequate for determining the distribution of target compounds at regulatory concentrations.
- Data generated at the on-site laboratory show good quantitative agreement with the off-site data and are useable for quanitative assessments of VOC contamination at the site. Data users should consider that on-site results may have a slight high bias.

# APPENDIX L-2
# TABLE 1
# SUMMARY OF SPLIT SAMPLES FOR HEXAVALENT CHROMIUM
# OU2 JANUARY 1999 GROUNDWATER SAMPLES
# STRATFORD ARMY ENGINE PLANT

| SITE ID | Sample Interval (ft,bgs) | HEX CR-Lab (mg/L) | HEX CR-HACH (mg/L) | RPD |
|---|---|---|---|---|
| WP-99-02 | 30-34 | 50.9 | 75 | -38 |
| WP-99-02 | 37-41 | <0.01 | <0.1 | |
| WP-99-02 | 47-51 | <0.01 | <0.1 | |
| WP-99-02 | 57-61 | <0.01 | <0.1 | |
| WP-99-02 | 67-71 | <0.01 | <0.1 | |
| WP-99-03 | 26-30 | 8.39 | 8 | 5 |
| WP-99-08 | 46-50 | <0.01 | <0.1 | |
| WP-99-09 | 25-29 | <0.01 | <0.1 | |
| WP-99-11 | 24-28 | 54.2 | 50 | 8 |
| WP-99-11 | 30-34 | 42.1 | 60 | -35 |
| WP-99-12 | 20-24 | <0.01 | <0.1 | |
| WP-99-12 | 24-28 | <0.01 | <0.1 | |
| WP-99-15 | 26-30 | 347 | 360 | -4 |
| WP-99-15 | 56-60 | <0.01 | <0.1 | |
| WP-99-17 | 30-34 | <0.01 | <0.1 | |
| WP-99-18 | 15-19 | 1.57 | 1.2 | 27 |
| WP-99-20 | 25-29 | 6.32 | 15 | -81 |
| WP-99-22 | 20-24 | <0.01 | <0.1 | |
| WP-99-24 | 30-34 | <0.01 | <0.1 | |
| WP-99-27 | 25-29 | <0.01 | <0.1 | |
| WP-99-28 | 20-24 | <0.01 | <0.1 | |
| WC-PZ-8D | 24-34 | <0.01 | <0.1 | |
| | | | AVG RPD: | -17 |

Notes:
RPD = relative percent difference

APPENDIX L-2
TABLE 2
SUMMARY OF VOC SPLIT SAMPLE RESULTS
OU2 MARCH 1999 EVENT
STRATFORD ARMY ENGINE PLANT

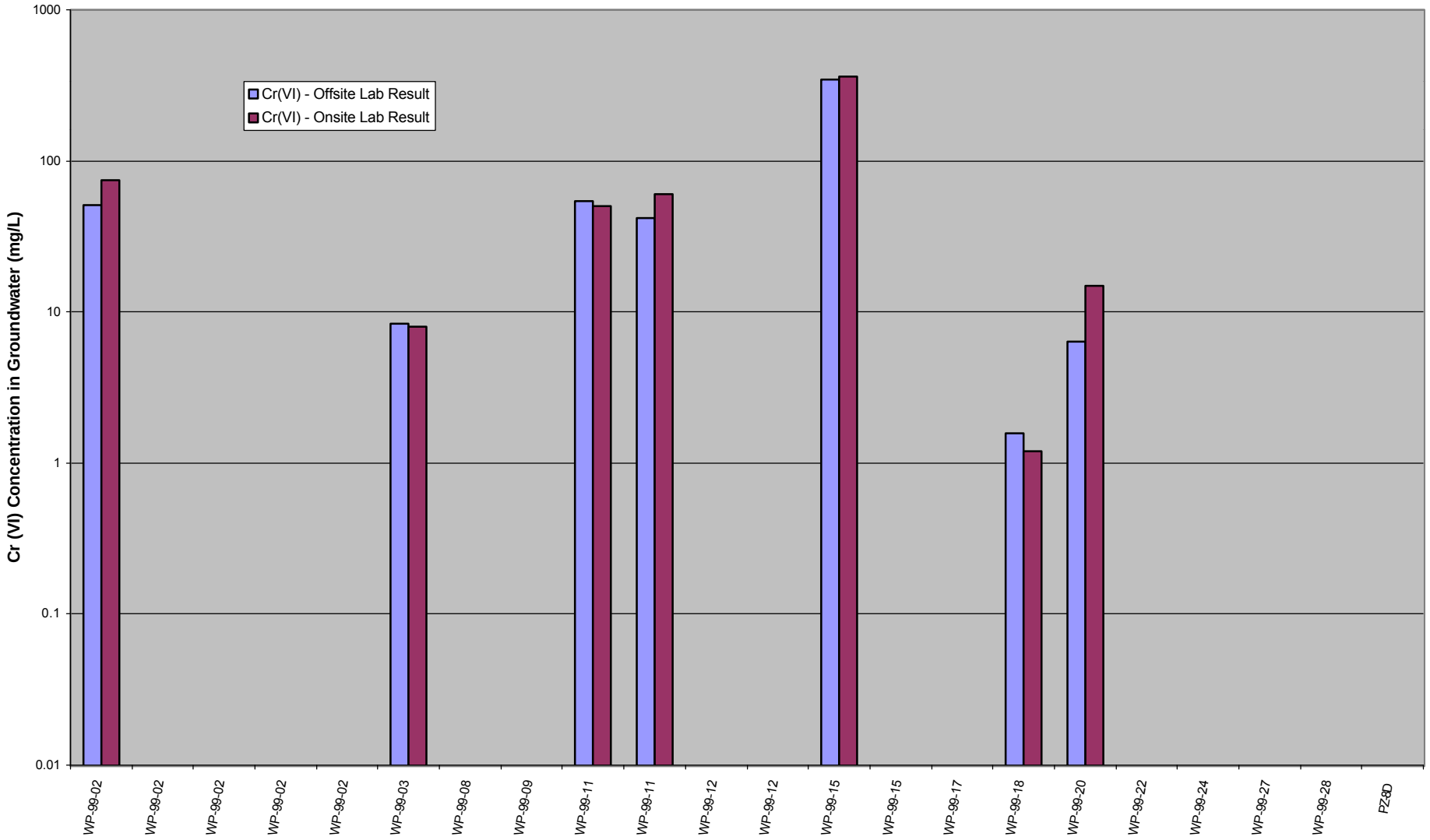
| SITE ID | DEPTH | COMPOUND | RSR | ON-SITE RESULTS | OFF-SITE RESULTS | RPD | CATEGORY |
|---|---|---|---|---|---|---|---|
| WP-99-33 | 76-80 | 1,1-Dichloroethene | 96 | 240 | 100 | 82 | 2 |
| | | 1,1,1-Trichloroethane | 62000 | 6 | 50 U | 0 | 1 |
| | | Trichloroethene | 2340 | 450 | 270 | 50 | 1 |
| | | Tetrachloroethene | 88 | 5 | 50 U | 0 | 1 |
| WP-99-34 | 30-34 | Trichloroethene | 2340 | 31000 | 29000 E | 7 | 2 |
| WP-99-34 | 26-30 | Trichloroethene | 2340 | 220000 | 170000 E | 26 | 2 |
| WP-99-34 | 16-20 | Trichloroethene | 2340 | 630 | 600 | 5 | 1 |
| WP-99-41 | 77-81 | 1,1-Dichloroethene | 96 | 10 | 9 | 8 | 1 |
| | | c-1,2-Dichloroethene | NA | 2 | 5 U | 0 | NA |
| | | 1,1,1-Trichloroethane | 62000 | 7 | 6 | 15 | 1 |
| | | Trichloroethene | 2340 | 20 | 26 | 26 | 1 |
| | | Tetrachloroethene | 88 | 2 | 5 U | 0 | 1 |
| WP-99-41 | 26-30 | 1,1-Dichloroethene | 96 | 10000 U | 110 | 0 | * |
| | | c-1,2-Dichloroethene | NA | 10000 U | 630 | 0 | NA |
| | | Trichloroethene | 2340 | 48000 | 23000 E | 70 | 2 |
| | | Tetrachloroethene | 88 | 10000 U | 420 | 0 | * |
| WP-99-47 | 17-21 | 1,1-Dichloroethene | 96 | 4800 | 3900 | 21 | 2 |
| | | 1,1,1-Trichloroethane | 62000 | 9800 | 8600 | 13 | 1 |
| | | Trichloroethene | 2340 | 1900 | 1000 U | NC | 1 |
| | | Tetrachloroethene | 88 | 1100 | 1000 U | NC | * |
| WP-99-47 | 6-10 | 1,1-Dichloroethene | 96 | 2200 | 2000 U | NC | * |
| | | c-1,2-Dichloroethene | NA | 120 | 500 U | 0 | NA |
| | | 1,1,1-Trichloroethane | 62000 | 4500 | 3200 | 34 | 1 |
| | | Trichloroethene | 2340 | 180 | 500 U | 0 | 1 |
| | | Tetrachloroethene | 88 | 130 | 500 U | 0 | * |
| WP-99-54 | 58-62 | 1,1-Dichloroethene | 96 | 100 U | 3 | 0 | * |
| | | c-1,2-Dichloroethene | NA | 100 U | 28 E | 0 | NA |
| | | Trichloroethene | 2340 | 410 | 360 | 13 | 1 |

Notes:
RSR = Remediation Standard Regulation
RPD = relative precent difference
NC = not calculated
NA = not applicable because RSR standard does not exist
U = not detected at or above the reporting limit
E = concentration exceeds the instrument calibration range and results are estimated

APPENDIX L-2
TABLE 2
SUMMARY OF VOC SPLIT SAMPLE RESULTS
OU2 MARCH 1999 EVENT
STRATFORD ARMY ENGINE PLANT

| SITE ID | DEPTH | COMPOUND | RSR | ON-SITE RESULTS | OFF-SITE RESULTS | RPD | CATEGORY |
|---|---|---|---|---|---|---|---|
| WP-99-33 | 76-80 | 1,1-Dichloroethene | 96 | 240 | 100 | 82 | 2 |
| | | 1,1,1-Trichloroethane | 62000 | 6 | 50 U | 0 | 1 |
| | | Trichloroethene | 2340 | 450 | 270 | 50 | 1 |
| | | Tetrachloroethene | 88 | 5 | 50 U | 0 | 1 |
| WP-99-34 | 30-34 | Trichloroethene | 2340 | 31000 | 29000 E | 7 | 2 |
| WP-99-34 | 26-30 | Trichloroethene | 2340 | 220000 | 170000 E | 26 | 2 |
| WP-99-34 | 16-20 | Trichloroethene | 2340 | 630 | 600 | 5 | 1 |
| WP-99-41 | 77-81 | 1,1-Dichloroethene | 96 | 10 | 9 | 8 | 1 |
| | | c-1,2-Dichloroethene | NA | 2 | 5 U | 0 | NA |
| | | 1,1,1-Trichloroethane | 62000 | 7 | 6 | 15 | 1 |
| | | Trichloroethene | 2340 | 20 | 26 | 26 | 1 |
| | | Tetrachloroethene | 88 | 2 | 5 U | 0 | 1 |
| WP-99-41 | 26-30 | 1,1-Dichloroethene | 96 | 10000 U | 110 | 0 | * |
| | | c-1,2-Dichloroethene | NA | 10000 U | 630 | 0 | NA |
| | | Trichloroethene | 2340 | 48000 | 23000 E | 70 | 2 |
| | | Tetrachloroethene | 88 | 10000 U | 420 | 0 | * |
| WP-99-47 | 17-21 | 1,1-Dichloroethene | 96 | 4800 | 3900 | 21 | 2 |
| | | 1,1,1-Trichloroethane | 62000 | 9800 | 8600 | 13 | 1 |
| | | Trichloroethene | 2340 | 1900 | 1000 U | NC | 1 |
| | | Tetrachloroethene | 88 | 1100 | 1000 U | NC | * |
| WP-99-47 | 6-10 | 1,1-Dichloroethene | 96 | 2200 | 2000 U | NC | * |
| | | c-1,2-Dichloroethene | NA | 120 | 500 U | 0 | NA |
| | | 1,1,1-Trichloroethane | 62000 | 4500 | 3200 | 34 | 1 |
| | | Trichloroethene | 2340 | 180 | 500 U | 0 | 1 |
| | | Tetrachloroethene | 88 | 130 | 500 U | 0 | * |
| WP-99-54 | 58-62 | 1,1-Dichloroethene | 96 | 100 U | 3 | 0 | * |
| | | c-1,2-Dichloroethene | NA | 100 U | 28 E | 0 | NA |
| | | Trichloroethene | 2340 | 410 | 360 | 13 | 1 |

Notes:
RSR = Remediation Standard Regulation
RPD = relative precent difference
NC = not calculated
NA = not applicable because RSR standard does not exist
U = not detected at or above the reporting limit
E = concentration exceeds the instrument calibration range and results are estimated
* = assessment not possible due to quantitation limit variability




**APPENDIX L-2 FIGURE 1**
**COMPARISON OF ONSITE vs. OFFSITE ANALYTICAL RESULTS - Cr(VI)**
**CHROMIUM PLATING FACILITY**
**STRATFORD ARMY ENGINE PLANT**

**Harding Lawson Associates**

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Chart1

# L-3 DATA VALIDATION SUMMARY REPORT
# 1999 OFF-SITE ANALYTICAL PROGRAM

# APPENDIX L-3
# 1999 OFF-SITE ANALYTICAL PROGRAM DATA VALIDATION SUMMARY
# OU2 NCRA PRE-DESIGN INVESTIGATION REPORT
# STRATFORD ARMY ENGINE PLANT

## 1.0 INTRODUCTION

The purpose of this report is to summarize data validation activities and actions for soil and aqueous samples collected during investigations at Operable Unit 2 (OU2) at the Causeway and Dike at the Stratford Army Engine Plant. Samples were collected by HLA in January, February, and March 1999 and analyzed by Averill Environmental Laboratory in Plainville, Connecticut. Data validation was completed by Environmental Data Quality, Inc., in Exton, Pennsylvania using USEPA Region I Tier III guidelines (USEPA, 1996).

### 1.1 Analytical Methods

The analytical program included the following methods:

- Volatile Organic Compounds by Method 8260B
- Semivolatile organic compounds by Method 3550B/8270C
- Inorganics by 6010B/7471A
- SPLP chromium by 1312/6010B
- Hexavalent chromium by 7196A and 218.1
- Cyanide by USEPA 9014 and 355.2
- Sulfate by USEPA 300
- Alkalinity by USEPA 310.1

## 2.0 DATA QUALITY EVALUATION

The majority of the results provided by the laboratory were determined to be adequate for use without qualification in contamination and risk evaluations. With the exception of the items described below, all quality control checks for the analytical methods and validation guidelines were met. A subset of results has been qualified as estimated J values based on the validation guidance. For some results potential bias have been identified for the reported results. Unless noted below quality control measurements associated with these data sets were within method specifications. A summary of validation actions is provided in the following subsections for each analytical method.

### 2.1 VOA

Soil samples collected for volatile analysis were preserved in methanol at the time of sample collection. Sample quantiation limits (SQLs) vary between samples depending on the amount of soil collected and the percent solids of the matrix. For some samples

dilution reanalyses were necessary to bring target compounds into the instrument calibration range. Sample results from the original and dilution analyses have been combined to obtain final results for all target compounds. The following data validation actions were completed:

- Results for acetone, 2-hexanone, carbon tetrachloride, cis-1,3-dichloropropene, 4-methyl-2-pentanone, and 1,1,2,2-tetrachloroethene in subset of samples have been qualified estimated J due to response in calibration standards.

- Results for the following compounds and samples were qualified estimated E because detected concentrations exceeded the instrument calibration range. The concentrations reported with E qualifiers are interpreted to be potentially biased low.

| Sample numbers | Qualified Compounds |
|---|---|
| CP9905131XX | cis-1,2-DCE |
| CP9905131XX | TCE |
| CP9908158XX | TCE |
| CP9906030XX | 1,2-DCA; 1,1-DCA; 1,1,1-TCA; toluene |
| CP9908073XX | toluene |
| CP9908073XXD | 1,1,-TCA |
| CP9908062XX | 1,2-DCA; 1,1-DCA; 1,1,1-TCA; toluene; 1,1-DCE; TCE |
| CP9908101XX | 1,1-DCE; 1,1,1-TCA; toluene; TCE |
| CP9909011XX | Acetone, vinyl chloride |
| CP9909035XX | 1,2-DCA; 1,1-DCE; 1,1,1-TCA; vinyl chloride |
| CP9908135XX | TCE |
| CP9909090XX | 1,1,1-TCA |
| CP9912021XX | 1,1-DCA; cis-1,2-DCE; vinyl chloride |
| CP9912011XX | 1,1-DCA; vinyl chloride |
| CP9910036XX | 1,1-DCA; cis-1,2-DCE; vinyl chloride |
| CP9910043XX | Chloroform; 1,1-DCA; cis-1,2-DCE; PCE |
| CP9911047XX | TCE |
| CP9910060XX | 1,1-DCE |
| CP9910075XX | 1,1-DCA |
| CP9917032XX | 1,1-DCA; 1,1-DCE; 1,1,1-TCA, TCE |
| CP9917046XX | TCE |
| CP99170XXXX | 1,1-DCA; 1,1-DCE; 1,1,1-TCA, TCE |
| WP9909029XX | TCE |
| WP9934040XX | TCE |
| WP9934030XX | TCE |
| WP9954062XX | Cis-1,2-DCE |
| WP9954062XXD | Cis-1,2-DCE |
| WP9908030XX | TCE |

| | |
|---|---|
| WP9908012XX | 1,1-DCE; 1,1,1-TCA; 1,1,2-TCA; TCE |
| PZ9904I000XX | 1,1-DCA; 1,2-DCE; chloroform; TCE |
| PZ9912I000XX | 1,1-DCE; 1,1,1-TCA; vinyl chloride |
| PZ9901I000XX | TCE |

## 2.2 SVOA

- Results for di-n-butyl-phthalate, hexachlorobenzene, and hexachlorocyclopentadiene are qualified estimated J due to calibration response in a subset of samples.

## 2.3 Hexavalent Chromium

The majority of soil samples submitted for hexavalent chromium analysis were analyzed from approximately 2 to 4 weeks from date collected. Holding times for the project were 7 days from sample collection. Soil results from samples analyzed outside the project holding time were qualified estimated J.

**Reference:**

U.S. Environmental Protection Agency (USEPA), 1996. "Region 1 EPA-NE Data Validation Guidelines For Evaluating Environmental Analyses"; Quality Assurance Unit Staff; Office of Environmental Measurement and Evaluation; December 1996

# L-4 1999 ON-SITE LABORATORY SOIL VAPOR SURVEY DATA QUALITY SUMMARY

# APPENDIX L-4
# 1999 ON-SITE LABORATORY
# SOIL VAPOR SURVEY DATA QUALITY SUMMARY
# OU2 NCRA PRE-DESIGN INVESTIGATION REPORT
# STRATFORD ARMY ENGINE PLANT

## 1. Introduction

The purpose of this report is to provide a summary of data quality evaluations and interpretations completed for on-site screening data collected during the Stratford Army Engine Plant (SAEP) Soil Vapor Survey. A total of 52 soil vapor samples were taken between August 4th, 1999 and August 10th, 1999. Data usability objectives for the screening data included the following goals:

- identification of the presence, absence, and distribution of targeted volatile organic compounds
- provide additional data to support remedial alternatives selection
- locate exceedences specified by the CTDEP Remediation Standard Regulations
- provide preliminary data used for the selection of samples for off-site laboratory analysis

## 2. Analytical Method

Soil vapor screening samples were analyzed on-site for 1,1-dichloroethene, trichloroethene, tetrachloroethene, and vinyl chloride using a Phototvac 10S50 gas chromatograph using procedures described in Attachment I. Reporting limits for trichloroethene and tetrachloroethene were obtained from the USEPA Region I method "Ambient Air Grab Sample Analysis for Volatile Organic Compounds" (USEPA,1998) included as Attachment 2. Reporting limits for vinyl chloride and 1,1-dichloroethene were estimated.

## 3. Instrument Calibration:

Instruments were calibrated using headspace standards prepared as described in the USEPA Region I method (USEPA, 1998). Standards were analyzed in duplicate to demonstrate method precision at the calibration concentration. All standard recoveries were within the QC limits established in Attachment 1 and Attachment 2.

## 4. Duplicate Analysis:

Duplicates analyses were performed on 10% of the samples. Duplicate results are presented on Table 1. With the exception of low concentration tetrachloroethene results in sample SG9906003, RPDs were within 50% limits and ranged from 3 to 13 indicating excellent precision. Duplicates were within 50% RPD for all target compounds in exceedence of the CTDEP Remediation Standard Regulations.

**5. Off Site Split Sample Comparison:**

A subset of on-site air samples were collected in Tedlar bags and submitted to an off-site laboratory for anlysis by USEPA Method TO-14. A data quality review summary for the off-site data set is included in Attachment 3. These samples were collected to provide data on the comparability of the on-site screening method to data generated at an off-site laboratory. Results for the split samples are presented on Table 2. Relative percent difference of the results ranged from 5 to 190 indicating a wide range of variability of the results. No data bias trends were apparent with high results observed in both the on-site and off-site data set. Based on the split sample comparison, results of the soil gas screening data set are considered estimated.

Reference:

U.S. Environmental Protection Agency (USEPA), 1998. "EPA Region 1 Ambient Air Grab Sample Analysis for Volatile Organic Compounds"; EIA-FLDGRAB1.SOP; March 1998.

# APPENDIX L-4
# TABLE 1
# SUMMARY OF ON-SITE DUPLICATE SOIL GAS RESULTS
# STRATFORD ARMY ENGINE PLANT

| SAMPLE ID | COMPOUND | ON-SITE (ppm v/v) | ON-SITE Duplicate (ppm v/v) | RPD |
|---|---|---|---|---|
| SG9906003XF | Vinyl chloride | 0.02 | 0.02 | 0 |
| SG9906003XF | 1,1-Dichloroethene | 0.04 | 0.01 U | 0 |
| SG9906003XF | Trichloroethene | 65 | 57 | 13 |
| SG9906003XF | Tetrachloroethene | 0.08 | 0.04 | 67 |
| SG9922003XF | Vinyl chloride | 0.01 | 0.01 | 0 |
| SG9922003XF | 1,1-Dichloroethene | 0.07 | 0.07 | 0 |
| SG9922003XF | Trichloroethene | 1.7 | 1.7 | 0 |
| SG9922003XF | Tetrachloroethene | 3.5 | 3.5 | 0 |
| SG9937003XF | Vinyl chloride | 0.01 U | 0.01 U | 0 |
| SG9937003XF | 1,1-Dichloroethene | 0.01 U | 0.01 U | 0 |
| SG9937003XF | Trichloroethene | 0.02 U | 0.02 U | 0 |
| SG9937003XF | Tetrachloroethene | 0.03 U | 0.03 U | 0 |
| SG9948003XF | Vinyl chloride | 1.7 | 1.6 | 6 |
| SG9948003XF | 1,1-Dichloroethene | 0.01 U | 0.01 U | 0 |
| SG9948003XF | Trichloroethene | 1.2 | 1.1 | 9 |
| SG9948003XF | Tetrachloroethene | 0.46 | 0.42 | 9 |
| SG9951003XF | Vinyl chloride | 0.01 U | 0.01 U | 0 |
| SG9951003XF | 1,1-Dichloroethene | 0.01 U | 0.01 U | 0 |
| SG9951003XF | Trichloroethene | 110 | 120 | 9 |
| SG9951003XF | Tetrachloroethene | 0.32 | 0.33 | 3 |

Notes:

U = Not detected above reporting limit

# APPENDIX L-4
# TABLE 2
# SUMMARY OF SOIL GAS SPLIT SAMPLE RESULTS
# OU2 AUGUST 1999 SAMPLING EVENT
# STRATFORD ARMY ENGINE PLANT

| SAMPLE ID | COMPOUND | ON-SITE (ppm v/v) | OFF-SITE (ppm v/v) | RPD |
|---|---|---|---|---|
| SG9904003XX | Vinyl chloride | 0.14 | 1 U | 0 |
| SG9904003XX | 1,1-Dichloroethene | 2.5 | 1.4 | 56 |
| SG9904003XX | Trichloroethene | 100 | 8.2 J | 170 |
| SG9910003XX | Vinyl chloride | 0.14 | 1 U | 0 |
| SG9910003XX | 1,1-Dichloroethene | 0.80 | 3.7 | 130 |
| SG9910003XX | Trichloroethene | 20 | 19 J | 5 |
| SG9910003XX | Tetrachloroethene | 0.03 | 1 U | 0 |
| SG9931003XX | 1,1-Dichloroethene | .01 U | 0.007 | 0 |
| SG9931003XX | Trichloroethene | .02 U | 0.006 J | 0 |
| SG9937003XX | Vinyl chloride | .01 U | 0.004 | 0 |
| SG9937003XX | Trichloroethene | .02 U | 0.015 J | 0 |
| SG9948003XX | Vinyl chloride | 1.7 | 0.04 | 190 |
| SG9948003XX | 1,1-Dichloroethene | .01 U | 0.03 | 0 |
| SG9948003XX | Trichloroethene | 1.2 | 0.01 U | 0 |
| SG9948003XX | Tetrachloroethene | 0.46 | 0.01 U | 0 |
| SG9950003XX | 1,1-Dichloroethene | 4.2 | 16 | 120 |
| SG9950003XX | Trichloroethene | 8.1 | 1 J | 160 |
| SG9950003XX | Tetrachloroethene | 0.86 | 0.02 U | 0 |

Notes:

U = Not detected above reporting limit

J = Result qualified, estimated

**APPENDIX L-4**
**ATTACHMENT 1**

**SOIL VAPOR SAMPLE COLLECTION PROCEDURE**
**USEPA REGION I METHOD FOR SOIL VAPOR SCREENING**
**STRATFORD ARMY ENGINE PLANT**

**Introduction:**

This procedure describes analytical procedures for analysis of soil gas samples by USEPA Region I method "Ambient Air Grab Sample Analysis For Volatile Organic Compounds". Samples will be collected by pumping known volumes of soil gas through glass, gas sample bulbs. Soil gas will be obtained using GeoProbe™ sample rods from depths outlined in the project Work Plan. Modifications made to the analytical method are discussed below.

**Target Compounds and Reporting Limits:**

Target compounds and their reporting limits are listed below. Reporting limits are equivalent to the calibration standard concentration described in Attachment 2. Concentrations have been modified based on a factor of 8 for standards applied to the calibration standard concentration. The factor of 8 is based on air volumes injected for standards (100 µL and samples (800 µL). Limits were converted to ppmv and rounded.

| **Target Compound** | **Reporting Limit ($ppb_v$)** |
|---|---|
| Vinyl chloride | 9.5 ( 0.01 ppmv) |
| 1,1-Dichloroethylene | 14.75 (0.01 ppmv) |
| Trichloroethylene | 17.75 (0.02 ppmv) |
| Tetrachloroethylene | 25.125 (0.03 ppmv) |

**Sample Collection:**

1. The GeoProbe™ rods will be advanced to within three feet bgs of the water table (vadose zone). The expendable point will be released and the rods backed out of the ground approximately four to six inches. This will provide a void volume to draw soil gas into the probe rods.

2. Inert tubing is threaded through the rods to a fitting located at the rod's end. The fitting is engaged with the tubing and a seal is formed. A glass, soil gas sample bulb will be connected in line of the probe rods to a vacuum pump.

3. Three liters of soil vapor will be purged, measured by an attached flow meter. The exit stopcock for the gas sample bulb will be closed. The vacuum gauge will be allowed to equilibrate to zero, at this point the entrance stopcock will be closed. The bulb will then be submitted to the field lab for analysis.

**Calibration:**

A single point calibration as per the EPA method. After analysis of the initial calibration point a second calibration point is run. The results of the second point are compared to the first. The recoveries of the second point must agree within 80% of the first for all compounds. The instrument will be recalibrated in the same way after every ten samples.

**Documentation:**

A FTDS included as Attachment 1 will be completed for each soil gas sample. The sample tube ID, HLA Field sample number, date of collection, purging information, sampling times, flow rates, and observations will be recorded in the spaces provided.

USEPA Region I method, "Ambient Air Grab Sample Analysis For Organic Compounds," March 1998.

# APPENDIX L-4
# ATTACHMENT 3
# AUGUST 1999 OFF-SITE SOIL GAS ANALYSES DATA REVIEW
# OU2 NCRA PRE-DESIGN INVESTIGATION
# STRATFORD ARMY ENGINE PLANT

**Introduction:**

Seven soil gas samples were collected in Tedlar bags and submitted for off-site laboratory analysis using USEPA Method 8260B. The samples were collected to provided comparability data for evaluation of on-site screening results. Air data were reviewed by the project chemist prior to finalizing results. The review included a review of holding times, laboratory control sample (LCS) recoveries, laboratory blanks results, and field duplicate data.

**Review Evaluation:**

With the exception of a subset of field duplicated results, all method requirements were met for holding times and LCS recoveries, and no laboratory contamination was reported in blanks indicating that the data are usable as reported. Results for trichloroethene in all Tedlar bag samples have been qualified estimated J because differences in the data set exceed USEPA Region I goals for field duplicate precision. Field duplicate data are presented on the data review notes included as attached pages.

Although the purpose of the off-site analyses was to provide comparison data for evaluation of the on-site results, the off-site analyses also provided data on additional target compounds. Several additional compounds that were not included in the screening list were reported in the off-site data set including 1,1,1-trichloroethane, 1,1-dichloroethane, 1,2-dichloroethene, and freons. Off-site laboratory results are included as attached pages.

# APPENDIX L-4
# ATTACHMENT 2

**EPA Region I Ambient Air Grab Sample Analysis for Volatile Organic Compounds**

EPA Region 1

# AMBIENT AIR GRAB SAMPLE ANALYSIS FOR VOLATILE ORGANIC COMPOUNDS

Prepared for: The Office of Environmental Measurement and Evaluation, US EPA Region 1

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## 1.0 Purpose

This procedure establishes a uniform method for screening ambient air samples for volatile organic compounds using a Photovac 10A10 field portable gas chromatograph (GC) with a photoionization detector.

## 2.0 Applicability

The procedure contained herein is applicable to all EPA Region I chemists performing screening for volatile organics for ambient air grab samples.

## 3.0 Definitions

Headspace - air above water standard in sample vial.

## 4.0 Discussion

Field screening using the portable gas chromatograph is used for tentative identifications and quantitations of volatile organic compounds in air samples. This screening technique can provide quick and reliable results to assist in important on-site decision making.

## 5.0 Responsibilities

The EPA Region I chemist performing screening on a set of samples is responsible for the following:

..Standard preparation for instrument calibration
..Sample collection and/or oversight
..Sample qualitative and quantitative analysis
..Entry of work performed into the GC screening logbook
..Reporting of results to project manager and project file
..Upkeep of instrument

## 6.0 Procedure

### 6.1 Instrument Preparations

The Photovac 10A10 GC in the laboratory using A.C. power should always have carrier gas (zero air) flowing through its columns and the detector on. When moving the Photovac to a site, carrier gas should always be

flowing through the GC columns.

The following steps are taken before analysis of samples on the Photovac:

- Check detector. Insure that the detector source is on by observing the "source off" lamp (red) on the face of the instrument. When the source is on, the "source off" lamp should not be illuminated. Another method of checking the detector is to remove the detector housing with an allen wrench. With the detector on, you will observe a purple glow inside the teflon detector chamber.

- Check carrier gas flow. The gas flow is checked using a bubble flow meter hooked up to the detector out vent port. Flow can be adjusted to the desired rate by using the verrier knobs on the left side of the instrument face or by adjusting the delivery pressure on the carrier gas cylinder regulator. A desirable flow is from 18-40cc/min, depending upon application.

- Check injection port septum. It is a good idea to put in a new septum before analyzing a large number of samples.

- Check to be sure that signal cable is connected from Photovac output to strip chart recorder input.

- Set strip chart recorder input to 100 MV fullscale and chart speed to 60 cm/hr. for Photovac 10A10. (Recorder input for Photovac 10S50 should be set to 1 V fullscale)

- Adjust needle on Photovac output meter using the offset dial so that when attenuation is switched, the needle does not deflect. Setting the output somewhere between 4-10 mv DC will usually achieve this.

- Set recorder zero to 5% of chart fullscale and establish an acceptable base line.

6.2 Sample Analysis

Ambient air analysis generally consists of taking an 800 ul volume grab sample of ambient air using a 1 c.c. glass luer tip tuberculin syringe with a 2 inch, 25 gauge needle, and injecting it into the Photovac 10A10 GC injection port.

At the sample collection location, flush the syringe barrel three times using the plunger. After flushing, pull the plunger up to the 800 ul point on the barrel and place a spare GC septa on the tip of the needle to seal in the sample. Get the sample to the GC as soon as possible for analysis. Put the syringe needle into the GC injection port, and push the needle through the septum until the barrel comes up against the injection port and immediately push the plunger with a quick action. Leave the needle in place for about two seconds and then withdraw. Turn on the stripchart recorder and note on the chart:

1. start of run
2. sample number
3. sample volume
4. attenuation
5. any other relevant comments

The order in which analyses of a group of samples is performed is as follows:

1. Syringe Blank - Inject a 800 ul sample of clean air into the Photovac with the attenuation set at or lower than what your samples will be run on. At a site, an upwind location from the hot zone will usually suffice.

2. Standard - Inject a 100 ul sample of your standard headspace into the Photovac. Keep standard peaks at approximately 50% scale or more by adjusting the attenuation.

3. Repeat standard to check for reproducibility. Standard chromatograms should have compound

peak heights within 80% of each other and identical retention times.

4. Samples - Inject 800 ul sample volumes into the Photovac at the same attenuation or lower, than the standard was run. If contaminant levels put the chromatograms off-scale, adjust the attenuation to decrease instrument sensitivity. If chromatograms are still off-scale at the instruments lowest sensitivity (attenuation 100), wait for all compounds to elute and re-run the sample at attenuation 100 using a reduced sample volume.

7.0 Air Standard

The headspace above a 10 ppb aqueous standard at approximately 1°C is used for an air standard. Through in-house experimentation, we have determined the concentration* of various volatile organic compounds in the headspace of a 10 ppb aqueous standard at approximately 1°C to be as follows:

| | | |
|---|---|---|
| Benzene | : | 151 ppb |
| Trichloroethylene | : | 142 ppb |
| Toluene | : | 159 ppb |
| Tetrachloroethylene | : | 201 ppb |
| Ethylbenzene | : | 133 ppb |
| o-xylene | : | 90 ppb |

Through extrapolation, the approximate concentration of the following compounds in the headspace of a 10 ppb standard at approximately 1°C have been determined:

| | | |
|---|---|---|
| Chlorobenzene | : | 130 ppb |
| m-xylene | : | 100 ppb |

7.1 Standard Preparation and Use

Standard should be prepared in water at a 10 ppb concentration. After preparation, the standard is placed into a 40 ml VOA vial, filling the vial to the top leaving no headspace. The standard is then put into a cooler into an ice bath for storage until it is

* Concentration ppb by v/v

ready to use. When the standard is ready to use in connection with air sampling, 10 ml of liquid from the 10 ppb Standard VOA vial are withdrawn to give a headspace above the liquid standard. The standard is then put back into the ice bath. It is important to realize that the concentration of the volatile organic compounds in the headspace was calibrated at 1°C. Therefore, it is mandatory that the standard be stored in a cooler in an ice bath, septa side down, at all times.

8.0 Qualitation and Quantitation

Tentative identification of compounds present in a sample are made by matching retention times of peaks in the sample chromatogram to the retention times of standard peaks. When a compound can be tentatively identified, quantitation is done by a peak height comparison.

Example: If the 10 ppb aqueous standard headspace had a benzene peak height of 32 units from a 100 ul injection with instrument attenuation at 2, a tentatively identified benzene peak 14 units high from an 800 ul sample injection with instrument attenuation at 2 would represent a sample concentration of 8.2 ppb benzene.

$$\frac{32 \times 8 \text{ (volume factor)}}{151 \text{ ppb}} = \frac{14}{X}$$

$$X = 8.2 \text{ ppb}$$

9.0 Reporting Requirements

All work performed for the analyses of samples should be entered into the VOA screening logbook. The analyses data should be presented to the project manager, in the form of an Internal Correspondence. Chromatograms generated should be saved and filed.

10.0 Quality Control

a. Run standard periodically to determine retention time shifts from temperature fluctuations of instrument.

b. Analyze upwind samples to determine background concentrations.

Quality Control Check For
Stratford Army Engine Plant
Tedlar bag Air Sampling
Lot # M9H100209

**Introduction:**

Three samples were collected on 8/9/99 in Tedlar bags. The samples were received at the laboratory (Quanterra) on 8/10/99 and analyzed with in the 48 hour holding time on 8/11/99.

**LCS:**

A LCS and LCSD were analyzed on 8/11/99 for the associated Quality Control
Percent recoveries ranged from 83-101 % for 1,1-DCE, $MeCl_2$, TCE, 1,1,2,2-PCA, and Toluene
All percent recoveries and RPD's were within laboratory established QA/QC limits

**Blank:**

Method blank was analyzed on 8/11/99 and all compounds were below reporting limits

**Duplicates:**

Duplicates were not collected

Quality Control Check For
Stratford Army Engine Plant
Tedlar bag Air Sampling
Lot # M9H110249

**Introduction:**

Four samples were collected on 8/10/99 in Tedlar bags. The samples were received at the laboratory (Quanterra) on 8/11/99 and analyzed with in the 48 hour holding time on 8/11/99 & 8/12/99.

**LCS:**

A LCS and LCSD were analyzed on 8/11/99 and 8/12/99 for the associated Quality Control
Percent recoveries ranged from 81-101 % for 1,1-DCE, $MeCl_2$, TCE, 1,1,2,2-PCA, and Toluene
All percent recoveries and RPD's were within laboratory established QA/QC limits

**Blank:**

Method blank was analyzed on 8/11/99 and 8/12/99 and all compounds were below reporting limits

**Duplicates:**

Site ID# SG9950003XX was sampled/analyzed in duplicate. See results below:

| Compound | SG9950003XX (ppb v/v) | SG9950003XD (ppb v/v) | Avg | RPD |
|---|---|---|---|---|
| 1,1- DCE | 16000 | 18000 | 17000 | 11.8 |
| 1,1,2- TC-1,2,2- TFA | 350 | 390 | 370 | 10.8 |
| 1,1- DCA | 840 | 1000 | 920 | 17.4 |
| cis- 1,2- DCE | 350 | 460 | 405 | 27.2 |
| 1,1,1- TCA | 6800 | 8800 | 7800 | 25.6 |
| TCE | 1000 J | 1800 J | 1400 | 57.1 |

Results qualified estimated J. OK 1/28/00

Quanterra

# EXECUTIVE SUMMARY - Detection Highlights

M9H100209

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|---|---|---|---|---|
| **SG9931003XX 08/09/99 16:20 001** | | | | |
| Trichlorofluoromethane | 2.4 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| 1,1-Dichloroethene | 7.3 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 14 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| Acetone | 17 | 10 | ppb(v/v) | EPA-19 TO-14 |
| Chloroform | 3.1 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| 1,1,1-Trichloroethane | 33 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| Trichloroethene | 5.8 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| **SG9910003XX 08/09/99 16:50 002** | | | | |
| 1,1-Dichloroethene | 3700 | 100 | ppb(v/v) | EPA-19 TO-14 |
| 1,1-Dichloroethane | 3500 | 100 | ppb(v/v) | EPA-19 TO-14 |
| cis-1,2-Dichloroethene | 510 | 100 | ppb(v/v) | EPA-19 TO-14 |
| 1,1,1-Trichloroethane | 130000 | 100 | ppb(v/v) | EPA-19 TO-14 |
| Trichloroethene | 19000 | 100 | ppb(v/v) | EPA-19 TO-14 |
| **SG9904003XX 08/09/99 17:35 003** | | | | |
| Dichlorodifluoromethane | 5100 | 100 | ppb(v/v) | EPA-19 TO-14 |
| 1,1-Dichloroethene | 2500 | 100 | ppb(v/v) | EPA-19 TO-14 |
| 1,1-Dichloroethane | 4500 | 100 | ppb(v/v) | EPA-19 TO-14 |
| cis-1,2-Dichloroethene | 1200 | 100 | ppb(v/v) | EPA-19 TO-14 |
| 1,1,1-Trichloroethane | 69000 | 100 | ppb(v/v) | EPA-19 TO-14 |
| Trichloroethene | 8200 | 100 | ppb(v/v) | EPA-19 TO-14 |

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# EXECUTIVE SUMMARY - Detection Highlights

M9H110249

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|---|---|---|---|---|
| **SG9937003XX 08/10/99 09:35 001** | | | | |
| Vinyl chloride | 3.7 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| Trichlorofluoromethane | 2.3 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| Carbon disulfide | 12 | 10 | ppb(v/v) | EPA-19 TO-14 |
| Acetone | 170 | 10 | ppb(v/v) | EPA-19 TO-14 |
| cis-1,2-Dichloroethene | 2.4 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| 2-Butanone (MEK) | 25 | 10 | ppb(v/v) | EPA-19 TO-14 |
| 1,1,1-Trichloroethane | 150 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| Benzene | 3.9 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| Trichloroethene | 15 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| Toluene | 5.0 | 5.0 | ppb(v/v) | EPA-19 TO-14 |
| Xylenes (total) | 2.6 | 2.0 | ppb(v/v) | EPA-19 TO-14 |
| **SG9948003XX 08/10/99 13:55 002** | | | | |
| Vinyl chloride | 44 | 10 | ppb(v/v) | EPA-19 TO-14 |
| Chloroethane | 280 | 20 | ppb(v/v) | EPA-19 TO-14 |
| 1,1-Dichloroethene | 28 | 10 | ppb(v/v) | EPA-19 TO-14 |
| Acetone | 610 | 50 | ppb(v/v) | EPA-19 TO-14 |
| trans-1,2-Dichloroethene | 15 | 10 | ppb(v/v) | EPA-19 TO-14 |
| 1,1-Dichloroethane | 110 | 10 | ppb(v/v) | EPA-19 TO-14 |
| cis-1,2-Dichloroethene | 82 | 10 | ppb(v/v) | EPA-19 TO-14 |
| 2-Butanone (MEK) | 70 | 50 | ppb(v/v) | EPA-19 TO-14 |
| 1,1,1-Trichloroethane | 43 | 10 | ppb(v/v) | EPA-19 TO-14 |
| Benzene | 30 | 10 | ppb(v/v) | EPA-19 TO-14 |
| Ethylbenzene | 22 | 10 | ppb(v/v) | EPA-19 TO-14 |
| Xylenes (total) | 47 | 10 | ppb(v/v) | EPA-19 TO-14 |
| **SG9950003XX 08/10/99 16:20 003** | | | | |
| 1,1-Dichloroethene | 16000 | 200 | ppb(v/v) | EPA-19 TO-14 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 350 | 200 | ppb(v/v) | EPA-19 TO-14 |
| 1,1-Dichloroethane | 840 | 200 | ppb(v/v) | EPA-19 TO-14 |
| cis-1,2-Dichloroethene | 350 | 200 | ppb(v/v) | EPA-19 TO-14 |
| 1,1,1-Trichloroethane | 6800 | 200 | ppb(v/v) | EPA-19 TO-14 |
| Trichloroethene | 1000 | 200 | ppb(v/v) | EPA-19 TO-14 |
| **SG9950003XD 08/10/99 16:20 004** | | | | |
| 1,1-Dichloroethene | 18000 | 200 | ppb(v/v) | EPA-19 TO-14 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 390 | 200 | ppb(v/v) | EPA-19 TO-14 |
| 1,1-Dichloroethane | 1000 | 200 | ppb(v/v) | EPA-19 TO-14 |

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Quanterra

# EXECUTIVE SUMMARY - Detection Highlights

M9H110249

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|---|---|---|---|---|
| SG9950003XD 08/10/99 16:20 004 | | | | |
| cis-1,2-Dichloroethene | 460 | 200 | ppb(v/v) | EPA-19 TO-14 |
| 1,1,1-Trichloroethane | 8800 | 200 | ppb(v/v) | EPA-19 TO-14 |
| Trichloroethene | 1800 | 200 | ppb(v/v) | EPA-19 TO-14 |

# L-5 1999 OU 2 SOIL BORING AND TREATABILITY TESTING DATA VALIDATION SUMMARY REPORT

# APPENDIX L-5
# 1999 SOIL BORING AND BENCH SCALE TESTING
# DATA VALIDATION SUMMARY REPORT
# OU2 NCRA PRE-DESIGN INVESTIGATION REPORT
# STRATFORD ARMY ENGINE PLANT

## 1.0 INTRODUCTION

The purpose of this report is to summarize data validation activities and actions for soil and aqueous samples collected during investigations at Operable Unit 2 (OU2) at the Stratford Army Engine Plant. Samples were collected by HLA in August and September 1999 and analyzed by Quanterra in North Canton, Ohio. Data validation was completed by Environmental Data Quality, Inc., in Exton, Pennsylvania using USEPA Region I Tier III guidelines (USEPA, 1996).

### 1.1 Analytical Methods

The analytical program included the following methods:

- Volatile Organic Compounds by Method 8260B
- Hexavalent chromium by 7196A
- Sulfide by USEPA 376.1
- Alkalinity by USEPA 310.1
- Chloride by USEPA 300
- Hardness by USEPA 130.2
- Calcium, manganese, and magnesium by 6010B
- Inorganics by 6010B/7471A
- Cyanide by USEPA 9012A
- Semivolatile organics by 8270C
- TPH by USEPA 418.1

## 2.0 DATA QUALITY EVALUATION

The majority of the results provided by the laboratory were determined to be adequate for use in contamination and risk evaluations without qualification. With the exception of the items described below, all quality control checks for the analytical methods and validation guidelines were met. A subset of results has been qualified as estimated J values based on the validation guidance. For some results potential bias have been identified for the reported results. A subset of results have also been qualified rejected R and are considered to be unusable. Unless noted below quality control measurements associated with these data sets were within method specifications. A summary of validation actions is provided in the following subsections for each analytical method.

## 2.1 VOA

Soil samples collected for volatile analysis were preserved in methanol at the time of sample collection. Sample quantiation limits (SQLs) vary between samples depending on the amount of soil collected and the percent solids of the matrix. For some samples dilution reanalyses were necessary to bring target compounds into the instrument calibration range. Sample results from the original and dilution analyses have been combined to obtain final results for all target compounds. The following data validation actions were completed:

Initial/Continuing Calibration

- A subset of sample results for bromomethane, 1,2-DCA, acetone, 2-butanone, 2-hexanone were qualified estimated (J or UJ) due to continuing calibration response outside USEPA validation goals.

Blanks

- Postive detections of methylene chloride were qualified (U) due to associated blank contamination in a subset of samples.

## 2.2 TAL Inorganics

- Results for antimony in samples collected from piezometers PZ9902 and PZ9903 were qualified estimated J due to low recovery in the associated matrix spike. Results are potentially biased low.

- Results for copper, chromium, and manganese in samples collected from piezometers PZ9902 and PZ9903 were qualified estimated J due to high recovery in the associated matrix spike. Results are potentially biased high.

## 2.3 SPLP Metals

- A subset of positive results for barium, calcium, sodium, and zinc were qualified non-detect U due to associated method blank detections.

## 2.4 Petroleum Hydrocarbons

- Results for petroleum hydrocarbons in samples collected from piezometers PZ9902 and PZ9903 were qualified estimated J due to low recovery in the associated laboratory control sample. Results are potentially biased low.

# HYDROGEOLOGIC CALCULATIONS

## Calculation of Horizontal Hydraulic Gradient

### Beneath Building B-2:

1. **Groundwater Elevations (7/20/99-7/23/99):**

   PZ-11D: 2.33 feet MSL
   WC-12S: 2.23 feet MSL
   Distance between PZ-11D and WC-125: 589 feet
   Horizontal Gradient ($i_h$) = $\frac{(2.33-2.23)}{589}$

   = 0.00017 feet/foot

2. **Groundwater Elevations (7/24/99-7/26/99):**

   PZ-11D: 2.31 feet MSL
   WC-12S: 2.24 feet MSL
   Distance between PZ-11D and WC-125: 610 feet
   Horizontal Gradient ($i_h$) = $\frac{(2.31-2.24)}{610}$

   = 0.00011 feet/foot

### From the Eastern End of Building B-16:

1. **Groundwater Elevations (7/20/99-7/23/99):**

   Eastern End of B-16: 1.90 feet MSL
   1.00 feet MSL contour: 1.00 feet MSL
   Distance: 380 feet
   Horizontal Gradient ($i_h$) = $\frac{(1.90-1.00)}{380}$

   = 0.0024 feet/foot

2. **Groundwater Elevations (7/24/99-7/26/99):**

   Eastern End of B-16: 1.90 feet MSL
   1.20 feet MSL contour: 1.20 feet MSL
   Distance: 360 feet
   Horizontal Gradient ($i_h$) = $\frac{(1.90-1.20)}{360}$

   = 0.0019 feet/foot

**Calculation of Vertical Hydraulic Gradients:**

1. **Well Pair WC-19S/WC-19D1:**

Separation of well screen mid points = 27.3 feet

| July 20-23, 1999 | July 24-26, 1999 |
|---|---|
| WC-19S WL=2.17ft MSL | WC-19S WL=2.16ft MSL |
| WC-19D1 WL=2.13ft MSL | WC-19D1 WL=2.11 ft MSL |
| $i_v = \frac{(2.17-2.13)}{27.3}$ | $i_v = \frac{(2.16-2.11)}{27.3}$ |
| = 0.0015 feet/foot | = 0.0018 feet/foot ▼ |

2. **Well Pair WC5-35/WC5-1D:**

Separation of well screen mid points = 72.5 feet

| July 20-23, 1999 | July 24-26, 1999 |
|---|---|
| WC5-3S WL=2.28ft MSL | WC5-3S WL=2.27ft MSL |
| WC5-1D WL=1.68ft MSL | WC5-1D WL=1.82 ft MSL |
| $i_v = \frac{(2.28-1.68)}{72.5}$ | $i_v = \frac{(2.27-1.82)}{72.5}$ |
| = 0.0083 feet/foot ▼ | = 0.0062 feet/foot ▼ |

3. **Well Pair WC-5S/PZ-5D:**

Separation of well screen mid points = 30 feet

| July 20-23, 1999 | July 24-26, 1999 |
|---|---|
| WC-5S WL=1.73ft MSL | WC-5S WL=1.81ft MSL |
| PZ-5D WL=2.20ft MSL | PZ-5D WL=2.20 ft MSL |
| $i_v = \frac{(1.73-2.20)}{30}$ | $i_v = \frac{(1.81-2.20)}{30}$ |
| = -0.016 feet/foot ▲ | = -0.013 feet/foot ▲ |

4. **Well Pair WC-3S/WC2-3I:**

Separation of well screen mid points = 42 feet

| July 20-23, 1999 | July 24-26, 1999 |
|---|---|
| WC-3S WL=1.46ft MSL | WC-3S WL=1.67ft MSL |
| WC2-3I WL=1.99ft MSL | WC2-3I WL=1.99 ft MSL |
| $i_v = \frac{(1.46-1.99)}{42}$ | $i_v = \frac{(1.67-1.99)}{42}$ |
| = -0.013 feet/foot ▲ | = -0.0076 feet/foot ▲ |

# COMPLETE ANALYTICAL RESULTS

**N-1 1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION – SOILS**

**N-2 1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION – GROUNDWATER**

**N-3 1999 VOC INVESTIGATION – GROUNDWATER**

# N-1 1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION – SOILS

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| C-1 | C-1-1 | 1 | 2 | 6/17/98 | Inorganics | | Cyanide, Reactive | 5 | U | MG/KG |
| C-1 | C-1-7 | 7 | 8 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 2218 | | MG/KG |
| C-1 | C-1-7 | 7 | 8 | 6/17/98 | pH | | pH | 6.2 | | MG/KG |
| C-1 | C-1-1TCLP | 1 | 2 | 6/17/98 | TCLP | 7440-47-3 | Chromium | 9.3 | | MG/L |
| C-1 | C-1-1 | 1 | 2 | 6/17/98 | Inorganics | 57-12-5 | Cyanide | 0.144 | U | MG/KG |
| C-1 | C-1-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 2460 | | MG/KG |
| C-1 | C-1-1 | 1 | 2 | 6/17/98 | pH | | pH | 5.9 | | MG/KG |
| C-1 | C-1-1 | 1 | 2 | 6/17/98 | pH | | pH | 5 | U | MG/KG |
| C-10 | C-10-1 | 1 | 2 | 6/17/98 | pH | | pH | 7.3 | | MG/KG |
| C-10 | C-10-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 176 | | MG/KG |
| C-10 | C-10-7 | 7 | 8 | 6/17/98 | pH | | pH | 6.9 | | MG/KG |
| C-10 | C-10-7 | 7 | 8 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 6.6 | | MG/KG |
| C-11 | C-11-7TCLP | 7 | 8 | 6/17/98 | TCLP | 7440-47-3 | Chromium | 0.06 | U | MG/L |
| C-11 | C-11-1 | 1 | 2 | 6/17/98 | pH | | pH | 8.1 | | MG/KG |
| C-11 | C-11-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 8.31 | | MG/KG |
| C-11 | C-11-7 | 7 | 8 | 6/17/98 | pH | | pH | 7.4 | | MG/KG |
| C-11 | C-11-7 | 7 | 8 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 5 | | MG/KG |
| C-11 | C-11-7 | 7 | 8 | 6/17/98 | Inorganics | | Cyanide, Reactive | 5 | U | MG/KG |
| C-11 | C-11-7 | 7 | 8 | 6/17/98 | Inorganics | 57-12-5 | Cyanide | 0.144 | U | MG/KG |
| C-12 | C-12-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 17.1 | | MG/KG |
| C-12 | C-12-1 | 1 | 2 | 6/18/98 | pH | | pH | 8.5 | | MG/KG |
| C-13 | C-13-7 | 7 | 8 | 6/17/98 | Inorganics | 57-12-5 | Cyanide | 0.144 | U | MG/KG |
| C-13 | C-13-7TCLP | 7 | 8 | 6/17/98 | TCLP | 7440-47-3 | Chromium | 0.06 | U | MG/L |
| C-13 | C-13-7 | 7 | 8 | 6/17/98 | Inorganics | | Cyanide, Reactive | 5 | U | MG/KG |
| C-13 | C-13-7 | 7 | 8 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 7.4 | | MG/KG |
| C-13 | C-13-7 | 7 | 8 | 6/17/98 | pH | | pH | 6.5 | | MG/KG |
| C-13 | C-13-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 90 | | MG/KG |
| C-13 | C-13-1 | 1 | 2 | 6/17/98 | pH | | pH | 7.1 | | MG/KG |
| C-14 | C-14-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 6.93 | | MG/KG |
| C-14 | C-14-7 | 7 | 8 | 6/17/98 | pH | | pH | 6.5 | | MG/KG |
| C-14 | C-14-7 | 7 | 8 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 4.82 | | MG/KG |
| C-14 | C-14-1 | 1 | 2 | 6/17/98 | pH | | pH | 6.4 | | MG/KG |
| C-15 | C-15-1 | 1 | 2 | 6/18/98 | pH | | pH | 8.1 | | MG/KG |
| C-15 | C-15-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 12.1 | | MG/KG |
| C-16 | C-16-1 | 1 | 2 | 6/18/98 | pH | | pH | 8.3 | | MG/KG |
| C-16 | C-16-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 59 | | MG/KG |
| C-17 | C-17-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 33 | | MG/KG |
| C-17 | C-17-1 | 1 | 2 | 6/18/98 | pH | | pH | 6.5 | | MG/KG |
| C-18 | C-18-7 | 7 | 8 | 6/18/98 | Inorganics | 57-12-5 | Cyanide | 0.579 | | MG/KG |
| C-18 | C-18-7TCLP | 7 | 8 | 6/18/98 | TCLP | 7440-47-3 | Chromium | 0.5 | | MG/L |
| C-18 | C-18-7 | 7 | 8 | 6/18/98 | Inorganics | | Cyanide, Reactive | 5 | U | MG/KG |
| C-18 | C-18-7 | 7 | 8 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 576 | | MG/KG |
| C-18 | C-18-7 | 7 | 8 | 6/18/98 | pH | | pH | 5.7 | | MG/KG |
| C-18 | C-18-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 360 | | MG/KG |
| C-18 | C-18-1 | 1 | 2 | 6/18/98 | pH | | pH | 6.7 | | MG/KG |
| C-19 | C-19-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 16 | | MG/KG |
| C-19 | C-19-1 | 1 | 2 | 6/18/98 | pH | | pH | 9.7 | | MG/KG |
| C-2 | C-2-7 | 7 | 8 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 51 | | MG/KG |
| C-2 | C-2-1 | 1 | 2 | 6/17/98 | pH | | pH | 7.5 | | MG/KG |
| C-2 | C-2-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 196 | | MG/KG |
| C-2 | C-2-7 | 7 | 8 | 6/17/98 | pH | | pH | 6.1 | | MG/KG |
| C-20 | C-20-7 | 7 | 8 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 12 | | MG/KG |
| C-20 | C-20-7 | 7 | 8 | 6/18/98 | pH | | pH | 7 | | MG/KG |
| C-20 | C-20-1 | 1 | 2 | 6/18/98 | pH | | pH | 9.7 | | MG/KG |
| C-20 | C-20-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 6 | | MG/KG |
| C-21 | C-21-1 | 1 | 2 | 6/18/98 | pH | | pH | 7.9 | | MG/KG |
| C-21 | C-21-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 26.4 | | MG/KG |
| C-22 | C-22-1 | 1 | 2 | 6/18/98 | pH | | pH | 7.7 | | MG/KG |
| C-22 | C-22-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 24 | | MG/KG |
| C-23 | C-23-1 | 1 | 2 | 6/18/98 | pH | | pH | 9.9 | | MG/KG |
| C-23 | C-23-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 14.2 | | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| C-23 | C-23-7 | 7 | 8 | 6/18/98 | pH | | pH | 8.1 | | MG/KG |
| C-23 | C-23-7 | 7 | 8 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 7.61 | | MG/KG |
| C-23 | C-23-7 | 7 | 8 | 6/18/98 | Inorganics | | Cyanide, Reactive | 5 | U | MG/KG |
| C-23 | C-23-7 | 7 | 8 | 6/18/98 | Inorganics | 57-12-5 | Cyanide | 0.144 | U | MG/KG |
| C-23 | C-23-7TCLP | 7 | 8 | 6/18/98 | TCLP | 7440-47-3 | Chromium | 0.06 | U | MG/L |
| C-24 | C-24-1 | 1 | 2 | 6/18/98 | pH | | pH | 8 | | MG/KG |
| C-24 | C-24-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 42.4 | | MG/KG |
| C-25 | C-25-1 | 1 | 2 | 6/18/98 | pH | | pH | 6.9 | | MG/KG |
| C-25 | C-25-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 1245 | | MG/KG |
| C-26 | C-26-1 | 1 | 2 | 6/18/98 | pH | | pH | 6.8 | | MG/KG |
| C-26 | C-26-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 781 | | MG/KG |
| C-26 | C-26-7 | 7 | 8 | 6/18/98 | pH | | pH | 6.3 | | MG/KG |
| C-26 | C-26-7 | 7 | 8 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 121 | | MG/KG |
| C-27 | C-27-7 | 7 | 8 | 6/18/98 | Inorganics | | Cyanide, Reactive | 5 | U | MG/KG |
| C-27 | C-27-7 | 7 | 8 | 6/18/98 | Inorganics | 57-12-5 | Cyanide | 0.144 | U | MG/KG |
| C-27 | C-27-7 | 7 | 8 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 180 | | MG/KG |
| C-27 | C-27-7 | 7 | 8 | 6/18/98 | pH | | pH | 6.9 | | MG/KG |
| C-27 | C-27-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 1917 | | MG/KG |
| C-27 | C-27-1 | 1 | 2 | 6/18/98 | pH | | pH | 5.2 | | MG/KG |
| C-27 | C-27-7TCLP | 7 | 8 | 6/18/98 | TCLP | 7440-47-3 | Chromium | 0.21 | | MG/L |
| C-28 | C-28-1 | 1 | 2 | 6/18/98 | pH | | pH | 7 | | MG/KG |
| C-28 | C-28-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 12.7 | | MG/KG |
| C-28 | C-28-7 | 7 | 8 | 6/18/98 | pH | | pH | 8.4 | | MG/KG |
| C-28 | C-28-7 | 7 | 8 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 33.1 | | MG/KG |
| C-29 | C-29-1 | 1 | 2 | 6/18/98 | pH | | pH | 6.3 | | MG/KG |
| C-29 | C-29-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 29.3 | | MG/KG |
| C-29 | C-29-7 | 7 | 8 | 6/18/98 | pH | | pH | 6.9 | | MG/KG |
| C-29 | C-29-7 | 7 | 8 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 45.4 | | MG/KG |
| C-3 | C-3-1 | 1 | 2 | 6/17/98 | pH | | pH | 8.1 | | MG/KG |
| C-3 | C-3-7 | 7 | 8 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 114 | | MG/KG |
| C-3 | C-3-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 70.4 | | MG/KG |
| C-3 | C-3-7 | 7 | 8 | 6/17/98 | pH | | pH | 5.3 | | MG/KG |
| C-30 | C-30-1 | 1 | 2 | 6/18/98 | pH | | pH | 8 | | MG/KG |
| C-30 | C-30-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 76.3 | | MG/KG |
| C-30 | C-30-7 | 7 | 8 | 6/18/98 | pH | | pH | 6.5 | | MG/KG |
| C-30 | C-30-7 | 7 | 8 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 160 | | MG/KG |
| C-4 | C-4-1 | 1 | 2 | 6/17/98 | pH | | pH | 6 | | MG/KG |
| C-4 | C-4-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 362 | | MG/KG |
| C-4 | C-4-7 | 7 | 8 | 6/17/98 | pH | | pH | 6 | | MG/KG |
| C-4 | C-4-7 | 7 | 8 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 4.44 | | MG/KG |
| C-5 | C-5-1 | 1 | 2 | 6/18/98 | pH | | pH | 6.9 | | MG/KG |
| C-5 | C-5-7 | 7 | 8 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 56 | | MG/KG |
| C-5 | C-5-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 135 | | MG/KG |
| C-5 | C-5-7 | 7 | 8 | 6/18/98 | pH | | pH | 5.8 | | MG/KG |
| C-6 | C-6-1 | 1 | 2 | 6/17/98 | pH | | pH | 6.4 | | MG/KG |
| C-6 | C-6-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 25 | | MG/KG |
| C-7 | C-7-1 | 1 | 2 | 6/17/98 | pH | | pH | 8.1 | | MG/KG |
| C-7 | C-7-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 22.4 | | MG/KG |
| C-8 | C-8-1 | 1 | 2 | 6/17/98 | pH | | pH | 6.2 | | MG/KG |
| C-8 | C-8-1 | 1 | 2 | 6/17/98 | Inorganics | 7440-47-3 | Chromium | 3.43 | | MG/KG |
| C-9 | C-9-7 | 7 | 8 | 6/18/98 | pH | | pH | 6.1 | | MG/KG |
| C-9 | C-9-7 | 7 | 8 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 106 | | MG/KG |
| C-9 | C-9-1 | 1 | 2 | 6/18/98 | pH | | pH | 6.2 | | MG/KG |
| C-9 | C-9-1 | 1 | 2 | 6/18/98 | Inorganics | 7440-47-3 | Chromium | 118 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 74-87-3 | Chloromethane | 0.64 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 67-64-1 | Acetone | 0.64 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 71-43-2 | Benzene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 75-27-4 | Bromodichloromethane | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 75-25-2 | Bromoform | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 74-83-9 | Bromomethane | 0.64 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 75-15-0 | Carbon disulfide | 0.32 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 56-23-5 | Carbon tetrachloride | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 108-90-7 | Chlorobenzene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 67-66-3 | Chloroform | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 107-06-2 | 1,2-Dichloroethane | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 156-59-2 | cis-1,2-Dichloroethene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 10061-01-5 | cis-1,3-Dichloropropylene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 124-48-1 | Dibromochloromethane | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 75-09-2 | Dichloromethane | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 100-41-4 | Ethylbenzene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 108-10-1 | Methyl Isobutyl Ketone / 4 | 0.64 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 591-78-6 | Methyl n-butyl ketone | 0.64 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 75-00-3 | Chloroethane | 0.64 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SOLIDS | Q1082 | Percent Solids | | | |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | PAH | 91-20-3 | Naphthalene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 120-82-1 | 1,2,4-Trichlorobenzene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 1330-20-7 | Xylenes | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 541-73-1 | 1,3-Dichlorobenzene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 95-50-1 | 1,2-Dichlorobenzene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 621-64-7 | N-Nitrosodi-n-propylamine | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 86-30-6 | N-Nitrosodiphenylamine | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 98-95-3 | Nitrobenzene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 78-93-3 | 2-Butanone | 0.64 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-02-0 | Nickel | 5.38 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 78-87-5 | 1,2-Dichloropropane | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 71-55-6 | 1,1,1-Trichloroethane | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 79-00-5 | 1,1,2-Trichloroethane | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 75-34-3 | 1,1-Dichloroethane | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 67-66-3 | Chloroform | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 75-35-4 | 1,1-Dichloroethene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Cation | Q131 | Cation Exchange Capacity | 230 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 100-42-5 | Styrene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 17.8 | J | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 591-78-6 | Methyl n-butyl ketone | 0.5 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 108-90-7 | Chlorobenzene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 75-00-3 | Chloroethane | 0.5 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 74-87-3 | Chloromethane | 0.5 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 156-59-2 | cis-1,2-Dichloroethene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 10061-01-5 | cis-1,3-Dichloropropylene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 124-48-1 | Dibromochloromethane | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 75-09-2 | Dichloromethane | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 75-15-0 | Carbon disulfide | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 108-10-1 | Methyl Isobutyl Ketone / 4 | 0.5 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 74-83-9 | Bromomethane | 0.5 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 100-42-5 | Styrene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 127-18-4 | Tetrachloroethene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 108-88-3 | Toluene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 156-60-5 | trans-1,2-Dichloroethene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 10061-02-6 | trans-1,3-Dichloropropene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 79-01-6 | Trichloroethene | 0.17 | J | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 75-01-4 | Vinyl Chloride | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | TOC | 7440-44-0 | Total Organic Carbon | 930 | | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 100-41-4 | Ethylbenzene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 75-34-3 | 1,1-Dichloroethane | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 10 | 12 | 8/20/99 | VOA | 108-88-3 | Toluene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 156-60-5 | trans-1,2-Dichloroethene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 10061-02-6 | trans-1,3-Dichloropropene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 79-01-6 | Trichloroethene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 75-01-4 | Vinyl Chloride | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 1330-20-7 | Xylenes | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 71-55-6 | 1,1,1-Trichloroethane | 0.25 | U | MG/KG |

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**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 56-23-5 | Carbon tetrachloride | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 79-00-5 | 1,1,2-Trichloroethane | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | VOA | 127-18-4 | Tetrachloroethene | 0.32 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 75-35-4 | 1,1-Dichloroethene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 107-06-2 | 1,2-Dichloroethane | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 78-87-5 | 1,2-Dichloropropane | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 78-93-3 | 2-Butanone | 0.5 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 67-64-1 | Acetone | 0.5 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 71-43-2 | Benzene | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 75-27-4 | Bromodichloromethane | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 75-25-2 | Bromoform | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901027XX | 25 | 27 | 8/20/99 | VOA | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.25 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 121-14-2 | 2,4-Dinitrotoluene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7439-96-5 | Manganese | 75.6 | J | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-66-6 | Zinc | 12.4 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7439-97-6 | Mercury | 0.129 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 106-46-7 | 1,4-Dichlorobenzene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 95-95-4 | 2,4,5-Trichlorophenol | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 88-06-2 | 2,4,6-Trichlorophenol | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 120-83-2 | 2,4-Dichlorophenol | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 99-09-2 | 3-Nitroaniline | 2.1 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 51-28-5 | 2,4-Dinitrophenol | 2.1 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-41-7 | Beryllium | 0.0863 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 606-20-2 | 2,6-Dinitrotoluene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 91-58-7 | 2-Chloronaphthalene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 95-57-8 | 2-chlorophenol | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 91-57-6 | 2-Methylnaphthalene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 95-48-7 | 2-Methylphenol | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 88-74-4 | 2-Nitroaniline | 2.1 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 88-75-5 | 2-Nitrophenol | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 91-94-1 | 3,3'-Dichlorobenzidine | 2.1 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 105-67-9 | 2,4-Dimethylphenol | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7439-95-4 | Magnesium | 1160 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 57-12-5 | Cyanide | 3.6 | J | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 118-74-1 | Hexachlorobenzene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SOLIDS | Q1082 | Percent Solids | 0 | | |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | TPH | TPH | TPHC | 19 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-36-0 | Antimony | 0.309 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-42-8 | Boron | 11.6 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-43-9 | Cadmium | 0.371 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-47-3 | Chromium | 66.8 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7439-89-6 | Iron | 4710 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7439-92-1 | Lead | 2.14 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-50-8 | Copper | 119 | J | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-22-4 | Silver | 0.232 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-23-5 | Sodium | 72.4 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-28-0 | Thallium | 0.837 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-62-2 | Vanadium | 6.01 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-09-7 | Potassium | 960 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7782-49-2 | Selenium | 0.631 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7429-90-5 | Aluminum | 2820 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-70-2 | Calcium | 438 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-48-4 | Cobalt | 2.37 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 67-72-1 | Hexachloroethane | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 85-68-7 | Butylbenzyl phthalate | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 218-01-9 | Chrysene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 84-74-2 | Di-n-butyl phthalate | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 117-84-0 | Di-n-octyl phthalate | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 53-70-3 | Dibenz[ah]anthracene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 132-64-9 | Dibenzofuran | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 131-11-3 | Dimethyl phthalate | 0.43 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 117-81-7 | Bis(2-ethylhexyl) phthalate | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 77-47-4 | Hexachlorocyclopentadien | 2.1 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 84-66-2 | Diethyl phthalate | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 193-39-5 | Indeno[1,2,3-c,d]pyrene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 78-59-1 | Isophorone | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 87-86-5 | Pentachlorophenol | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 85-01-8 | Phenanthrene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 534-52-1 | 4,6-Dinitro-2-cresol | 2.1 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 129-00-0 | Pyrene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | Inorganics | 7440-39-3 | Barium | 10.1 | | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 108-95-2 | Phenol | 0.047 | J | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 87-68-3 | Hexachlorobutadiene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 83-32-9 | Acenaphthene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 101-55-3 | 4-Bromophenylphenyl Eth | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 59-50-7 | 4-Chloro-3-cresol | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 106-47-8 | 4-Chloroaniline | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 206-44-0 | Fluoranthene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 108-60-1 | bis(2-chloroisopropyl) Eth | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 106-44-5 | 4-methylphenol | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 100-01-6 | 4-Nitroaniline | 2.1 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 100-02-7 | 4-Nitrophenol | 2.1 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 86-73-7 | 9H-Fluorene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 7005-72-3 | 4-Chlorophenylphenyl Eth | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 208-96-8 | Acenaphthylene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 207-08-9 | Benzo[k]fluoranthene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 111-44-4 | bis(2-chloroethyl) Ether | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 86-74-8 | Carbazole | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 111-91-1 | bis(2-chloroethoxy) Metha | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 191-24-2 | Benzo[ghi]perylene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 205-99-2 | Benzo[b]fluoranthene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 50-32-8 | Benzo[a]pyrene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 56-55-3 | Benzo[a]anthracene | 0.43 | U | MG/KG |
| PZ-99-01 | PZ9901012XX | 10 | 12 | 8/20/99 | SVOA | 120-12-7 | Anthracene | 0.43 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 71-55-6 | 1,1,1-Trichloroethane | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 621-64-7 | N-Nitrosodi-n-propylamine | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 118-74-1 | Hexachlorobenzene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 541-73-1 | 1,3-Dichlorobenzene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 98-95-3 | Nitrobenzene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 95-50-1 | 1,2-Dichlorobenzene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 256 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-02-0 | Nickel | 4.84 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SOLIDS | Q1082 | Percent Solids | 0 | | |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 86-30-6 | N-Nitrosodiphenylamine | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 79-00-5 | 1,1,2-Trichloroethane | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 75-34-3 | 1,1-Dichloroethane | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 75-35-4 | 1,1-Dichloroethene | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 107-06-2 | 1,2-Dichloroethane | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 78-93-3 | 2-Butanone | 1.2 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 120-82-1 | 1,2,4-Trichlorobenzene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 85-68-7 | Butylbenzyl phthalate | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 67-64-1 | Acetone | 1.2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 71-43-2 | Benzene | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 78-87-5 | 1,2-Dichloropropane | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 87-68-3 | Hexachlorobutadiene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-22-4 | Silver | 0.223 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 75-27-4 | Bromodichloromethane | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 108-60-1 | bis(2-chloroisopropyl) Eth | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 117-81-7 | Bis(2-ethylhexyl) phthalate | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 218-01-9 | Chrysene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 117-84-0 | Di-n-octyl phthalate | 0.4 | U | MG/KG |

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**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 53-70-3 | Dibenz[ah]anthracene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 132-64-9 | Dibenzofuran | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 84-66-2 | Diethyl phthalate | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 84-74-2 | Di-n-butyl phthalate | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 206-44-0 | Fluoranthene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | PAH | 91-20-3 | Naphthalene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 77-47-4 | Hexachlorocyclopentadier | 1.9 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 67-72-1 | Hexachloroethane | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 193-39-5 | Indeno[1,2,3-c,d]pyrene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 78-59-1 | Isophorone | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 87-86-5 | Pentachlorophenol | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 85-01-8 | Phenanthrene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 108-95-2 | Phenol | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 129-00-0 | Pyrene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 57-12-5 | Cyanide | 0.61 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | TOC | 7440-44-0 | Total Organic Carbon | 580 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 131-11-3 | Dimethyl phthalate | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-62-2 | Vanadium | 8.15 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-42-8 | Boron | 11.2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-39-3 | Barium | 12.5 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-70-2 | Calcium | 814 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-47-3 | Chromium | 266 | J | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-48-4 | Cobalt | 3.44 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7439-89-6 | Iron | 5780 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7439-92-1 | Lead | 1.92 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7439-95-4 | Magnesium | 1590 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7439-96-5 | Manganese | 230 | J | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | TPH | TPH | TPHC | 8.7 | J | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-23-5 | Sodium | 192 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SOLIDS | Q1082 | Percent Solids | | | |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-66-6 | Zinc | 13.8 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-36-0 | Antimony | 0.298 | J | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 111-44-4 | bis(2-chloroethyl) Ether | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-43-9 | Cadmium | 0.0558 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-36-0 | Antimony | 0.292 | J | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-28-0 | Thallium | 0.806 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7782-49-2 | Selenium | 0.608 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-41-7 | Beryllium | 0.0831 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-50-8 | Copper | 9.47 | J | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 205-99-2 | Benzo[b]fluoranthene | 0.55 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-09-7 | Potassium | 654 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 100-41-4 | Ethylbenzene | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 74-83-9 | Bromomethane | 1.2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 75-15-0 | Carbon disulfide | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 56-23-5 | Carbon tetrachloride | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 108-90-7 | Chlorobenzene | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 75-00-3 | Chloroethane | 1.2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 67-66-3 | Chloroform | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 74-87-3 | Chloromethane | 1.2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 156-59-2 | cis-1,2-Dichloroethene | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 10061-01-5 | cis-1,3-Dichloropropylene | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7429-90-5 | Aluminum | 3110 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 75-09-2 | Dichloromethane | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 75-25-2 | Bromoform | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 108-10-1 | Methyl Isobutyl Ketone / 4 | 1.2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 591-78-6 | Methyl n-butyl ketone | 1.2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 100-42-5 | Styrene | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 127-18-4 | Tetrachloroethene | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 108-88-3 | Toluene | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 156-60-5 | trans-1,2-Dichloroethene | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 10061-02-6 | trans-1,3-Dichloropropene | 0.62 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 79-01-6 | Trichloroethene | 14 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 75-01-4 | Vinyl Chloride | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 1330-20-7 | Xylenes | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | VOA | 124-48-1 | Dibromochloromethane | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 1330-20-7 | Xylenes | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 75-09-2 | Dichloromethane | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 100-41-4 | Ethylbenzene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 108-10-1 | Methyl Isobutyl Ketone / 4 | 0.61 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 591-78-6 | Methyl n-butyl ketone | 0.61 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 100-42-5 | Styrene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 127-18-4 | Tetrachloroethene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 108-88-3 | Toluene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 156-60-5 | trans-1,2-Dichloroethene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 10061-02-6 | trans-1,3-Dichloropropene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7439-92-1 | Lead | 2.08 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 75-01-4 | Vinyl Chloride | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 156-59-2 | cis-1,2-Dichloroethene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SOLIDS | Q1082 | Percent Solids | | | |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | TPH | TPH | TPHC | 11 | J | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7429-90-5 | Aluminum | 2310 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-39-3 | Barium | 8.54 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-70-2 | Calcium | 599 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-47-3 | Chromium | 231 | J | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-48-4 | Cobalt | 2.53 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-50-8 | Copper | 7.38 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-43-9 | Cadmium | 0.0547 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 79-01-6 | Trichloroethene | 11 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 71-43-2 | Benzene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 50-32-8 | Benzo[a]pyrene | 0.53 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SOLIDS | Q1082 | Percent Solids | 0 | | |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 71-55-6 | 1,1,1-Trichloroethane | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 79-00-5 | 1,1,2-Trichloroethane | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 75-34-3 | 1,1-Dichloroethane | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 75-35-4 | 1,1-Dichloroethene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 107-06-2 | 1,2-Dichloroethane | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 78-87-5 | 1,2-Dichloropropane | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 124-48-1 | Dibromochloromethane | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 67-64-1 | Acetone | 0.61 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 10061-01-5 | cis-1,3-Dichloropropylene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 75-27-4 | Bromodichloromethane | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 75-25-2 | Bromoform | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 74-83-9 | Bromomethane | 0.61 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 75-15-0 | Carbon disulfide | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 56-23-5 | Carbon tetrachloride | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 108-90-7 | Chlorobenzene | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 75-00-3 | Chloroethane | 0.61 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 67-66-3 | Chloroform | 0.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 74-87-3 | Chloromethane | 0.61 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7439-95-4 | Magnesium | 1160 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | VOA | 78-93-3 | 2-Butanone | 0.61 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 86-74-8 | Carbazole | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 88-75-5 | 2-Nitrophenol | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 91-94-1 | 3,3'-Dichlorobenzidine | 1.9 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 99-09-2 | 3-Nitroaniline | 1.9 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 534-52-1 | 4,6-Dinitro-2-cresol | 1.9 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 101-55-3 | 4-Bromophenylphenyl Eth | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 59-50-7 | 4-Chloro-3-cresol | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 106-47-8 | 4-Chloroaniline | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 7005-72-3 | 4-Chlorophenylphenyl Eth | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 106-44-5 | 4-methylphenol | 0.4 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7439-89-6 | Iron | 4150 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 100-02-7 | 4-Nitrophenol | 1.9 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 91-57-6 | 2-Methylnaphthalene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 86-73-7 | 9H-Fluorene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 83-32-9 | Acenaphthene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 208-96-8 | Acenaphthylene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 120-12-7 | Anthracene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 56-55-3 | Benzo[a]anthracene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 50-32-8 | Benzo[a]pyrene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 205-99-2 | Benzo[b]fluoranthene | 0.25 | J | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 191-24-2 | Benzo[ghi]perylene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 207-08-9 | Benzo[k]fluoranthene | 0.26 | J | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 100-01-6 | 4-Nitroaniline | 1.9 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 106-46-7 | 1,4-Dichlorobenzene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7439-96-5 | Manganese | 170 | J | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-09-7 | Potassium | 428 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-23-5 | Sodium | 188 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-62-2 | Vanadium | 5.97 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-66-6 | Zinc | 8.82 | | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-42-8 | Boron | 10.9 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-22-4 | Silver | 0.219 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-28-0 | Thallium | 0.79 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7782-49-2 | Selenium | 0.595 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 88-74-4 | 2-Nitroaniline | 1.9 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7439-97-6 | Mercury | 0.122 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 95-48-7 | 2-Methylphenol | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 95-95-4 | 2,4,5-Trichlorophenol | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 88-06-2 | 2,4,6-Trichlorophenol | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 120-83-2 | 2,4-Dichlorophenol | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 105-67-9 | 2,4-Dimethylphenol | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 51-28-5 | 2,4-Dinitrophenol | 1.9 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 121-14-2 | 2,4-Dinitrotoluene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 606-20-2 | 2,6-Dinitrotoluene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 91-58-7 | 2-Chloronaphthalene | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 95-57-8 | 2-chlorophenol | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | SVOA | 111-91-1 | bis(2-chloroethoxy) Metha | 0.4 | U | MG/KG |
| PZ-99-02 | PZ9902027XD | 25 | 27 | 8/18/99 | Inorganics | 7440-41-7 | Beryllium | 0.0814 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 108-90-7 | Chlorobenzene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7439-96-5 | Manganese | 124 | J | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 100-41-4 | Ethylbenzene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 75-09-2 | Dichloromethane | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 124-48-1 | Dibromochloromethane | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 10061-01-5 | cis-1,3-Dichloropropylene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 156-59-2 | cis-1,2-Dichloroethene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 74-87-3 | Chloromethane | 0.64 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 591-78-6 | Methyl n-butyl ketone | 0.64 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 75-00-3 | Chloroethane | 0.64 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 100-42-5 | Styrene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 56-23-5 | Carbon tetrachloride | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 75-15-0 | Carbon disulfide | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 74-83-9 | Bromomethane | 0.64 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 75-25-2 | Bromoform | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 75-27-4 | Bromodichloromethane | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 71-43-2 | Benzene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 67-64-1 | Acetone | 0.64 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 78-93-3 | 2-Butanone | 0.64 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 67-66-3 | Chloroform | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | TPH | TPH | TPHC | 25 | J | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 108-60-1 | bis(2-chloroisopropyl) Eth | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7439-92-1 | Lead | 2.22 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7439-89-6 | Iron | 6400 | | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-50-8 | Copper | 5.91 | J | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-48-4 | Cobalt | 3.67 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-47-3 | Chromium | 41.5 | J | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-70-2 | Calcium | 829 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 108-10-1 | Methyl Isobutyl Ketone / 4 | 0.64 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7429-90-5 | Aluminum | 2810 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 75-35-4 | 1,1-Dichloroethene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SOLIDS | Q1082 | Percent Solids | | | |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 1330-20-7 | Xylenes | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 75-01-4 | Vinyl Chloride | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 79-01-6 | Trichloroethene | 2.2 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 10061-02-6 | trans-1,3-Dichloropropene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 156-60-5 | trans-1,2-Dichloroethene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 108-88-3 | Toluene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 127-18-4 | Tetrachloroethene | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-39-3 | Barium | 14.4 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 131-11-3 | Dimethyl phthalate | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 108-95-2 | Phenol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 85-01-8 | Phenanthrene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 87-86-5 | Pentachlorophenol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 78-59-1 | Isophorone | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 193-39-5 | Indeno[1,2,3-c,d]pyrene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 67-72-1 | Hexachloroethane | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 77-47-4 | Hexachlorocyclopentadier | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 78-87-5 | 1,2-Dichloropropane | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 206-44-0 | Fluoranthene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | TOC | 7440-44-0 | Total Organic Carbon | 1300 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 84-66-2 | Diethyl phthalate | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 132-64-9 | Dibenzofuran | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 53-70-3 | Dibenz[ah]anthracene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 117-84-0 | Di-n-octyl phthalate | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 84-74-2 | Di-n-butyl phthalate | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 218-01-9 | Chrysene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 85-68-7 | Butylbenzyl phthalate | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 117-81-7 | Bis(2-ethylhexyl) phthalate | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 87-68-3 | Hexachlorobutadiene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 86-30-6 | N-Nitrosodiphenylamine | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-09-7 | Potassium | 785 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 75-34-3 | 1,1-Dichloroethane | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 79-00-5 | 1,1,2-Trichloroethane | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 71-55-6 | 1,1,1-Trichloroethane | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SOLIDS | Q1082 | Percent Solids | 0 | | |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 151 | J | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SOLIDS | Q1082 | Percent Solids | | | |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 129-00-0 | Pyrene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 98-95-3 | Nitrobenzene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 57-12-5 | Cyanide | 0.67 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 621-64-7 | N-Nitrosodi-n-propylamine | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 118-74-1 | Hexachlorobenzene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 541-73-1 | 1,3-Dichlorobenzene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 95-50-1 | 1,2-Dichlorobenzene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 120-82-1 | 1,2,4-Trichlorobenzene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | PAH | 91-20-3 | Naphthalene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Cation | Q131 | Cation Exchange Capacity | 650 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | VOA | 107-06-2 | 1,2-Dichloroethane | 0.32 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-02-0 | Nickel | 5.61 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 84-74-2 | Di-n-butyl phthalate | 0.047 | J | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7439-95-4 | Magnesium | 1660 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 77-47-4 | Hexachlorocyclopentadier | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 87-68-3 | Hexachlorobutadiene | 0.42 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 206-44-0 | Fluoranthene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 131-11-3 | Dimethyl phthalate | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 84-66-2 | Diethyl phthalate | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 132-64-9 | Dibenzofuran | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 193-39-5 | Indeno[1,2,3-c,d]pyrene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 117-84-0 | Di-n-octyl phthalate | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 78-59-1 | Isophorone | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 218-01-9 | Chrysene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 85-68-7 | Butylbenzyl phthalate | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 117-81-7 | Bis(2-ethylhexyl) phthalate | 0.067 | J | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 108-60-1 | bis(2-chloroisopropyl) Eth | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 111-44-4 | bis(2-chloroethyl) Ether | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 111-91-1 | bis(2-chloroethoxy) Metha | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 207-08-9 | Benzo[k]fluoranthene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 191-24-2 | Benzo[ghi]perylene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 53-70-3 | Dibenz[ah]anthracene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 120-82-1 | 1,2,4-Trichlorobenzene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7439-97-6 | Mercury | 0.124 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-02-0 | Nickel | 7.65 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 23.8 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 98-95-3 | Nitrobenzene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 86-30-6 | N-Nitrosodiphenylamine | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 621-64-7 | N-Nitrosodi-n-propylamine | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 118-74-1 | Hexachlorobenzene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 67-72-1 | Hexachloroethane | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 95-50-1 | 1,2-Dichlorobenzene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 56-55-3 | Benzo[a]anthracene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | PAH | 91-20-3 | Naphthalene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Cation | Q131 | Cation Exchange Capacity | 480 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | TOC | 7440-44-0 | Total Organic Carbon | 950 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 57-12-5 | Cyanide | 0.64 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 129-00-0 | Pyrene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 108-95-2 | Phenol | 0.096 | J | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 85-01-8 | Phenanthrene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 87-86-5 | Pentachlorophenol | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 541-73-1 | 1,3-Dichlorobenzene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7439-97-6 | Mercury | 0.128 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 91-58-7 | 2-Chloronaphthalene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 606-20-2 | 2,6-Dinitrotoluene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 121-14-2 | 2,4-Dinitrotoluene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 51-28-5 | 2,4-Dinitrophenol | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 105-67-9 | 2,4-Dimethylphenol | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 120-83-2 | 2,4-Dichlorophenol | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 88-06-2 | 2,4,6-Trichlorophenol | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 205-99-2 | Benzo[b]fluoranthene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 106-46-7 | 1,4-Dichlorobenzene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 95-48-7 | 2-Methylphenol | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-41-7 | Beryllium | 0.086 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7782-49-2 | Selenium | 0.629 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-28-0 | Thallium | 0.834 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-22-4 | Silver | 0.231 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-42-8 | Boron | 11.6 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-66-6 | Zinc | 42.8 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-62-2 | Vanadium | 8.75 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-23-5 | Sodium | 505 | | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 95-95-4 | 2,4,5-Trichlorophenol | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 106-47-8 | 4-Chloroaniline | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-36-0 | Antimony | 0.308 | J | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 120-12-7 | Anthracene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 208-96-8 | Acenaphthylene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 83-32-9 | Acenaphthene | 0.42 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 86-73-7 | 9H-Fluorene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 86-74-8 | Carbazole | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 100-02-7 | 4-Nitrophenol | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 100-01-6 | 4-Nitroaniline | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 95-57-8 | 2-chlorophenol | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 7005-72-3 | 4-Chlorophenylphenyl Eth | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 91-57-6 | 2-Methylnaphthalene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 59-50-7 | 4-Chloro-3-cresol | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 101-55-3 | 4-Bromophenylphenyl Eth | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 534-52-1 | 4,6-Dinitro-2-cresol | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 99-09-2 | 3-Nitroaniline | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 91-94-1 | 3,3'-Dichlorobenzidine | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 88-75-5 | 2-Nitrophenol | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 88-74-4 | 2-Nitroaniline | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 50-32-8 | Benzo[a]pyrene | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | SVOA | 106-44-5 | 4-methylphenol | 0.42 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 78-59-1 | Isophorone | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 75-25-2 | Bromoform | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | PAH | 91-20-3 | Naphthalene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Cation | Q131 | Cation Exchange Capacity | 530 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | TOC | 7440-44-0 | Total Organic Carbon | 1000 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 57-12-5 | Cyanide | 0.62 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 129-00-0 | Pyrene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 108-95-2 | Phenol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 95-50-1 | 1,2-Dichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 87-86-5 | Pentachlorophenol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 541-73-1 | 1,3-Dichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 193-39-5 | Indeno[1,2,3-c,d]pyrene | 0.37 | J | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 67-72-1 | Hexachloroethane | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 77-47-4 | Hexachlorocyclopentadien | 2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 87-68-3 | Hexachlorobutadiene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 206-44-0 | Fluoranthene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 131-11-3 | Dimethyl phthalate | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 84-66-2 | Diethyl phthalate | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 132-64-9 | Dibenzofuran | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 85-01-8 | Phenanthrene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 75-27-4 | Bromodichloromethane | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 71-43-2 | Benzene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 67-64-1 | Acetone | 2.7 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 78-93-3 | 2-Butanone | 2.7 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 78-87-5 | 1,2-Dichloropropane | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 107-06-2 | 1,2-Dichloroethane | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 75-35-4 | 1,1-Dichloroethene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 120-82-1 | 1,2,4-Trichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 79-00-5 | 1,1,2-Trichloroethane | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 117-81-7 | Bis(2-ethylhexyl) phthalate | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 71-55-6 | 1,1,1-Trichloroethane | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SOLIDS | Q1082 | Percent Solids | 0 | | |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 7440-02-0 | Nickel | 6.5 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 263 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 98-95-3 | Nitrobenzene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 86-30-6 | N-Nitrosodiphenylamine | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 621-64-7 | N-Nitrosodi-n-propylamine | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 118-74-1 | Hexachlorobenzene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 75-34-3 | 1,1-Dichloroethane | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 105-67-9 | 2,4-Dimethylphenol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 88-75-5 | 2-Nitrophenol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 88-74-4 | 2-Nitroaniline | 2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 95-48-7 | 2-Methylphenol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 91-57-6 | 2-Methylnaphthalene | 0.41 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 95-57-8 | 2-chlorophenol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 91-58-7 | 2-Chloronaphthalene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 606-20-2 | 2,6-Dinitrotoluene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 84-74-2 | Di-n-butyl phthalate | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 51-28-5 | 2,4-Dinitrophenol | 2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 534-52-1 | 4,6-Dinitro-2-cresol | 2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 120-83-2 | 2,4-Dichlorophenol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 88-06-2 | 2,4,6-Trichlorophenol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 95-95-4 | 2,4,5-Trichlorophenol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 106-46-7 | 1,4-Dichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 117-84-0 | Di-n-octyl phthalate | 0.56 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 111-44-4 | bis(2-chloroethyl) Ether | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902052XX | 50 | 52 | 8/18/99 | Inorganics | 7440-43-9 | Cadmium | 0.0578 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 207-08-9 | Benzo[k]fluoranthene | 0.7 | | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 121-14-2 | 2,4-Dinitrotoluene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 86-74-8 | Carbazole | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 53-70-3 | Dibenz[ah]anthracene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 108-60-1 | bis(2-chloroisopropyl) Eth | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 111-44-4 | bis(2-chloroethyl) Ether | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 111-91-1 | bis(2-chloroethoxy) Metha | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 191-24-2 | Benzo[ghi]perylene | 0.24 | J | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 56-55-3 | Benzo[a]anthracene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 120-12-7 | Anthracene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 208-96-8 | Acenaphthylene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 91-94-1 | 3,3'-Dichlorobenzidine | 2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 86-73-7 | 9H-Fluorene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 99-09-2 | 3-Nitroaniline | 2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 100-02-7 | 4-Nitrophenol | 2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 100-01-6 | 4-Nitroaniline | 2 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 106-44-5 | 4-methylphenol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 7005-72-3 | 4-Chlorophenylphenyl Eth | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 106-47-8 | 4-Chloroaniline | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 59-50-7 | 4-Chloro-3-cresol | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 101-55-3 | 4-Bromophenylphenyl Eth | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 85-68-7 | Butylbenzyl phthalate | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 83-32-9 | Acenaphthene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 120-83-2 | 2,4-Dichlorophenol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-43-9 | Cadmium | 0.0603 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 91-94-1 | 3,3'-Dichlorobenzidine | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 88-74-4 | 2-Nitroaniline | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 91-57-6 | 2-Methylnaphthalene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 95-57-8 | 2-chlorophenol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 91-58-7 | 2-Chloronaphthalene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 606-20-2 | 2,6-Dinitrotoluene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 121-14-2 | 2,4-Dinitrotoluene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 534-52-1 | 4,6-Dinitro-2-cresol | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 105-67-9 | 2,4-Dimethylphenol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 101-55-3 | 4-Bromophenylphenyl Eth | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 88-06-2 | 2,4,6-Trichlorophenol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 95-95-4 | 2,4,5-Trichlorophenol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 106-46-7 | 1,4-Dichlorobenzene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7439-97-6 | Mercury | 0.134 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-41-7 | Beryllium | 0.0898 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7782-49-2 | Selenium | 0.657 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-28-0 | Thallium | 0.872 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-22-4 | Silver | 0.241 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 51-28-5 | 2,4-Dinitrophenol | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 83-32-9 | Acenaphthene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 111-91-1 | bis(2-chloroethoxy) Metha | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 207-08-9 | Benzo[k]fluoranthene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 191-24-2 | Benzo[ghi]perylene | 0.44 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-02 | PZ9902027XX | 25 | 27 | 8/18/99 | SVOA | 218-01-9 | Chrysene | 0.41 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 74-83-9 | Bromomethane | 2.7 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 205-99-2 | Benzo[b]fluoranthene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 50-32-8 | Benzo[a]pyrene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 56-55-3 | Benzo[a]anthracene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 99-09-2 | 3-Nitroaniline | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 208-96-8 | Acenaphthylene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 95-48-7 | 2-Methylphenol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 86-73-7 | 9H-Fluorene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 86-74-8 | Carbazole | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 100-02-7 | 4-Nitrophenol | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 100-01-6 | 4-Nitroaniline | 2.1 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 106-44-5 | 4-methylphenol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 7005-72-3 | 4-Chlorophenylphenyl Eth | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 106-47-8 | 4-Chloroaniline | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 59-50-7 | 4-Chloro-3-cresol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 120-12-7 | Anthracene | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 124-48-1 | Dibromochloromethane | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 75-01-4 | Vinyl Chloride | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 79-01-6 | Trichloroethene | 28 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 10061-02-6 | trans-1,3-Dichloropropene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 156-60-5 | trans-1,2-Dichloroethene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 108-88-3 | Toluene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 127-18-4 | Tetrachloroethene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 591-78-6 | Methyl n-butyl ketone | 2.7 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 75-15-0 | Carbon disulfide | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 1330-20-7 | Xylenes | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 75-09-2 | Dichloromethane | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 100-42-5 | Styrene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 10061-01-5 | cis-1,3-Dichloropropylene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 156-59-2 | cis-1,2-Dichloroethene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 74-87-3 | Chloromethane | 2.7 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 67-66-3 | Chloroform | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SVOA | 88-75-5 | 2-Nitrophenol | 0.44 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 75-00-3 | Chloroethane | 2.7 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 108-90-7 | Chlorobenzene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 56-23-5 | Carbon tetrachloride | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 100-41-4 | Ethylbenzene | 1.3 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7439-95-4 | Magnesium | 1430 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-42-8 | Boron | 12.1 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-36-0 | Antimony | 0.322 | J | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | VOA | 108-10-1 | Methyl Isobutyl Ketone / 4 | 2.7 | U | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-62-2 | Vanadium | 7.69 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-23-5 | Sodium | 331 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7439-96-5 | Manganese | 148 | J | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-66-6 | Zinc | 13.3 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7439-92-1 | Lead | 1.74 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7439-89-6 | Iron | 5530 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7429-90-5 | Aluminum | 2810 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-48-4 | Cobalt | 2.96 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-47-3 | Chromium | 293 | J | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-70-2 | Calcium | 841 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-39-3 | Barium | 12.5 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | SOLIDS | Q1082 | Percent Solids | | | |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-50-8 | Copper | 7.31 | J | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | Inorganics | 7440-09-7 | Potassium | 1130 | | MG/KG |
| PZ-99-02 | PZ9902032XX | 30 | 32 | 8/18/99 | TPH | TPH | TPHC | 13 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 71-43-2 | Benzene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 75-27-4 | Bromodichloromethane | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 75-25-2 | Bromoform | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 74-83-9 | Bromomethane | 0.62 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 67-66-3 | Chloroform | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 56-23-5 | Carbon tetrachloride | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 108-90-7 | Chlorobenzene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 67-64-1 | Acetone | 0.62 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 75-00-3 | Chloroethane | 0.62 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 75-15-0 | Carbon disulfide | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 78-93-3 | 2-Butanone | 0.62 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 78-87-5 | 1,2-Dichloropropane | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 107-06-2 | 1,2-Dichloroethane | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 75-35-4 | 1,1-Dichloroethene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-02-0 | Nickel | 15.5 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 79-00-5 | 1,1,2-Trichloroethane | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 71-55-6 | 1,1,1-Trichloroethane | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SOLIDS | Q1082 | Percent Solids | | | |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SOLIDS | Q1082 | Percent Solids | 0 | | |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 75-34-3 | 1,1-Dichloroethane | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 108-88-3 | Toluene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | TPH | TPH | TPHC | 11 | J | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 83-32-9 | Acenaphthene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 4.3 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-36-0 | Antimony | 0.536 | J | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7429-90-5 | Aluminum | 4150 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-39-3 | Barium | 15.4 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 75-01-4 | Vinyl Chloride | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 79-01-6 | Trichloroethene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 1330-20-7 | Xylenes | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 156-60-5 | trans-1,2-Dichloroethene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 74-87-3 | Chloromethane | 0.62 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 127-18-4 | Tetrachloroethene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 100-42-5 | Styrene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 591-78-6 | Methyl n-butyl ketone | 0.62 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 108-10-1 | Methyl Isobutyl Ketone / 4 | 0.62 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 100-41-4 | Ethylbenzene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 75-09-2 | Dichloromethane | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 124-48-1 | Dibromochloromethane | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 10061-01-5 | cis-1,3-Dichloropropylene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 156-59-2 | cis-1,2-Dichloroethene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | VOA | 10061-02-6 | trans-1,3-Dichloropropene | 0.31 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 205-99-2 | Benzo[b]fluoranthene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 117-84-0 | Di-n-octyl phthalate | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 84-74-2 | Di-n-butyl phthalate | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 218-01-9 | Chrysene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 85-68-7 | Butylbenzyl phthalate | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 117-81-7 | Bis(2-ethylhexyl) phthalate | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 108-60-1 | bis(2-chloroisopropyl) Eth | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 111-44-4 | bis(2-chloroethyl) Ether | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 111-91-1 | bis(2-chloroethoxy) Metha | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 120-12-7 | Anthracene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 191-24-2 | Benzo[ghi]perylene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 206-44-0 | Fluoranthene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 50-32-8 | Benzo[a]pyrene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 56-55-3 | Benzo[a]anthracene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 208-96-8 | Acenaphthylene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 86-73-7 | 9H-Fluorene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-70-2 | Calcium | 1100 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 621-64-7 | N-Nitrosodi-n-propylamine | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 86-74-8 | Carbazole | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 100-02-7 | 4-Nitrophenol | 1.9 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 207-08-9 | Benzo[k]fluoranthene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 129-00-0 | Pyrene | 0.4 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 86-30-6 | N-Nitrosodiphenylamine | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 621-64-7 | N-Nitrosodi-n-propylamine | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 118-74-1 | Hexachlorobenzene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 541-73-1 | 1,3-Dichlorobenzene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 95-50-1 | 1,2-Dichlorobenzene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 120-82-1 | 1,2,4-Trichlorobenzene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | PAH | 91-20-3 | Naphthalene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Cation | Q131 | Cation Exchange Capacity | 390 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 53-70-3 | Dibenz[ah]anthracene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 57-12-5 | Cyanide | 0.85 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 84-66-2 | Diethyl phthalate | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 108-95-2 | Phenol | 0.043 | J | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 85-01-8 | Phenanthrene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 87-86-5 | Pentachlorophenol | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 78-59-1 | Isophorone | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 193-39-5 | Indeno[1,2,3-c,d]pyrene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 67-72-1 | Hexachloroethane | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 77-47-4 | Hexachlorocyclopentadien | 1.9 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 87-68-3 | Hexachlorobutadiene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 98-95-3 | Nitrobenzene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | TOC | 7440-44-0 | Total Organic Carbon | 750 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 108-60-1 | bis(2-chloroisopropyl) Eth | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 83-32-9 | Acenaphthene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 131-11-3 | Dimethyl phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 84-66-2 | Diethyl phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 132-64-9 | Dibenzofuran | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 53-70-3 | Dibenz[ah]anthracene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 117-84-0 | Di-n-octyl phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 84-74-2 | Di-n-butyl phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 218-01-9 | Chrysene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 87-68-3 | Hexachlorobutadiene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 117-81-7 | Bis(2-ethylhexyl) phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 77-47-4 | Hexachlorocyclopentadien | 2 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 111-44-4 | bis(2-chloroethyl) Ether | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 111-91-1 | bis(2-chloroethoxy) Metha | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 207-08-9 | Benzo[k]fluoranthene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 191-24-2 | Benzo[ghi]perylene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 205-99-2 | Benzo[b]fluoranthene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 50-32-8 | Benzo[a]pyrene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 56-55-3 | Benzo[a]anthracene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 120-12-7 | Anthracene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 541-73-1 | 1,3-Dichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 85-68-7 | Butylbenzyl phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Cation | Q131 | Cation Exchange Capacity | 450 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 132-64-9 | Dibenzofuran | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 100-01-6 | 4-Nitroaniline | 1.9 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-02-0 | Nickel | 9.37 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 3.5 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 98-95-3 | Nitrobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 86-30-6 | N-Nitrosodiphenylamine | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 118-74-1 | Hexachlorobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 95-50-1 | 1,2-Dichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 206-44-0 | Fluoranthene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | PAH | 91-20-3 | Naphthalene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 86-73-7 | 9H-Fluorene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | TOC | 7440-44-0 | Total Organic Carbon | 1200 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 57-12-5 | Cyanide | 0.62 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 129-00-0 | Pyrene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 108-95-2 | Phenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 85-01-8 | Phenanthrene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 87-86-5 | Pentachlorophenol | 0.41 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 78-59-1 | Isophorone | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 193-39-5 | Indeno[1,2,3-c,d]pyrene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 67-72-1 | Hexachloroethane | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 120-82-1 | 1,2,4-Trichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-66-6 | Zinc | 17.8 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 208-96-8 | Acenaphthylene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 95-95-4 | 2,4,5-Trichlorophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 106-46-7 | 1,4-Dichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7439-97-6 | Mercury | 0.124 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-41-7 | Beryllium | 0.0828 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7782-49-2 | Selenium | 0.606 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-28-0 | Thallium | 0.804 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-22-4 | Silver | 0.223 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 120-83-2 | 2,4-Dichlorophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-42-8 | Boron | 11.1 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 105-67-9 | 2,4-Dimethylphenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-62-2 | Vanadium | 12.1 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-23-5 | Sodium | 314 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-09-7 | Potassium | 1250 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7439-96-5 | Manganese | 141 | J | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7439-95-4 | Magnesium | 2260 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7439-92-1 | Lead | 2.04 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7439-89-6 | Iron | 7910 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-50-8 | Copper | 8.34 | J | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-48-4 | Cobalt | 3.86 | | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-43-9 | Cadmium | 0.0556 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 91-94-1 | 3,3'-Dichlorobenzidine | 2 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 86-74-8 | Carbazole | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 100-02-7 | 4-Nitrophenol | 2 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 100-01-6 | 4-Nitroaniline | 2 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 106-44-5 | 4-methylphenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 7005-72-3 | 4-Chlorophenylphenyl Eth | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 106-47-8 | 4-Chloroaniline | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 59-50-7 | 4-Chloro-3-cresol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 101-55-3 | 4-Bromophenylphenyl Eth | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 88-06-2 | 2,4,6-Trichlorophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 99-09-2 | 3-Nitroaniline | 2 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | Inorganics | 7440-47-3 | Chromium | 16.7 | J | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 88-75-5 | 2-Nitrophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 88-74-4 | 2-Nitroaniline | 2 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 95-48-7 | 2-Methylphenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 91-57-6 | 2-Methylnaphthalene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 95-57-8 | 2-chlorophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 91-58-7 | 2-Chloronaphthalene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 606-20-2 | 2,6-Dinitrotoluene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 121-14-2 | 2,4-Dinitrotoluene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 51-28-5 | 2,4-Dinitrophenol | 2 | U | MG/KG |
| PZ-99-03 | PZ9903032XX | 30 | 32 | 8/17/99 | SVOA | 534-52-1 | 4,6-Dinitro-2-cresol | 2 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 56-55-3 | Benzo[a]anthracene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 106-47-8 | 4-Chloroaniline | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 85-68-7 | Butylbenzyl phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 117-81-7 | Bis(2-ethylhexyl) phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 108-60-1 | bis(2-chloroisopropyl) Eth | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 111-44-4 | bis(2-chloroethyl) Ether | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 111-91-1 | bis(2-chloroethoxy) Metha | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 207-08-9 | Benzo[k]fluoranthene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 191-24-2 | Benzo[ghi]perylene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 84-74-2 | Di-n-butyl phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 50-32-8 | Benzo[a]pyrene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 117-84-0 | Di-n-octyl phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 120-12-7 | Anthracene | 0.41 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 208-96-8 | Acenaphthylene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 83-32-9 | Acenaphthene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 86-73-7 | 9H-Fluorene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 86-74-8 | Carbazole | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 100-02-7 | 4-Nitrophenol | 2 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 100-01-6 | 4-Nitroaniline | 2 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 106-44-5 | 4-methylphenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 541-73-1 | 1,3-Dichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 205-99-2 | Benzo[b]fluoranthene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 78-59-1 | Isophorone | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 95-50-1 | 1,2-Dichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 120-82-1 | 1,2,4-Trichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | PAH | 91-20-3 | Naphthalene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Cation | Q131 | Cation Exchange Capacity | 170 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | TOC | 7440-44-0 | Total Organic Carbon | 1100 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 57-12-5 | Cyanide | 0.63 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 129-00-0 | Pyrene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 108-95-2 | Phenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 218-01-9 | Chrysene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 87-86-5 | Pentachlorophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 59-50-7 | 4-Chloro-3-cresol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 193-39-5 | Indeno[1,2,3-c,d]pyrene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 67-72-1 | Hexachloroethane | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 77-47-4 | Hexachlorocyclopentadier | 2 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 87-68-3 | Hexachlorobutadiene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 206-44-0 | Fluoranthene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 131-11-3 | Dimethyl phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 84-66-2 | Diethyl phthalate | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 132-64-9 | Dibenzofuran | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 53-70-3 | Dibenz[ah]anthracene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 85-01-8 | Phenanthrene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7439-92-1 | Lead | 1.31 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 7005-72-3 | 4-Chlorophenylphenyl Eth | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-43-9 | Cadmium | 0.0565 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-42-8 | Boron | 11.3 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-36-0 | Antimony | 0.301 | J | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-66-6 | Zinc | 8.46 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-62-2 | Vanadium | 12.2 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-23-5 | Sodium | 84.6 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-09-7 | Potassium | 569 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-28-0 | Thallium | 0.816 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7439-95-4 | Magnesium | 752 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7782-49-2 | Selenium | 0.615 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-50-8 | Copper | 7.17 | J | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-47-3 | Chromium | 12.6 | J | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-70-2 | Calcium | 319 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-39-3 | Barium | 13.8 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7429-90-5 | Aluminum | 1590 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | TPH | TPH | TPHC | 18 | J | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SOLIDS | Q1082 | Percent Solids | | | |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 106-44-5 | 4-methylphenol | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 131-11-3 | Dimethyl phthalate | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7439-96-5 | Manganese | 41.2 | J | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 606-20-2 | 2,6-Dinitrotoluene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 101-55-3 | 4-Bromophenylphenyl Eth | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 534-52-1 | 4,6-Dinitro-2-cresol | 2 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 99-09-2 | 3-Nitroaniline | 2 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 91-94-1 | 3,3'-Dichlorobenzidine | 2 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 88-75-5 | 2-Nitrophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 88-74-4 | 2-Nitroaniline | 2 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 95-48-7 | 2-Methylphenol | 0.41 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 91-57-6 | 2-Methylnaphthalene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-22-4 | Silver | 0.226 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 91-58-7 | 2-Chloronaphthalene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7439-89-6 | Iron | 2660 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 121-14-2 | 2,4-Dinitrotoluene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 51-28-5 | 2,4-Dinitrophenol | 2 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 105-67-9 | 2,4-Dimethylphenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 120-83-2 | 2,4-Dichlorophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 88-06-2 | 2,4,6-Trichlorophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 95-95-4 | 2,4,5-Trichlorophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 106-46-7 | 1,4-Dichlorobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7439-97-6 | Mercury | 0.126 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-41-7 | Beryllium | 0.0841 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 95-57-8 | 2-chlorophenol | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-09-7 | Potassium | 541 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-41-7 | Beryllium | 0.0805 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7782-49-2 | Selenium | 0.588 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-28-0 | Thallium | 0.781 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-22-4 | Silver | 0.216 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-43-9 | Cadmium | 0.054 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-42-8 | Boron | 10.8 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-36-0 | Antimony | 0.288 | J | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-66-6 | Zinc | 14.3 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-39-3 | Barium | 11.6 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-23-5 | Sodium | 130 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 95-95-4 | 2,4,5-Trichlorophenol | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7439-96-5 | Manganese | 123 | J | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7439-95-4 | Magnesium | 2130 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7439-92-1 | Lead | 1.32 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7439-89-6 | Iron | 5790 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-50-8 | Copper | 6.28 | J | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-48-4 | Cobalt | 3.03 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-47-3 | Chromium | 22.4 | J | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-70-2 | Calcium | 509 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7440-62-2 | Vanadium | 9.49 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 91-57-6 | 2-Methylnaphthalene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 106-47-8 | 4-Chloroaniline | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 7005-72-3 | 4-Chlorophenylphenyl Eth | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-48-4 | Cobalt | 1.19 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 118-74-1 | Hexachlorobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 59-50-7 | 4-Chloro-3-cresol | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 101-55-3 | 4-Bromophenylphenyl Eth | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 99-09-2 | 3-Nitroaniline | 1.9 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 88-75-5 | 2-Nitrophenol | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7439-97-6 | Mercury | 0.12 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 95-48-7 | 2-Methylphenol | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 106-46-7 | 1,4-Dichlorobenzene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 95-57-8 | 2-chlorophenol | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 91-58-7 | 2-Chloronaphthalene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 606-20-2 | 2,6-Dinitrotoluene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 121-14-2 | 2,4-Dinitrotoluene | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 51-28-5 | 2,4-Dinitrophenol | 1.9 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 105-67-9 | 2,4-Dimethylphenol | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 120-83-2 | 2,4-Dichlorophenol | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 88-06-2 | 2,4,6-Trichlorophenol | 0.4 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 91-94-1 | 3,3'-Dichlorobenzidine | 1.9 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 88-74-4 | 2-Nitroaniline | 1.9 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 79-00-5 | 1,1,2-Trichloroethane | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 74-83-9 | Bromomethane | 0.6 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 75-25-2 | Bromoform | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 75-27-4 | Bromodichloromethane | 0.3 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 71-43-2 | Benzene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 67-64-1 | Acetone | 0.6 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 78-93-3 | 2-Butanone | 0.6 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 78-87-5 | 1,2-Dichloropropane | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 107-06-2 | 1,2-Dichloroethane | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 75-15-0 | Carbon disulfide | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 75-34-3 | 1,1-Dichloroethane | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 71-55-6 | 1,1,1-Trichloroethane | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SOLIDS | Q1082 | Percent Solids | 0 | | |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 98-95-3 | Nitrobenzene | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 7440-02-0 | Nickel | 6.34 | | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 621-64-7 | N-Nitrosodi-n-propylamine | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | SVOA | 86-30-6 | N-Nitrosodiphenylamine | 0.41 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | Inorganics | 7429-90-5 | Aluminum | 3460 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SVOA | 534-52-1 | 4,6-Dinitro-2-cresol | 1.9 | U | MG/KG |
| PZ-99-03 | PZ9903012XX | 10 | 12 | 8/17/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 4.7 | | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 75-35-4 | 1,1-Dichloroethene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 108-88-3 | Toluene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 1330-20-7 | Xylenes | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 75-01-4 | Vinyl Chloride | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 79-01-6 | Trichloroethene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 56-23-5 | Carbon tetrachloride | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | SOLIDS | Q1082 | Percent Solids | | | |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 156-60-5 | trans-1,2-Dichloroethene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 127-18-4 | Tetrachloroethene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 100-42-5 | Styrene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | TPH | TPH | TPHC | 23 | J | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 591-78-6 | Methyl n-butyl ketone | 0.6 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 108-90-7 | Chlorobenzene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 10061-02-6 | trans-1,3-Dichloropropene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 108-10-1 | Methyl Isobutyl Ketone / 4 | 0.6 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 75-00-3 | Chloroethane | 0.6 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 67-66-3 | Chloroform | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 156-59-2 | cis-1,2-Dichloroethene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 10061-01-5 | cis-1,3-Dichloropropylene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 124-48-1 | Dibromochloromethane | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 75-09-2 | Dichloromethane | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 100-41-4 | Ethylbenzene | 0.3 | U | MG/KG |
| PZ-99-03 | PZ9903022XX | 20 | 22 | 8/17/99 | VOA | 74-87-3 | Chloromethane | 0.6 | U | MG/KG |
| SP-98-01 | SP0100 | 0.25 | 2 | 8/20/98 | TCLP | 7440-47-3 | Chromium | 7.3 | | MG/L |
| SP-98-01 | SP0107 | 7 | 9 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 80.4 | | MG/KG |
| SP-98-01 | SP0100 | 0.25 | 2 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 705 | | MG/KG |
| SP-98-01 | SP0107 | 7 | 9 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 586 | | MG/KG |
| SP-98-01 | SP0100 | 0.25 | 2 | 8/20/98 | TCLP | 57-12-5 | Cyanide | 0.01 | U | MG/L |
| SP-98-01 | SP0100 | 0.25 | 2 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 1.1 | U | MG/KG |
| SP-98-01 | SP0100 | 0.25 | 2 | 8/20/98 | Inorganics | 7440-02-0 | Nickel | 8.4 | | MG/KG |
| SP-98-01 | SP0100 | 0.25 | 2 | 8/20/98 | Inorganics | 57-12-5 | Cyanide | 0.55 | U | MG/KG |
| SP-98-01 | SP0100 | 0.25 | 2 | 8/20/98 | Inorganics | 7440-44-0 | Total Organic Carbon | 110 | U | MG/KG |
| SP-98-01 | SP0100 | 0.25 | 2 | 8/20/98 | Inorganics | 7439-96-5 | Manganese | 174 | | MG/KG |
| SP-98-02 | SP0200 | 0.33 | 2 | 8/20/98 | Inorganics | 7440-02-0 | Nickel | 6.9 | | MG/KG |
| SP-98-02 | SP0207 | 7 | 9 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 162 | | MG/KG |
| SP-98-02 | SP0200 | 0.33 | 2 | 8/20/98 | TCLP | 57-12-5 | Cyanide | 0.01 | U | MG/L |
| SP-98-02 | SP0200 | 0.33 | 2 | 8/20/98 | Inorganics | 7440-44-0 | Total Organic Carbon | 110 | U | MG/KG |
| SP-98-02 | SP0207 | 7 | 9 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 35.7 | | MG/KG |
| SP-98-02 | SP0200 | 0.33 | 2 | 8/20/98 | Inorganics | 7439-96-5 | Manganese | 156 | | MG/KG |
| SP-98-02 | SP0200 | 0.33 | 2 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 72.7 | | MG/KG |
| SP-98-02 | SP0200 | 0.33 | 2 | 8/20/98 | Inorganics | 57-12-5 | Cyanide | 0.55 | U | MG/KG |
| SP-98-02 | SP0200 | 0.33 | 2 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 279 | | MG/KG |
| SP-98-02 | SP0200 | 0.33 | 2 | 8/20/98 | TCLP | 7440-47-3 | Chromium | 3.7 | | MG/L |
| SP-98-03 | SP0300 | 0.25 | 2 | 8/20/98 | TCLP | 7440-47-3 | Chromium | 1.1 | | MG/L |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| SP-98-03 | SP0307 | 7 | 9 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 59.2 | | MG/KG |
| SP-98-03 | SP0307 | 7 | 9 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 1380 | | MG/KG |
| SP-98-03 | SP0300 | 0.25 | 2 | 8/20/98 | TCLP | 57-12-5 | Cyanide | 0.01 | U | MG/L |
| SP-98-03 | SP0300 | 0.25 | 2 | 8/20/98 | Inorganics | 7440-44-0 | Total Organic Carbon | 120 | U | MG/KG |
| SP-98-03 | SP0300 | 0.25 | 2 | 8/20/98 | Inorganics | 7440-02-0 | Nickel | 4.6 | U | MG/KG |
| SP-98-03 | SP0300 | 0.25 | 2 | 8/20/98 | Inorganics | 7439-96-5 | Manganese | 152 | | MG/KG |
| SP-98-03 | SP0300 | 0.25 | 2 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 3.7 | | MG/KG |
| SP-98-03 | SP0300 | 0.25 | 2 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 910 | | MG/KG |
| SP-98-03 | SP0300 | 0.25 | 2 | 8/20/98 | Inorganics | 57-12-5 | Cyanide | 230 | | MG/KG |
| SP-98-04 | SP0407 | 7 | 9 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 41.9 | | MG/KG |
| SP-98-04 | SP0407 | 7 | 9 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 252 | | MG/KG |
| SP-98-04 | SP0400 | 0.4 | 2 | 8/20/98 | Inorganics | 7439-96-5 | Manganese | 234 | | MG/KG |
| SP-98-04 | SP0400 | 0.4 | 2 | 8/20/98 | TCLP | 7440-47-3 | Chromium | 0.1 | U | MG/L |
| SP-98-04 | SP0400 | 0.4 | 2 | 8/20/98 | Inorganics | 57-12-5 | Cyanide | 0.55 | U | MG/KG |
| SP-98-04 | SP0400 | 0.4 | 2 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 46.8 | | MG/KG |
| SP-98-04 | SP0400 | 0.4 | 2 | 8/20/98 | Inorganics | 7440-44-0 | Total Organic Carbon | 140 | | MG/KG |
| SP-98-04 | SP0400 | 0.4 | 2 | 8/20/98 | Inorganics | 7440-02-0 | Nickel | 71.8 | | MG/KG |
| SP-98-04 | SP0400 | 0.4 | 2 | 8/20/98 | TCLP | 57-12-5 | Cyanide | 0.01 | U | MG/L |
| SP-98-04 | SP0400 | 0.4 | 2 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 8.9 | | MG/KG |
| SP-98-05 | SP0500 | 0.33 | 2 | 8/20/98 | Inorganics | 7440-02-0 | Nickel | 29.9 | | MG/KG |
| SP-98-05 | SP0507 | 7 | 9 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 5.9 | | MG/KG |
| SP-98-05 | SP0507 | 7 | 9 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 15.3 | | MG/KG |
| SP-98-05 | SP0500 | 0.33 | 2 | 8/20/98 | TCLP | 57-12-5 | Cyanide | 0.01 | U | MG/L |
| SP-98-05 | SP0500 | 0.33 | 2 | 8/20/98 | Inorganics | 7440-44-0 | Total Organic Carbon | 110 | U | MG/KG |
| SP-98-05 | SP0500 | 0.33 | 2 | 8/20/98 | Inorganics | 7439-96-5 | Manganese | 215 | | MG/KG |
| SP-98-05 | SP0500 | 0.33 | 2 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 11.9 | | MG/KG |
| SP-98-05 | SP0500 | 0.33 | 2 | 8/20/98 | Inorganics | 57-12-5 | Cyanide | 0.55 | U | MG/KG |
| SP-98-05 | SP0500 | 0.33 | 2 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 1380 | | MG/KG |
| SP-98-05 | SP0500 | 0.33 | 2 | 8/20/98 | TCLP | 7440-47-3 | Chromium | 21.8 | | MG/L |
| SP-98-06 | SP0600 | 0.33 | 2 | 8/20/98 | TCLP | 7440-47-3 | Chromium | 0.2 | | MG/L |
| SP-98-06 | SP0600 | 0.33 | 2 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 574 | | MG/KG |
| SP-98-06 | SP0607 | 7 | 9 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 1.2 | U | MG/KG |
| SP-98-06 | SP0607 | 7 | 9 | 8/20/98 | Inorganics | 7440-47-3 | Chromium | 6.6 | | MG/KG |
| SP-98-06 | SP0600 | 0.33 | 2 | 8/20/98 | TCLP | 57-12-5 | Cyanide | 0.01 | U | MG/L |
| SP-98-06 | SP0600 | 0.33 | 2 | 8/20/98 | Inorganics | 7440-44-0 | Total Organic Carbon | 120 | U | MG/KG |
| SP-98-06 | SP0600 | 0.33 | 2 | 8/20/98 | Inorganics | 7440-02-0 | Nickel | 223 | | MG/KG |
| SP-98-06 | SP0600 | 0.33 | 2 | 8/20/98 | Inorganics | 7439-96-5 | Manganese | 123 | | MG/KG |
| SP-98-06 | SP0600 | 0.33 | 2 | 8/20/98 | Inorganics | 57-12-5 | Cyanide | 19 | | MG/KG |
| SP-98-06 | SP0600 | 0.33 | 2 | 8/20/98 | Inorganics | 18540-29-9 | Hexavalent Chromium | 1.6 | | MG/KG |
| SP-99-01 | SP9901004XX | 4 | 8 | 1/6/99 | Inorganics | | Cyanide, Reactive | 0.279 | U | MG/KG |
| SP-99-01 | SP9901000XX | 0 | 4 | 1/6/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.425 | U | MG/KG |
| SP-99-01 | SP9901004XX | 4 | 8 | 1/6/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.447 | U | MG/KG |
| SP-99-01 | SP9901004XX | 4 | 8 | 1/6/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.447 | U | MG/KG |
| SP-99-01 | SP9901004XX | 4 | 8 | 1/6/99 | Inorganics | 7440-47-3 | Chromium | 6.01 | | MG/KG |
| SP-99-01 | SP9901004XX | 4 | 8 | 1/6/99 | pH | | pH | | | |
| SP-99-01 | SP9901000XX | 0 | 4 | 1/6/99 | Inorganics | 7439-96-5 | Manganese | 203 | | MG/KG |
| SP-99-01 | SP9901004XX | 4 | 8 | 1/6/99 | Inorganics | 57-12-5 | Cyanide | 0.279 | U | MG/KG |
| SP-99-01 | SP9901000XX | 0 | 4 | 1/6/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.425 | U | MG/KG |
| SP-99-01 | SP9901000XX | 0 | 4 | 1/6/99 | Inorganics | 7440-47-3 | Chromium | 7.01 | | MG/KG |
| SP-99-01 | SP9901000XX | 0 | 4 | 1/6/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.05 | U | MG/L |
| SP-99-01 | SP9901000XX | 0 | 4 | 1/6/99 | pH | | pH | | | |
| SP-99-01 | SP9901000XX | 0 | 4 | 1/6/99 | Inorganics | 57-12-5 | Cyanide | 0.267 | U | MG/KG |
| SP-99-01 | SP9901000XX | 0 | 4 | 1/6/99 | Inorganics | | Cyanide, Reactive | 0.267 | U | MG/KG |
| SP-99-02 | SP9902000XX | 4 | 8 | 1/6/99 | Inorganics | 7440-47-3 | Chromium | 13.5 | | MG/KG |
| SP-99-02 | SP9902000XX | 4 | 8 | 1/6/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.611 | J | MG/KG |
| SP-99-02 | SP9902000XX | 4 | 8 | 1/6/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.611 | | MG/KG |
| SP-99-03 | SP9903005XX | 5 | 7 | 1/7/99 | Inorganics | | Cyanide, Reactive | 0.299 | U | MG/KG |
| SP-99-03 | SP9903005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.475 | UJ | MG/KG |
| SP-99-03 | SP9903005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.475 | U | MG/KG |
| SP-99-03 | SP9903005XX | 5 | 7 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 4.52 | U | MG/KG |
| SP-99-03 | SP9903005XX | 5 | 7 | 1/7/99 | pH | | pH | | | |

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**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| SP-99-03 | SP9903005XX | 5 | 7 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 0.299 | U | MG/KG |
| SP-99-03 | SP9903000XX | 0 | 2 | 1/7/99 | Inorganics | 7439-96-5 | Manganese | 87.4 | | MG/KG |
| SP-99-03 | SP9903000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.444 | UJ | MG/KG |
| SP-99-03 | SP9903000XX | 0 | 2 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 5.69 | | MG/KG |
| SP-99-03 | SP9903000XX | 0 | 2 | 1/7/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.05 | U | MG/L |
| SP-99-03 | SP9903000XX | 0 | 2 | 1/7/99 | Inorganics | | Cyanide, Reactive | 0.278 | U | MG/KG |
| SP-99-03 | SP9903000XX | 0 | 2 | 1/7/99 | pH | | pH | | | |
| SP-99-03 | SP9903000XX | 0 | 2 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 0.278 | U | MG/KG |
| SP-99-03 | SP9903000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.444 | U | MG/KG |
| SP-99-04 | SP9904000XX | 0 | 2 | 1/7/99 | Inorganics | 7439-96-5 | Manganese | 192 | | MG/KG |
| SP-99-04 | SP9904005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.467 | U | MG/KG |
| SP-99-04 | SP9904005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.467 | UJ | MG/KG |
| SP-99-04 | SP9904005XX | 5 | 7 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 9.31 | | MG/KG |
| SP-99-04 | SP9904005XX | 5 | 7 | 1/7/99 | pH | | pH | | | |
| SP-99-04 | SP9904005XX | 5 | 7 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 0.292 | U | MG/KG |
| SP-99-04 | SP9904000XX | 0 | 2 | 1/7/99 | Inorganics | | Cyanide, Reactive | 0.291 | U | MG/KG |
| SP-99-04 | SP9904000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.805 | | MG/KG |
| SP-99-04 | SP9904000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.805 | J | MG/KG |
| SP-99-04 | SP9904000XX | 0 | 2 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 16.4 | | MG/KG |
| SP-99-04 | SP9904000XX | 0 | 2 | 1/7/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.05 | U | MG/L |
| SP-99-04 | SP9904000XX | 0 | 2 | 1/7/99 | pH | | pH | | | |
| SP-99-04 | SP9904000XX | 0 | 2 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 0.291 | U | MG/KG |
| SP-99-04 | SP9904005XX | 5 | 7 | 1/7/99 | Inorganics | | Cyanide, Reactive | 0.292 | U | MG/KG |
| SP-99-05 | SP9905005XX | 5 | 7 | 1/11/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 2.46 | | MG/KG |
| SP-99-05 | SP9905005XX | 5 | 7 | 1/11/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 2.46 | J | MG/KG |
| SP-99-05 | SP9905005XX | 5 | 7 | 1/11/99 | Inorganics | 7440-47-3 | Chromium | 8.7 | | MG/KG |
| SP-99-05 | SP9905005XX | 5 | 7 | 1/11/99 | pH | | pH | | | |
| SP-99-05 | SP9905005XX | 5 | 7 | 1/11/99 | Inorganics | 57-12-5 | Cyanide | 0.287 | U | MG/KG |
| SP-99-05 | SP9905005XX | 5 | 7 | 1/11/99 | Inorganics | | Cyanide, Reactive | 0.287 | U | MG/KG |
| SP-99-05 | SP9905000XX | 0 | 4 | 1/11/99 | Inorganics | | Cyanide, Reactive | 0.416 | | MG/KG |
| SP-99-05 | SP9905000XX | 0 | 4 | 1/11/99 | Inorganics | 7439-96-5 | Manganese | 157 | | MG/KG |
| SP-99-05 | SP9905000XX | 0 | 4 | 1/11/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 39.8 | | MG/KG |
| SP-99-05 | SP9905000XX | 0 | 4 | 1/11/99 | Inorganics | 7440-47-3 | Chromium | 75.8 | | MG/KG |
| SP-99-05 | SP9905000XX | 0 | 4 | 1/11/99 | SPLP Inorgani | 7440-47-3 | Chromium | 1.31 | | MG/L |
| SP-99-05 | SP9905000XX | 0 | 4 | 1/11/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 39.8 | | MG/KG |
| SP-99-05 | SP9905000XX | 0 | 4 | 1/11/99 | Inorganics | 57-12-5 | Cyanide | 0.416 | | MG/KG |
| SP-99-05 | SP9905000XX | 0 | 4 | 1/11/99 | pH | | pH | | | |
| SP-99-07 | SP9907005XX | 5 | 7 | 1/8/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.456 | UJ | MG/KG |
| SP-99-07 | SP9907005XD | 5 | 7 | 1/8/99 | Inorganics | 7440-47-3 | Chromium | 7.42 | | MG/KG |
| SP-99-07 | SP9907005XD | 5 | 7 | 1/8/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.452 | UJ | MG/KG |
| SP-99-07 | SP9907005XD | 5 | 7 | 1/8/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.452 | U | MG/KG |
| SP-99-07 | SP9907005XX | 5 | 7 | 1/8/99 | Inorganics | | Cyanide, Reactive | 0.285 | U | MG/KG |
| SP-99-07 | SP9907005XX | 5 | 7 | 1/8/99 | Inorganics | 57-12-5 | Cyanide | 0.285 | U | MG/KG |
| SP-99-07 | SP9907005XX | 5 | 7 | 1/8/99 | Inorganics | 7440-47-3 | Chromium | 8.44 | | MG/KG |
| SP-99-07 | SP9907005XD | 5 | 7 | 1/8/99 | Inorganics | | Cyanide, Reactive | 0.285 | U | MG/KG |
| SP-99-07 | SP9907000XX | 0 | 2 | 1/8/99 | Inorganics | 7440-47-3 | Chromium | 9.61 | | MG/KG |
| SP-99-07 | SP9907005XX | 5 | 7 | 1/8/99 | pH | | pH | | | |
| SP-99-07 | SP9907005XD | 5 | 7 | 1/8/99 | Inorganics | 57-12-5 | Cyanide | 0.285 | U | MG/KG |
| SP-99-07 | SP9907000XX | 0 | 2 | 1/8/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.438 | U | MG/KG |
| SP-99-07 | SP9907000XX | 0 | 2 | 1/8/99 | Inorganics | 7439-96-5 | Manganese | 237 | | MG/KG |
| SP-99-07 | SP9907000XX | 0 | 2 | 1/8/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.438 | UJ | MG/KG |
| SP-99-07 | SP9907000XX | 0 | 2 | 1/8/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.05 | U | MG/L |
| SP-99-07 | SP9907000XX | 0 | 2 | 1/8/99 | pH | | pH | | | |
| SP-99-07 | SP9907000XX | 0 | 2 | 1/8/99 | Inorganics | 57-12-5 | Cyanide | 0.495 | | MG/KG |
| SP-99-07 | SP9907000XX | 0 | 2 | 1/8/99 | Inorganics | | Cyanide, Reactive | 0.495 | | MG/KG |
| SP-99-07 | SP9907005XX | 5 | 7 | 1/8/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.456 | U | MG/KG |
| SP-99-07 | SP9907005XD | 5 | 7 | 1/8/99 | pH | | pH | | | |
| SP-99-08 | SP9908007XX | 5 | 7 | 2/7/99 | pH | | pH | | | |
| SP-99-08 | SP9908007XX | 5 | 7 | 2/7/99 | Inorganics | 7440-47-3 | Chromium | 7.47 | | MG/KG |
| SP-99-08 | SP9908007XX | 5 | 7 | 2/7/99 | Inorganics | 57-12-5 | Cyanide | 0.278 | U | MG/KG |
| SP-99-08 | SP9908007XX | 5 | 7 | 2/7/99 | Inorganics | | Cyanide, Reactive | 0.278 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| SP-99-08 | SP9908007XX | 5 | 7 | 2/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | | U | |
| SP-99-08 | SP9908002XX | 0 | 2 | 2/7/99 | Inorganics | 7439-96-5 | Manganese | 238 | | MG/KG |
| SP-99-08 | SP9908002XX | 0 | 2 | 2/7/99 | Inorganics | 7440-47-3 | Chromium | 31.8 | | MG/KG |
| SP-99-08 | SP9908002XX | 0 | 2 | 2/7/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.314 | | MG/L |
| SP-99-08 | SP9908002XX | 0 | 2 | 2/7/99 | Inorganics | 57-12-5 | Cyanide | 0.278 | U | MG/KG |
| SP-99-08 | SP9908002XX | 0 | 2 | 2/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | | | |
| SP-99-08 | SP9908002XX | 0 | 2 | 2/7/99 | Inorganics | | Cyanide, Reactive | 0.278 | U | MG/KG |
| SP-99-09 | SP990900MD | 0 | 4 | 1/9/99 | SPLP Inorgani | 7439-96-5 | Manganese | 425 | | MG/L |
| SP-99-09 | SP9909000XX | 0 | 4 | 1/9/99 | Inorganics | 7439-96-5 | Manganese | 233 | | MG/L |
| SP-99-09 | SP990900MD | 0 | 4 | 1/9/99 | pH | | pH | | | |
| SP-99-09 | SP9909005XX | 5 | 7 | 1/9/99 | Inorganics | 57-12-5 | Cyanide | 0.299 | U | MG/KG |
| SP-99-09 | SP9909005XX | 5 | 7 | 1/9/99 | Inorganics | 7440-47-3 | Chromium | 21 | | MG/KG |
| SP-99-09 | SP9909005XX | 5 | 7 | 1/9/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.854 | J | MG/KG |
| SP-99-09 | SP9909005XX | 5 | 7 | 1/9/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.854 | | MG/KG |
| SP-99-09 | SP990900MD | 0 | 4 | 1/9/99 | Inorganics | | Cyanide, Reactive | 0.274 | U | MG/KG |
| SP-99-09 | SP9909000XX | 0 | 4 | 1/9/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 8.29 | | MG/KG |
| SP-99-09 | SP990900MD | 0 | 4 | 1/9/99 | Inorganics | 7440-47-3 | Chromium | 123 | | MG/KG |
| SP-99-09 | SP9909005XX | 5 | 7 | 1/9/99 | Inorganics | | Cyanide, Reactive | 0.299 | U | MG/KG |
| SP-99-09 | SP990900MD | 0 | 4 | 1/9/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 16.2 | | MG/KG |
| SP-99-09 | SP990900MD | 0 | 4 | 1/9/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 16.2 | | MG/KG |
| SP-99-09 | SP990900MD | 0 | 4 | 1/9/99 | Inorganics | 7439-96-5 | Manganese | 425 | | MG/L |
| SP-99-09 | SP990900MD | 0 | 4 | 1/9/99 | Inorganics | 57-12-5 | Cyanide | 0.274 | U | MG/KG |
| SP-99-09 | SP9909000MS | 0 | 4 | 1/9/99 | Inorganics | 57-12-5 | Cyanide | 0.275 | U | MG/KG |
| SP-99-09 | SP9909005XX | 5 | 7 | 1/9/99 | pH | | pH | | | |
| SP-99-09 | SP9909000MS | 0 | 4 | 1/9/99 | Inorganics | | Cyanide, Reactive | 0.275 | U | MG/KG |
| SP-99-09 | SP9909000XX | 0 | 4 | 1/9/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 8.29 | J | MG/KG |
| SP-99-09 | SP9909000MS | 0 | 4 | 1/9/99 | pH | | pH | | | |
| SP-99-09 | SP9909000MS | 0 | 4 | 1/9/99 | SPLP Inorgani | 7440-47-3 | Chromium | 1.3 | | MG/L |
| SP-99-09 | SP9909000MS | 0 | 4 | 1/9/99 | SPLP Inorgani | 7439-96-5 | Manganese | 385 | | MG/L |
| SP-99-09 | SP9909000MS | 0 | 4 | 1/9/99 | Inorganics | 7440-47-3 | Chromium | 115 | | MG/KG |
| SP-99-09 | SP9909000MS | 0 | 4 | 1/9/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 22.3 | | MG/KG |
| SP-99-09 | SP9909000MS | 0 | 4 | 1/9/99 | Inorganics | 7439-96-5 | Manganese | 385 | | MG/L |
| SP-99-09 | SP9909000XX | 0 | 4 | 1/9/99 | Inorganics | | Cyanide, Reactive | 0.277 | U | MG/KG |
| SP-99-09 | SP9909000XX | 0 | 4 | 1/9/99 | Inorganics | 57-12-5 | Cyanide | 0.277 | U | MG/KG |
| SP-99-09 | SP9909000XX | 0 | 4 | 1/9/99 | pH | | pH | | | |
| SP-99-09 | SP9909000XX | 0 | 4 | 1/9/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.865 | | MG/L |
| SP-99-09 | SP9909000XX | 0 | 4 | 1/9/99 | SPLP Inorgani | 7439-96-5 | Manganese | 233 | | MG/L |
| SP-99-09 | SP9909000XX | 0 | 4 | 1/9/99 | Inorganics | 7440-47-3 | Chromium | 49.9 | | MG/KG |
| SP-99-09 | SP9909000MS | 0 | 4 | 1/9/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 22.3 | | MG/KG |
| SP-99-09 | SP990900MD | 0 | 4 | 1/9/99 | SPLP Inorgani | 7440-47-3 | Chromium | 1.3 | | MG/L |
| SP-99-11 | SP9911000XX | 0 | 2 | 1/5/99 | Inorganics | 57-12-5 | Cyanide | 0.272 | U | MG/KG |
| SP-99-11 | SP9911000XX | 0 | 2 | 1/5/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 640 | | MG/KG |
| SP-99-11 | SP9911000XX | 0 | 2 | 1/5/99 | Inorganics | 7439-96-5 | Manganese | 224 | | MG/KG |
| SP-99-11 | SP9911000XX | 0 | 2 | 1/5/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 640 | J | MG/KG |
| SP-99-11 | SP9911000XX | 0 | 2 | 1/5/99 | Inorganics | 7440-47-3 | Chromium | 888 | | MG/KG |
| SP-99-11 | SP9911000XX | 0 | 2 | 1/5/99 | pH | | pH | | | |
| SP-99-11 | SP9911000XX | 0 | 2 | 1/5/99 | Inorganics | | Cyanide, Reactive | 0.272 | U | MG/KG |
| SP-99-11 | SP9911000XX | 0 | 2 | 1/5/99 | SPLP Inorgani | 7440-47-3 | Chromium | 25.5 | | MG/L |
| SP-99-11 | SP9911006XX | 6 | 8 | 1/6/99 | Inorganics | 57-12-5 | Cyanide | 0.266 | U | MG/KG |
| SP-99-11 | SP9911006XX | 6 | 8 | 1/6/99 | Inorganics | | Cyanide, Reactive | 0.266 | U | MG/KG |
| SP-99-11 | SP9911006XX | 6 | 8 | 1/6/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 513 | | MG/KG |
| SP-99-11 | SP9911006XX | 6 | 8 | 1/6/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 513 | J | MG/KG |
| SP-99-11 | SP9911006XX | 6 | 8 | 1/6/99 | Inorganics | 7440-47-3 | Chromium | 504 | | MG/KG |
| SP-99-11 | SP9911006XX | 6 | 8 | 1/6/99 | pH | | pH | | | |
| SP-99-12 | SP9912000XX | 0 | 2 | 1/12/99 | Inorganics | | Cyanide, Reactive | 0.282 | U | MG/KG |
| SP-99-12 | SP9912000XX | 0 | 2 | 1/12/99 | Inorganics | 57-12-5 | Cyanide | 0.282 | U | MG/KG |
| SP-99-12 | SP9912000XX | 0 | 2 | 1/12/99 | pH | | pH | | | |
| SP-99-12 | SP9912000XX | 0 | 2 | 1/12/99 | SPLP Inorgani | 7440-47-3 | Chromium | 1.82 | | MG/L |
| SP-99-12 | SP9912000XX | 0 | 2 | 1/12/99 | Inorganics | 7440-47-3 | Chromium | 56.3 | | MG/KG |
| SP-99-12 | SP9912000XX | 0 | 2 | 1/12/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 51.2 | | MG/KG |
| SP-99-12 | SP9912000XX | 0 | 2 | 1/12/99 | Inorganics | 7439-96-5 | Manganese | 238 | | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| SP-99-12 | SP9912000XX | 0 | 2 | 1/12/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 51.2 | | MG/KG |
| SP-99-12 | SP9912005XX | 5 | 7 | 1/12/99 | Inorganics | | Cyanide, Reactive | 0.283 | U | MG/KG |
| SP-99-12 | SP9912005XX | 5 | 7 | 1/12/99 | Inorganics | 57-12-5 | Cyanide | 0.283 | U | MG/KG |
| SP-99-12 | SP9912005XX | 5 | 7 | 1/12/99 | pH | | pH | | | |
| SP-99-12 | SP9912005XX | 5 | 7 | 1/12/99 | Inorganics | 7440-47-3 | Chromium | 12.5 | | MG/KG |
| SP-99-12 | SP9912005XX | 5 | 7 | 1/12/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 3.55 | | MG/KG |
| SP-99-12 | SP9912005XX | 5 | 7 | 1/12/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 3.55 | J | MG/KG |
| SP-99-13 | SP9913005XX | 5 | 7 | 1/12/99 | Inorganics | 7439-96-5 | Manganese | 90.2 | | MG/KG |
| SP-99-13 | SP9913005XX | 5 | 7 | 1/12/99 | pH | | pH | | | |
| SP-99-13 | SP9913000XX | 0 | 2 | 1/12/99 | Inorganics | | Cyanide, Reactive | 0.281 | U | MG/KG |
| SP-99-13 | SP9913005XX | 5 | 7 | 1/12/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 2.25 | | MG/KG |
| SP-99-13 | SP9913005XX | 5 | 7 | 1/12/99 | Inorganics | 7440-47-3 | Chromium | 14.5 | | MG/KG |
| SP-99-13 | SP9913005XX | 5 | 7 | 1/12/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.067 | | MG/L |
| SP-99-13 | SP9913005XX | 5 | 7 | 1/12/99 | Inorganics | 57-12-5 | Cyanide | 0.287 | U | MG/KG |
| SP-99-13 | SP9913005XX | 5 | 7 | 1/12/99 | Inorganics | | Cyanide, Reactive | 0.287 | U | MG/KG |
| SP-99-13 | SP9913000XX | 0 | 2 | 1/12/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 80.1 | | MG/KG |
| SP-99-13 | SP9913000XX | 0 | 2 | 1/12/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 80.1 | | MG/KG |
| SP-99-13 | SP9913000XX | 0 | 2 | 1/12/99 | Inorganics | 7440-47-3 | Chromium | 109 | | MG/KG |
| SP-99-13 | SP9913000XX | 0 | 2 | 1/12/99 | pH | | pH | | | |
| SP-99-13 | SP9913000XX | 0 | 2 | 1/12/99 | Inorganics | 57-12-5 | Cyanide | 0.281 | U | MG/KG |
| SP-99-13 | SP9913005XX | 5 | 7 | 1/12/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 2.25 | J | MG/KG |
| SP-99-14 | SP9914002XX | 0 | 2 | 2/7/99 | Inorganics | | Cyanide, Reactive | 0.278 | U | MG/KG |
| SP-99-14 | SP9914007XX | 5 | 7 | 2/7/99 | Inorganics | | Cyanide, Reactive | 1.43 | | MG/KG |
| SP-99-14 | SP9914007XX | 5 | 7 | 2/7/99 | Inorganics | 7439-96-5 | Manganese | 111 | | MG/KG |
| SP-99-14 | SP9914007XX | 5 | 7 | 2/7/99 | Inorganics | 7440-47-3 | Chromium | 1880 | | MG/KG |
| SP-99-14 | SP9914007XX | 5 | 7 | 2/7/99 | SPLP Inorgani | 7440-47-3 | Chromium | 2.09 | | MG/L |
| SP-99-14 | SP9914007XX | 5 | 7 | 2/7/99 | Inorganics | 57-12-5 | Cyanide | 1.43 | | MG/KG |
| SP-99-14 | SP9914007XX | 5 | 7 | 2/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | | | |
| SP-99-14 | SP9914007XX | 5 | 7 | 2/7/99 | pH | | pH | | | |
| SP-99-14 | SP9914002XX | 0 | 2 | 2/7/99 | Inorganics | 57-12-5 | Cyanide | 0.278 | U | MG/KG |
| SP-99-14 | SP9914002XX | 0 | 2 | 2/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | | | |
| SP-99-14 | SP9914002XX | 0 | 2 | 2/7/99 | pH | | pH | | | |
| SP-99-14 | SP9914002XX | 0 | 2 | 2/7/99 | Inorganics | 7440-47-3 | Chromium | 814 | | MG/KG |
| SP-99-17 | SP9917005XX | 5 | 7 | 1/7/99 | Inorganics | | Cyanide, Reactive | 0.294 | U | MG/KG |
| SP-99-17 | SP9917000XX | 0 | 2 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 5.91 | | MG/KG |
| SP-99-17 | SP9917005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 22.9 | | MG/KG |
| SP-99-17 | SP9917005XX | 5 | 7 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 71.8 | | MG/KG |
| SP-99-17 | SP9917005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 22.9 | | MG/KG |
| SP-99-17 | SP9917005XX | 5 | 7 | 1/7/99 | pH | | pH | | | |
| SP-99-17 | SP9917005XX | 5 | 7 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 0.294 | U | MG/KG |
| SP-99-17 | SP9917000XX | 0 | 2 | 1/7/99 | Inorganics | 7439-96-5 | Manganese | 264 | | MG/KG |
| SP-99-17 | SP9917000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 19 | J | MG/KG |
| SP-99-17 | SP9917000XX | 0 | 2 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 61.7 | | MG/KG |
| SP-99-17 | SP9917000XX | 0 | 2 | 1/7/99 | pH | | pH | | | |
| SP-99-17 | SP9917000XX | 0 | 2 | 1/7/99 | Inorganics | | Cyanide, Reactive | 6.68 | | MG/KG |
| SP-99-17 | SP9917000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 19 | | MG/KG |
| SP-99-17 | SP9917000XX | 0 | 2 | 1/7/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.269 | | MG/L |
| SP-99-18 | SP9918000XX | 0 | 2 | 1/7/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.05 | U | MG/L |
| SP-99-18 | SP9918005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.582 | | MG/KG |
| SP-99-18 | SP9918005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.582 | J | MG/KG |
| SP-99-18 | SP9918005XX | 5 | 7 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 7.67 | | MG/KG |
| SP-99-18 | SP9918005XX | 5 | 7 | 1/7/99 | pH | | pH | | | |
| SP-99-18 | SP9918005XX | 5 | 7 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 0.298 | U | MG/KG |
| SP-99-18 | SP9918005XX | 5 | 7 | 1/7/99 | Inorganics | | Cyanide, Reactive | 0.298 | U | MG/KG |
| SP-99-18 | SP9918000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.458 | U | MG/KG |
| SP-99-18 | SP9918000XX | 0 | 2 | 1/7/99 | Inorganics | 7439-96-5 | Manganese | 157 | | MG/KG |
| SP-99-18 | SP9918000XX | 0 | 2 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 7.39 | | MG/KG |
| SP-99-18 | SP9918000XX | 0 | 2 | 1/7/99 | pH | | pH | | | |
| SP-99-18 | SP9918000XX | 0 | 2 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 0.286 | U | MG/KG |
| SP-99-18 | SP9918000XX | 0 | 2 | 1/7/99 | Inorganics | | Cyanide, Reactive | 0.286 | U | MG/KG |
| SP-99-18 | SP9918000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.458 | U | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| SP-99-19 | SP9919005XX | 5 | 7 | 1/7/99 | Inorganics | 7439-96-5 | Manganese | 140 | | MG/KG |
| SP-99-19 | SP9919005XX | 5 | 7 | 1/7/99 | pH | | pH | | | |
| SP-99-19 | SP9919005XX | 5 | 7 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 48.4 | | MG/KG |
| SP-99-19 | SP9919000XX | 0 | 2 | 1/7/99 | Inorganics | | Cyanide, Reactive | 11.2 | | MG/KG |
| SP-99-19 | SP9919005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 4.92 | | MG/KG |
| SP-99-19 | SP9919005XX | 5 | 7 | 1/7/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.05 | U | MG/L |
| SP-99-19 | SP9919005XX | 5 | 7 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 0.302 | U | MG/KG |
| SP-99-19 | SP9919005XX | 5 | 7 | 1/7/99 | Inorganics | | Cyanide, Reactive | 0.302 | U | MG/KG |
| SP-99-19 | SP9919000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 1.4 | | MG/KG |
| SP-99-19 | SP9919000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 1.4 | J | MG/KG |
| SP-99-19 | SP9919000XX | 0 | 2 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 127 | | MG/KG |
| SP-99-19 | SP9919000XX | 0 | 2 | 1/7/99 | pH | | pH | | | |
| SP-99-19 | SP9919000XX | 0 | 2 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 11.2 | | MG/KG |
| SP-99-19 | SP9919005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 4.92 | | MG/KG |
| SP-99-20 | SP9920000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.534 | | MG/KG |
| SP-99-20 | SP9920005XX | 5 | 7 | 1/7/99 | Inorganics | | Cyanide, Reactive | 3.93 | | MG/KG |
| SP-99-20 | SP9920005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.473 | U | MG/KG |
| SP-99-20 | SP9920005XX | 5 | 7 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.473 | UJ | MG/KG |
| SP-99-20 | SP9920005XX | 5 | 7 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 6.83 | | MG/KG |
| SP-99-20 | SP9920005XX | 5 | 7 | 1/7/99 | pH | | pH | | | |
| SP-99-20 | SP9920000XX | 0 | 2 | 1/7/99 | Inorganics | 7439-96-5 | Manganese | 205 | | MG/KG |
| SP-99-20 | SP9920000XX | 0 | 2 | 1/7/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 0.534 | J | MG/KG |
| SP-99-20 | SP9920000XX | 0 | 2 | 1/7/99 | Inorganics | 7440-47-3 | Chromium | 19.6 | | MG/KG |
| SP-99-20 | SP9920000XX | 0 | 2 | 1/7/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.05 | U | MG/L |
| SP-99-20 | SP9920000XX | 0 | 2 | 1/7/99 | pH | | pH | | | |
| SP-99-20 | SP9920000XX | 0 | 2 | 1/7/99 | Inorganics | | Cyanide, Reactive | 0.288 | U | MG/KG |
| SP-99-20 | SP9920000XX | 0 | 2 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 0.288 | U | MG/KG |
| SP-99-20 | SP9920005XX | 5 | 7 | 1/7/99 | Inorganics | 57-12-5 | Cyanide | 3.93 | | MG/KG |
| SP-PILOT-01 | SPP1A000XXX | 2 | 7 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-01 | SPP1A000XXX | 2 | 7 | 1/10/99 | SPLP Inorgani | 7440-47-3 | Chromium | 1.6 | | MG/L |
| SP-PILOT-01 | SPP1A000XXX | 2 | 7 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 67.1 | | MG/KG |
| SP-PILOT-01 | SPP1A000XXX | 2 | 7 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 43 | J | MG/KG |
| SP-PILOT-01 | SPP1A000XXX | 2 | 7 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 43 | | MG/KG |
| SP-PILOT-01 | SPP1A005XXX | 2 | 7 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 19.5 | | MG/KG |
| SP-PILOT-01 | SPP1A005XXX | 2 | 7 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 9.95 | J | MG/KG |
| SP-PILOT-01 | SPP1A005XXX | 2 | 7 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 9.95 | | MG/KG |
| SP-PILOT-01 | SPP1A005XXX | 2 | 7 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-02 | SPP2A005XXX | 2 | 7 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-02 | SPP2A005XXX | 2 | 7 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 13.5 | | MG/KG |
| SP-PILOT-02 | SPP2A005XXX | 2 | 7 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 4.33 | J | MG/KG |
| SP-PILOT-02 | SPP2A005XXX | 2 | 7 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 4.33 | | MG/KG |
| SP-PILOT-02 | SPP2A005XXX | 2 | 7 | 1/10/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.161 | | MG/L |
| SP-PILOT-02 | SPP2A000XXX | 2 | 7 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 48 | | MG/KG |
| SP-PILOT-02 | SPP2A000XXX | 2 | 7 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 48 | J | MG/KG |
| SP-PILOT-02 | SPP2A000XXX | 2 | 7 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 85.2 | | MG/KG |
| SP-PILOT-02 | SPP2A000XXX | 2 | 7 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-03 | SPP3A000XXX | 3 | 8 | 1/10/99 | SPLP Inorgani | 7440-47-3 | Chromium | 2.01 | | MG/L |
| SP-PILOT-03 | SPP3A005XX | 3 | 8 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 21.5 | J | MG/KG |
| SP-PILOT-03 | SPP3A005XX | 3 | 8 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 38.7 | | MG/KG |
| SP-PILOT-03 | SPP3A005XX | 3 | 8 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-03 | SPP3A000XXX | 3 | 8 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 46.1 | | MG/KG |
| SP-PILOT-03 | SPP3A000XD | 3 | 8 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-03 | SPP3A000XXX | 3 | 8 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 46.1 | J | MG/KG |
| SP-PILOT-03 | SPP3A000XXX | 3 | 8 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 69.3 | | MG/KG |
| SP-PILOT-03 | SPP3A005XX | 3 | 8 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 21.5 | | MG/KG |
| SP-PILOT-03 | SPP3A000MS | 3 | 8 | 1/10/99 | SPLP Inorgani | 7440-47-3 | Chromium | 2.42 | | MG/L |
| SP-PILOT-03 | SPP3A000MD | 3 | 8 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 60 | | MG/KG |
| SP-PILOT-03 | SPP3A000XD | 3 | 8 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 67.8 | | MG/KG |
| SP-PILOT-03 | SPP3A000MD | 3 | 8 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 60 | | MG/KG |
| SP-PILOT-03 | SPP3A000XXX | 3 | 8 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-03 | SPP3A000MD | 3 | 8 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 72.9 | | MG/KG |

**TABLE N-1**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION SOILS**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| SP-PILOT-03 | SPP3A000MS | 3 | 8 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-03 | SPP3A000MD | 3 | 8 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-03 | SPP3A000MS | 3 | 8 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 183 | | MG/KG |
| SP-PILOT-03 | SPP3A000MS | 3 | 8 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 52.3 | | MG/KG |
| SP-PILOT-03 | SPP3A000MS | 3 | 8 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 52.3 | | MG/KG |
| SP-PILOT-03 | SPP3A000XD | 3 | 8 | 1/10/99 | SPLP Inorgani | 7440-47-3 | Chromium | 2.02 | | MG/L |
| SP-PILOT-03 | SPP3A000XD | 3 | 8 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 41.3 | J | MG/KG |
| SP-PILOT-03 | SPP3A000XD | 3 | 8 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 41.3 | | MG/KG |
| SP-PILOT-03 | SPP3A000MD | 3 | 8 | 1/10/99 | SPLP Inorgani | 7440-47-3 | Chromium | 2.04 | | MG/L |
| SP-PILOT-04 | SPP4A000XX | 4 | 9 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 37.8 | | MG/KG |
| SP-PILOT-04 | SPP4A004XX | 4 | 9 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 6.25 | | MG/KG |
| SP-PILOT-04 | SPP4A004XX | 4 | 9 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 6.25 | J | MG/KG |
| SP-PILOT-04 | SPP4A004XX | 4 | 9 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 17.5 | | MG/KG |
| SP-PILOT-04 | SPP4A000XX | 4 | 9 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 37.8 | | MG/KG |
| SP-PILOT-04 | SPP4A000XX | 4 | 9 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 58.4 | | MG/KG |
| SP-PILOT-04 | SPP4A000XX | 4 | 9 | 1/10/99 | SPLP Inorgani | 7440-47-3 | Chromium | 1.6 | | MG/L |
| SP-PILOT-04 | SPP4A000XX | 4 | 9 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-04 | SPP4A004XX | 4 | 9 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-05 | SPP5A005XX | 6 | 11 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-05 | SPP5A000XX | 6 | 11 | 1/10/99 | pH | | pH | | | |
| SP-PILOT-05 | SPP5A000XX | 6 | 11 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 79.2 | | MG/KG |
| SP-PILOT-05 | SPP5A000XX | 6 | 11 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 69.9 | | MG/KG |
| SP-PILOT-05 | SPP5A005XX | 6 | 11 | 1/10/99 | SPLP Inorgani | 7440-47-3 | Chromium | 0.301 | | MG/L |
| SP-PILOT-05 | SPP5A005XX | 6 | 11 | 1/10/99 | Inorganics | 7440-47-3 | Chromium | 23.5 | | MG/KG |
| SP-PILOT-05 | SPP5A005XX | 6 | 11 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 8.48 | | MG/KG |
| SP-PILOT-05 | SPP5A005XX | 6 | 11 | 1/10/99 | Inorganics | 18540-29-9 | Hexavalent Chromium | 8.48 | | MG/KG |
| SP-PILOT-05 | SPP5A000XX | 6 | 11 | 1/10/99 | Inorganics | FE2 | Ferrous Iron | 69.9 | | MG/KG |

# N-2 1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION – GROUNDWATER

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ECD-4 | ECD4018XX | 8 | 18 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 2.25 | | MG/L |
| ECD-4 | ECD4018XX | 8 | 18 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 2.25 | | MG/L |
| ECD-4 | ECD4018XX | 8 | 18 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| PZ-8D | WCPZ8D000X | 24 | 34 | 13-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0019 | | MG/L |
| PZ-8D | WCPZ8D000X | 24 | 34 | 13-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| PZ-8D | PZ8D034XX | 24 | 34 | 13-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| PZ-8D | WCPZ8D000X | 24 | 34 | 13-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| PZ-8D | WCPZ8D000X | 24 | 34 | 13-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| PZ-8D | WCPZ8D000X | 24 | 34 | 13-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| PZ-8D | WCPZ8D000X | 24 | 34 | 13-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| PZ-8D | WCPZ8D000X | 24 | 34 | 13-Jan-99 | Inorganics | Averill Environmental | FE2 | Iron, Ferrous | 0.01 | U | MG/L |
| PZ-8D | PZ8D034XX | 24 | 34 | 13-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| PZ-8D | WCPZ8D000X | 24 | 34 | 13-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| PZ-8D | WCPZ8D000X | 24 | 34 | 13-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| PZ-99-01B | PZ1B082499 | 30 | 35 | 24-Aug-99 | Inorganics | Quanterra | 7440-70-2 | Calcium | 89.4 | | MG/L |
| PZ-99-01B | PZ1B082499 | 30 | 35 | 24-Aug-99 | Inorganics | Quanterra | 7439-95-4 | Magnesium | 56.8 | | MG/L |
| PZ-99-01B | PZ1B082499 | 30 | 35 | 24-Aug-99 | Inorganics | Quanterra | 7439-96-5 | Manganese | 3.8 | | MG/L |
| PZ-99-02B | PZ2B081999 | 25 | 30 | 19-Aug-99 | Inorganics | Quanterra | 7440-70-2 | Calcium | 151 | | MG/L |
| PZ-99-02B | PZ2B081999 | 25 | 30 | 19-Aug-99 | Inorganics | Quanterra | 7439-95-4 | Magnesium | 106 | | MG/L |
| PZ-99-02B | PZ2B081999 | 25 | 30 | 19-Aug-99 | Inorganics | Quanterra | 7439-96-5 | Manganese | 2.8 | | MG/L |
| PZ-99-03 | PZ03081899XX | 4 | 9 | 18-Aug-99 | Inorganics | Quanterra | 7440-70-2 | Calcium | 41.2 | | MG/L |
| PZ-99-03 | PZ03081899XX | 4 | 9 | 18-Aug-99 | Inorganics | Quanterra | 7439-95-4 | Magnesium | 12.5 | | MG/L |
| PZ-99-03 | PZ03081899XX | 4 | 9 | 18-Aug-99 | Inorganics | Quanterra | 7439-96-5 | Manganese | 10.6 | J | MG/L |
| PZ-PILOT- | PZPILOT03008 | 6 | 8 | 10-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 22.5 | | MG/L |
| PZ-PILOT- | PZPILOT03008 | 6 | 8 | 10-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 22.5 | | MG/L |
| WP-98-01 | WP9801007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | 18540-29-9 | Chromium, | 10.4 | | MG/L |
| WP-98-01 | WP9801007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | 7440-47-3 | Chromium, Total | 5.2 | | MG/L |
| WP-98-01 | WP9801007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | | Cyanide, Reactive | 0.01 | U | MG/L |
| WP-98-01 | WP9801007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | FE2 | Iron, Ferrous | 0.05 | U | MG/L |
| WP-98-01 | WP9801007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | 7439-89-6 | Iron, Total | 4.4 | | MG/L |
| WP-98-01 | WP9801007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | 7440-02-0 | Nickel | 0.04 | U | MG/L |
| WP-98-01 | WP01XX | 6.5 | 11.5 | 20-Aug-98 | Inorganics | Quanterra | 18540-29-9 | Chromium, | 0.05 | U | MG/L |
| WP-98-01 | WP01XX | 6.5 | 11.5 | 20-Aug-98 | Inorganics | Quanterra | 7440-47-3 | Chromium, Total | 5.2 | | MG/L |
| WP-98-01 | WP01XX | 6.5 | 11.5 | 20-Aug-98 | Inorganics | Quanterra | 57-12-5 | Cyanide | 0.01 | U | MG/L |
| WP-98-01 | WP01XX | 6.5 | 11.5 | 20-Aug-98 | Inorganics | Quanterra | | Cyanide, Reactive | 0.01 | U | MG/L |
| WP-98-01 | WP01XX | 6.5 | 11.5 | 20-Aug-98 | Inorganics | Quanterra | FE2 | Iron, Ferrous | 10.4 | | MG/L |
| WP-98-01 | WP01XX | 6.5 | 11.5 | 20-Aug-98 | Inorganics | Quanterra | 7439-89-6 | Iron, Total | 4.4 | | MG/L |
| WP-98-01 | WP01XX | 6.5 | 11.5 | 20-Aug-98 | Inorganics | Quanterra | 7440-02-0 | Nickel | 0.04 | U | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-98-01 | WP01XX | 6.5 | 11.5 | 20-Aug-98 | Inorganics | Quanterra | 14808-79-8 | Sulfate | 37 | | MG/L |
| WP-98-02 | WP9802007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | 18540-29-9 | Chromium, | 0.02 | U | MG/L |
| WP-98-02 | WP9802007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | 7440-47-3 | Chromium, Total | 0.026 | | MG/L |
| WP-98-02 | WP9802007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | | Cyanide, Reactive | 0.01 | U | MG/L |
| WP-98-02 | WP9802007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | FE2 | Iron, Ferrous | 0.05 | U | MG/L |
| WP-98-02 | WP9802007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | 7439-89-6 | Iron, Total | 0.05 | U | MG/L |
| WP-98-02 | WP9802007XX | 5 | 7 | 20-Aug-98 | Inorganics | Quanterra | 7440-02-0 | Nickel | 0.04 | U | MG/L |
| WP-98-02 | WP02XX | 7 | 12 | 20-Aug-98 | Inorganics | Quanterra | 18540-29-9 | Chromium, | 0.02 | U | MG/L |
| WP-98-02 | WP02XX | 7 | 12 | 20-Aug-98 | Inorganics | Quanterra | 7440-47-3 | Chromium, Total | 0.026 | | MG/L |
| WP-98-02 | WP02XX | 7 | 12 | 20-Aug-98 | Inorganics | Quanterra | 57-12-5 | Cyanide | 0.01 | U | MG/L |
| WP-98-02 | WP02XX | 7 | 12 | 20-Aug-98 | Inorganics | Quanterra | | Cyanide, Reactive | 0.01 | U | MG/L |
| WP-98-02 | WP02XX | 7 | 12 | 20-Aug-98 | Inorganics | Quanterra | FE2 | Iron, Ferrous | 0.05 | U | MG/L |
| WP-98-02 | WP02XX | 7 | 12 | 20-Aug-98 | Inorganics | Quanterra | 7439-89-6 | Iron, Total | 0.05 | U | MG/L |
| WP-98-02 | WP02XX | 7 | 12 | 20-Aug-98 | Inorganics | Quanterra | 7440-02-0 | Nickel | 0.04 | U | MG/L |
| WP-98-02 | WP02XX | 7 | 12 | 20-Aug-98 | Inorganics | Quanterra | 14808-79-8 | Sulfate | 43 | | MG/L |
| WP-99-01 | WP9901008XX | 8 | 10 | 06-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0029 | | MG/L |
| WP-99-01 | WP9901008XX | 8 | 10 | 06-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-01 | WP9901008XX | 8 | 10 | 06-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.079 | | MG/L |
| WP-99-01 | WP9901008XX | 8 | 10 | 06-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.061 | | MG/L |
| WP-99-01 | WP9901008XX | 8 | 10 | 06-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-01 | WP9901008XX | 8 | 10 | 06-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-01 | WP9901008XX | 8 | 10 | 06-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-01 | WP9901008XX | 8 | 10 | 06-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.075 | | MG/L |
| WP-99-01 | WP9901020XX | 16 | 20 | 24-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-01 | WP9901020XX | 16 | 20 | 24-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-01 | WP9901020XX | 16 | 20 | 24-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-01 | WP9901025XX | 21 | 25 | 24-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-01 | WP9901025XX | 21 | 25 | 24-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-01 | WP9901025XX | 21 | 25 | 24-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.7 | | MG/L |
| WP-99-02 | WP9902012XX | 8 | 12 | 21-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 1 | | MG/L |
| WP-99-02 | WP9902012XX | 8 | 12 | 21-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 1 | | MG/L |
| WP-99-02 | WP9902012XX | 8 | 12 | 21-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-02 | WP9902020XX | 16 | 20 | 21-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 1.5 | | MG/L |
| WP-99-02 | WP9902020XX | 16 | 20 | 21-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 1.5 | | MG/L |
| WP-99-02 | WP9902020XX | 16 | 20 | 21-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-02 | WP9902028XX | 24 | 28 | 21-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 350 | | MG/L |
| WP-99-02 | WP9902028XX | 24 | 28 | 21-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 350 | | MG/L |
| WP-99-02 | WP9902028XX | 24 | 28 | 21-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-02 | WP990234XX | 30 | 34 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-02 | WP990234XX | 30 | 34 | 22-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 50.9 | | MG/L |
| WP-99-02 | WP9902034XX | 30 | 34 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 75 | | MG/L |
| WP-99-02 | WP990234XX | 30 | 34 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 53.1 | | MG/L |
| WP-99-02 | WP9902034XX | 30 | 34 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 75 | | MG/L |
| WP-99-02 | WP990234XX | 30 | 34 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-02 | WP990234XX | 30 | 34 | 22-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-02 | WP990234XX | 30 | 34 | 22-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-02 | WP9902034XX | 30 | 34 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-02 | WP990234XX | 30 | 34 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-02 | WP990234XX | 30 | 34 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-02 | WP990241XX | 37 | 41 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0015 | | MG/L |
| WP-99-02 | WP990241XX | 37 | 41 | 22-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-02 | WP9902041XX | 37 | 41 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-02 | WP990241XX | 37 | 41 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-02 | WP9902041XX | 37 | 41 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-02 | WP990241XX | 37 | 41 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-02 | WP990241XX | 37 | 41 | 22-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-02 | WP990241XX | 37 | 41 | 22-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-02 | WP9902041XX | 37 | 41 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.4 | | MG/L |
| WP-99-02 | WP990241XX | 37 | 41 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-02 | WP990241XX | 37 | 41 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-02 | WP990251XX | 47 | 51 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0014 | | MG/L |
| WP-99-02 | WP9902051XX | 47 | 51 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-02 | WP990251XX | 47 | 51 | 22-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-02 | WP990251XX | 47 | 51 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-02 | WP9902051XX | 47 | 51 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-02 | WP990251XX | 47 | 51 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-02 | WP990251XX | 47 | 51 | 22-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-02 | WP990251XX | 47 | 51 | 22-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-02 | WP9902051XX | 47 | 51 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-02 | WP990251XX | 47 | 51 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-02 | WP990251XX | 47 | 51 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-02 | WP990261XX | 57 | 61 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0027 | | MG/L |
| WP-99-02 | WP990261XX | 57 | 61 | 22-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-02 | WP9902061XX | 57 | 61 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-02 | WP990261XX | 57 | 61 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-02 | WP9902061XX | 57 | 61 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-02 | WP990261XX | 57 | 61 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-02 | WP990261XX | 57 | 61 | 22-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-02 | WP990261XX | 57 | 61 | 22-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-02 | WP9902061XX | 57 | 61 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.8 | | MG/L |
| WP-99-02 | WP990261XX | 57 | 61 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-02 | WP990261XX | 57 | 61 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-02 | WP990271XX | 67 | 71 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.003 | | MG/L |
| WP-99-02 | WP990271XX | 67 | 71 | 22-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-02 | WP9902071XX | 67 | 71 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-02 | WP9902071XX | 67 | 71 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-02 | WP990271XX | 67 | 71 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-02 | WP990271XX | 67 | 71 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-02 | WP990271XX | 67 | 71 | 22-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-02 | WP990271XX | 67 | 71 | 22-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-02 | WP9902071XX | 67 | 71 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 2.2 | | MG/L |
| WP-99-02 | WP990271XX | 67 | 71 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-02 | WP990271XX | 67 | 71 | 22-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.072 | | MG/L |
| WP-99-03 | WP9903009XX | 5 | 9 | 24-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 7 | | MG/L |
| WP-99-03 | WP9903009XX | 5 | 9 | 24-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 7 | | MG/L |
| WP-99-03 | WP9903009XX | 5 | 9 | 24-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-03 | WP9903015XX | 11 | 15 | 24-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 9 | | MG/L |
| WP-99-03 | WP9903015XX | 11 | 15 | 24-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 9 | | MG/L |
| WP-99-03 | WP9903015XX | 11 | 15 | 24-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-03 | WP9903020XX | 16 | 20 | 24-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-03 | WP9903020XX | 16 | 20 | 24-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-03 | WP9903020XX | 16 | 20 | 24-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.15 | | MG/L |
| WP-99-03 | WP9903026XX | 21 | 25 | 11-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-03 | WP9903026XX | 21 | 25 | 11-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 8.39 | | MG/L |
| WP-99-03 | WP9903025XX | 21 | 25 | 24-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-03 | WP9903026XX | 21 | 25 | 11-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 7.17 | | MG/L |
| WP-99-03 | WP9903025XX | 21 | 25 | 24-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-03 | WP9903026XX | 21 | 25 | 11-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-03 | WP9903026XX | 21 | 25 | 11-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-03 | WP9903026XX | 21 | 25 | 11-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-03 | WP9903025XX | 21 | 25 | 24-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-03 | WP9903026XX | 21 | 25 | 11-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-03 | WP9903026XX | 21 | 25 | 11-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-03 | WP9903030XX | 26 | 30 | 24-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 8 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-03 | WP9903030XX | 26 | 30 | 24-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 8 | | MG/L |
| WP-99-03 | WP9903030XX | 26 | 30 | 24-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-03 | WP9903034XX | 30 | 34 | 24-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-03 | WP9903034XX | 30 | 34 | 24-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-03 | WP9903034XX | 30 | 34 | 24-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-03 | WP9903044XX | 40 | 44 | 24-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-03 | WP9903044XX | 40 | 44 | 24-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-03 | WP9903044XX | 40 | 44 | 24-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-03 | WP9903049XX | 45 | 49 | 24-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-03 | WP9903049XX | 45 | 49 | 24-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-03 | WP9903049XX | 45 | 49 | 24-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-04 | WP9904010XX | 6 | 10 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 4.5 | | MG/L |
| WP-99-04 | WP9904010XX | 6 | 10 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 4.5 | | MG/L |
| WP-99-04 | WP9904010XX | 6 | 10 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-04 | WP9904020XX | 16 | 20 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 95 | | MG/L |
| WP-99-04 | WP9904020XX | 16 | 20 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 95 | | MG/L |
| WP-99-04 | WP9904020XX | 16 | 20 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-04 | WP9904026XX | 22 | 26 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 700 | | MG/L |
| WP-99-04 | WP9904026XX | 22 | 26 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 700 | | MG/L |
| WP-99-04 | WP9904026XX | 22 | 26 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-04 | WP9904034XX | 30 | 34 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-04 | WP9904034XX | 30 | 34 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-04 | WP9904034XX | 30 | 34 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.2 | F | MG/L |
| WP-99-04 | WP9904044XX | 40 | 44 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-04 | WP9904044XX | 40 | 44 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-04 | WP9904044XX | 40 | 44 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.2 | | MG/L |
| WP-99-04 | WP9904054XX | 50 | 54 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-04 | WP9904054XX | 50 | 54 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-04 | WP9904054XX | 50 | 54 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.2 | | MG/L |
| WP-99-04 | WP9904066XX | 62 | 66 | 22-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-04 | WP9904066XX | 62 | 66 | 22-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-04 | WP9904066XX | 62 | 66 | 22-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-05 | WP9905010XX | 6 | 10 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-05 | WP9905010XX | 6 | 10 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-05 | WP9905010XX | 6 | 10 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-05 | WP9905020XX | 16 | 20 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-05 | WP9905020XX | 16 | 20 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-05 | WP9905020XX | 16 | 20 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-05 | WP9905030XX | 26 | 30 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-05 | WP9905030XX | 26 | 30 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-05 | WP9905030XX | 26 | 30 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.6 | | MG/L |
| WP-99-05 | WP9905040XX | 36 | 40 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-05 | WP9905040XX | 36 | 40 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-05 | WP9905040XX | 36 | 40 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.4 | | MG/L |
| WP-99-05 | WP9905050XX | 46 | 50 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-05 | WP9905050XX | 46 | 50 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-05 | WP9905050XX | 46 | 50 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-05 | WP9905060XX | 56 | 60 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.15 | | MG/L |
| WP-99-05 | WP9905060XX | 56 | 60 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.15 | | MG/L |
| WP-99-05 | WP9905060XX | 56 | 60 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-06 | WP9906012XX | 8 | 12 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-06 | WP9906012XX | 8 | 12 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-06 | WP9906012XX | 8 | 12 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-06 | WP9906020XX | 16 | 20 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-06 | WP9906020XX | 16 | 20 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-06 | WP9906020XX | 16 | 20 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-06 | WP9906030XX | 26 | 30 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-06 | WP9906030XX | 26 | 30 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-06 | WP9906030XX | 26 | 30 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-06 | WP9906036XX | 32 | 36 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-06 | WP9906036XX | 32 | 36 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-06 | WP9906036XX | 32 | 36 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-06 | WP9906046XX | 42 | 46 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-06 | WP9906046XX | 42 | 46 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-06 | WP9906046XX | 42 | 46 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.2 | | MG/L |
| WP-99-06 | WP9906056XX | 52 | 56 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-06 | WP9906056XX | 52 | 56 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-06 | WP9906056XX | 52 | 56 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.2 | | MG/L |
| WP-99-06 | WP9906066XX | 62 | 66 | 23-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-06 | WP9906066XX | 62 | 66 | 23-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-06 | WP9906066XX | 62 | 66 | 23-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-07 | WP9907007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-07 | WP9907007XD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-07 | WP9907007MD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0032 | | MG/L |
| WP-99-07 | WP9907007MS | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0031 | | MG/L |
| WP-99-07 | WP9907007MS | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 13.3 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-07 | WP9907007MD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 13.3 | | MG/L |
| WP-99-07 | WP9907007XD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 13.4 | | MG/L |
| WP-99-07 | WP9907007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 13.2 | | MG/L |
| WP-99-07 | WP9907007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 13.8 | | MG/L |
| WP-99-07 | WP9907007MS | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 13.6 | | MG/L |
| WP-99-07 | WP9907007MD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 13.7 | | MG/L |
| WP-99-07 | WP9907007XD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 13.6 | | MG/L |
| WP-99-07 | WP9907007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-07 | WP9907007XD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-07 | WP9907007MD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.503 | | MG/L |
| WP-99-07 | WP9907007MS | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.504 | | MG/L |
| WP-99-07 | WP9907007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-07 | WP9907007MD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.166 | | MG/L |
| WP-99-07 | WP9907007XD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-07 | WP9907007MS | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.174 | | MG/L |
| WP-99-07 | WP9907007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-07 | WP9907007XD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-07 | WP9907007MS | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.174 | | MG/L |
| WP-99-07 | WP9907007MD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.166 | | MG/L |
| WP-99-07 | WP9907007MS | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 1.01 | | MG/L |
| WP-99-07 | WP9907007MD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 1.02 | | MG/L |
| WP-99-07 | WP9907007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-07 | WP9907007XD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-07 | WP9907007XD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-07 | WP9907007MS | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 1.01 | | MG/L |
| WP-99-07 | WP9907007MD | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 1.02 | | MG/L |
| WP-99-07 | WP9907007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-08 | WP9908012XX | 8 | 12 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 7 | | MG/L |
| WP-99-08 | WP9908012XX | 8 | 12 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 7 | | MG/L |
| WP-99-08 | WP9908012XX | 8 | 12 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-08 | WP9908019XX | 15 | 19 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 5 | | MG/L |
| WP-99-08 | WP9908019XX | 15 | 19 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 5 | | MG/L |
| WP-99-08 | WP9908019XX | 15 | 19 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-08 | WP9908025XX | 21 | 25 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 500 | | MG/L |
| WP-99-08 | WP9908025XX | 21 | 25 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 500 | | MG/L |
| WP-99-08 | WP9908025XX | 21 | 25 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-08 | WP9908030XX | 26 | 30 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 300 | | MG/L |
| WP-99-08 | WP9908030XX | 26 | 30 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 300 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-08 | WP9908030XX | 26 | 30 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-08 | WP9908035XX | 31 | 35 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 300 | | MG/L |
| WP-99-08 | WP9908035XX | 31 | 35 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 300 | | MG/L |
| WP-99-08 | WP9908035XX | 31 | 35 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-08 | WP9908040XX | 36 | 40 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 500 | | MG/L |
| WP-99-08 | WP9908040XX | 36 | 40 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 500 | | MG/L |
| WP-99-08 | WP9908040XX | 36 | 40 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-08 | WP9908045XX | 41 | 45 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 16 | | MG/L |
| WP-99-08 | WP9908045XX | 41 | 45 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 16 | | MG/L |
| WP-99-08 | WP9908045XX | 41 | 45 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-08 | WP9908050XX | 46 | 50 | 09-Feb-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0042 | | MG/L |
| WP-99-08 | WP9908050XX | 46 | 50 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-08 | WP9908050XX | 46 | 50 | 09-Feb-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-08 | WP9908050XX | 46 | 50 | 09-Feb-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.017 | | MG/L |
| WP-99-08 | WP9908050XX | 46 | 50 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-08 | WP9908050XX | 46 | 50 | 09-Feb-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-08 | WP9908050XX | 46 | 50 | 09-Feb-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-08 | WP9908050XX | 46 | 50 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-08 | WP9908050XX | 46 | 50 | 09-Feb-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-08 | WP9908050XX | 46 | 50 | 09-Feb-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-08 | WP9908055XX | 51 | 55 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-08 | WP9908055XX | 51 | 55 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-08 | WP9908055XX | 51 | 55 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-08 | WP9908060XX | 56 | 60 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-08 | WP9908060XX | 56 | 60 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-08 | WP9908060XX | 56 | 60 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-08 | WP9908065XX | 61 | 65 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-08 | WP9908065XX | 61 | 65 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-08 | WP9908065XX | 61 | 65 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-08 | WP9908070XX | 66 | 70 | 09-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-08 | WP9908070XX | 66 | 70 | 09-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-08 | WP9908070XX | 66 | 70 | 09-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-09 | WP9909007XX | 7 | 11 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0044 | | MG/L |
| WP-99-09 | WP9909007XX | 7 | 11 | 08-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.669 | | MG/L |
| WP-99-09 | WP9909007XX | 7 | 11 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.689 | | MG/L |
| WP-99-09 | WP9909007XX | 7 | 11 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.085 | | MG/L |
| WP-99-09 | WP9909007XX | 7 | 11 | 08-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.044 | | MG/L |
| WP-99-09 | WP9909007XX | 7 | 11 | 08-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.044 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-09 | WP9909007XX | 7 | 11 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-09 | WP9909007XX | 7 | 11 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-09 | WP9909019XX | 15 | 19 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-09 | WP9909019XX | 15 | 19 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-09 | WP9909019XX | 15 | 19 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-09 | WP9909024XX | 20 | 24 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-09 | WP9909024XX | 20 | 24 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-09 | WP9909024XX | 20 | 24 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.011 | | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.011 | | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-09 | WP9909029XX | 25 | 29 | 27-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-09 | WP9909034XX | 30 | 34 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-09 | WP9909034XX | 30 | 34 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-09 | WP9909034XX | 30 | 34 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-09 | WP9909040XX | 36 | 40 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-09 | WP9909040XX | 36 | 40 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-09 | WP9909040XX | 36 | 40 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-09 | WP9909050XX | 46 | 50 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-09 | WP9909050XX | 46 | 50 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-09 | WP9909050XX | 46 | 50 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-09 | WP9909060XX | 56 | 60 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-09 | WP9909060XX | 56 | 60 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-09 | WP9909060XX | 56 | 60 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-10 | WP9910012XX | 8 | 12 | 25-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.6 | | MG/L |
| WP-99-10 | WP9910012XX | 8 | 12 | 25-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.6 | | MG/L |
| WP-99-10 | WP9910012XX | 8 | 12 | 25-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-10 | WP9910019XX | 15 | 19 | 25-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.9 | | MG/L |
| WP-99-10 | WP9910019XX | 15 | 19 | 25-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.9 | | MG/L |
| WP-99-10 | WP9910019XX | 15 | 19 | 25-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-10 | WP9910024XX | 20 | 24 | 25-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 4 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-10 | WP9910024XX | 20 | 24 | 25-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 4 | | MG/L |
| WP-99-10 | WP9910024XX | 20 | 24 | 25-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-10 | WP9910029XX | 25 | 29 | 25-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 4.5 | | MG/L |
| WP-99-10 | WP9910029XX | 25 | 29 | 25-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 4.5 | | MG/L |
| WP-99-10 | WP9910029XX | 25 | 29 | 25-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-10 | WP9910034XX | 30 | 34 | 25-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-10 | WP9910034XX | 30 | 34 | 25-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-10 | WP9910034XX | 30 | 34 | 25-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-10 | WP9910040XX | 36 | 40 | 25-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-10 | WP9910040XX | 36 | 40 | 25-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-10 | WP9910040XX | 36 | 40 | 25-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-10 | WP9910050XX | 46 | 50 | 25-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-10 | WP9910050XX | 46 | 50 | 25-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-10 | WP9910050XX | 46 | 50 | 25-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.7 | | MG/L |
| WP-99-11 | WP9911007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-11 | WP9911007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.25 | | MG/L |
| WP-99-11 | WP9911007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.249 | | MG/L |
| WP-99-11 | WP9911007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-11 | WP9911007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.008 | | MG/L |
| WP-99-11 | WP9911007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.008 | | MG/L |
| WP-99-11 | WP9911007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-11 | WP9911007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-11 | WP9911015XX | 11 | 15 | 21-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-11 | WP9911015XX | 11 | 15 | 21-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-11 | WP9911024XX | 20 | 24 | 21-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-11 | WP9911024XX | 20 | 24 | 21-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 2.5 | | MG/L |
| WP-99-11 | WP9911024XX | 24 | 28 | 12-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-11 | WP9911024XX | 24 | 28 | 12-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 54.2 | | MG/L |
| WP-99-11 | WP9911028XX | 24 | 28 | 21-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 50 | | MG/L |
| WP-99-11 | WP9911028XX | 24 | 28 | 21-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 50 | | MG/L |
| WP-99-11 | WP9911024XX | 24 | 28 | 12-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 55.2 | | MG/L |
| WP-99-11 | WP9911024XX | 24 | 28 | 12-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-11 | WP9911024XX | 24 | 28 | 12-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-11 | WP9911024XX | 24 | 28 | 12-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-11 | WP9911028XX | 24 | 28 | 21-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-11 | WP9911024XX | 24 | 28 | 12-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-11 | WP9911024XX | 24 | 28 | 12-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-11 | WP991134XX | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-11 | WP991134XD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-11 | WP991134MD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-11 | WP991134MS | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-11 | WP991134XD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 42.4 | | MG/L |
| WP-99-11 | WP991134XX | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 42.1 | | MG/L |
| WP-99-11 | WP991134MD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 68.1 | | MG/L |
| WP-99-11 | WP9911034XX | 30 | 34 | 21-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 60 | | MG/L |
| WP-99-11 | WP991134MS | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 67.5 | | MG/L |
| WP-99-11 | WP991134XD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 42.8 | | MG/L |
| WP-99-11 | WP991134MS | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 41.2 | | MG/L |
| WP-99-11 | WP991134XX | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 42.1 | | MG/L |
| WP-99-11 | WP991134MD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 41.7 | | MG/L |
| WP-99-11 | WP9911034XX | 30 | 34 | 21-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 60 | | MG/L |
| WP-99-11 | WP991134MD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-11 | WP991134XX | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-11 | WP991134MS | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-11 | WP991134XD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-11 | WP991134MS | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.091 | | MG/L |
| WP-99-11 | WP991134XD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-11 | WP991134XX | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-11 | WP991134MD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.092 | | MG/L |
| WP-99-11 | WP991134XD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-11 | WP991134XX | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-11 | WP991134MS | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.091 | | MG/L |
| WP-99-11 | WP991134MD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.092 | | MG/L |
| WP-99-11 | WP9911034XX | 30 | 34 | 21-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-11 | WP991134XD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-11 | WP991134MS | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-11 | WP991134MD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-11 | WP991134XX | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-11 | WP991134MS | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-11 | WP991134XD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-11 | WP991134XX | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-11 | WP991134MD | 30 | 34 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-11 | WP9911040XX | 36 | 40 | 21-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-11 | WP9911040XX | 36 | 40 | 21-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-11 | WP9911040XX | 36 | 40 | 21-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-11 | WP991151XX | 47 | 51 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0066 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-11 | WP991151XX | 47 | 51 | 21-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-11 | WP9911051XX | 47 | 51 | 21-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-11 | WP9911051XX | 47 | 51 | 21-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-11 | WP991151XX | 47 | 51 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.081 | | MG/L |
| WP-99-11 | WP991151XX | 47 | 51 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-11 | WP991151XX | 47 | 51 | 21-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-11 | WP991151XX | 47 | 51 | 21-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-11 | WP9911051XX | 47 | 51 | 21-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 2 | | MG/L |
| WP-99-11 | WP991151XX | 47 | 51 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-11 | WP991151XX | 47 | 51 | 21-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.063 | | MG/L |
| WP-99-12 | WP9912007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0056 | | MG/L |
| WP-99-12 | WP9912007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-12 | WP9912007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-12 | WP9912007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.423 | | MG/L |
| WP-99-12 | WP9912007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.013 | | MG/L |
| WP-99-12 | WP9912007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.013 | | MG/L |
| WP-99-12 | WP9912007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-12 | WP9912007XX | 7 | 9 | 07-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-12 | WP9912019XX | 15 | 19 | 03-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-12 | WP9912019XX | 15 | 19 | 03-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-12 | WP9912019XX | 15 | 19 | 03-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 12-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0018 | | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 12-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 03-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 12-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.022 | | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 03-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 12-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.047 | | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 12-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.182 | | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 12-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.182 | | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 03-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 12-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.17 | | MG/L |
| WP-99-12 | WP9912024XX | 20 | 24 | 12-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-12 | WP9912028XX | 24 | 28 | 03-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-12 | WP9912028XX | 24 | 28 | 03-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-12 | WP9912028XX | 24 | 28 | 03-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-12 | WP9912034XX | 30 | 34 | 03-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-12 | WP9912034XX | 30 | 34 | 03-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-12 | WP9912034XX | 30 | 34 | 03-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-12 | WP9912040XX | 36 | 40 | 03-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-12 | WP9912040XX | 36 | 40 | 03-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-12 | WP9912040XX | 36 | 40 | 03-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.6 | | MG/L |
| WP-99-12 | WP9912050XX | 46 | 50 | 03-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-12 | WP9912050XX | 46 | 50 | 03-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-12 | WP9912050XX | 46 | 50 | 03-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 2.2 | | MG/L |
| WP-99-13 | WP9913007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-13 | WP9913007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-13 | WP9913007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-13 | WP9913007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-13 | WP9913007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-13 | WP9913007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-13 | WP9913007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-13 | WP9913007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-14 | WP9914007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-14 | WP9914007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-14 | WP9914007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-14 | WP9914007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-14 | WP9914007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-14 | WP9914007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-14 | WP9914007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-14 | WP9914007XX | 7 | 9 | 08-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-15 | WP9915009XX | 7 | 9 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 17 | | MG/L |
| WP-99-15 | WP9915009XX | 7 | 9 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 17 | | MG/L |
| WP-99-15 | WP9915009XX | 7 | 9 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-15 | WP9915011XX | 9 | 11 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 4 | | MG/L |
| WP-99-15 | WP9915011XX | 9 | 11 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 4 | | MG/L |
| WP-99-15 | WP9915011XX | 9 | 11 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-15 | WP9915015XX | 11 | 15 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 3 | | MG/L |
| WP-99-15 | WP9915015XX | 11 | 15 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 3 | | MG/L |
| WP-99-15 | WP9915015XX | 11 | 15 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-15 | WP9915020XX | 16 | 20 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 8 | | MG/L |
| WP-99-15 | WP9915020XX | 16 | 20 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 8 | | MG/L |
| WP-99-15 | WP9915020XX | 16 | 20 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-15 | WP9915025XX | 21 | 25 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 150 | | MG/L |
| WP-99-15 | WP9915025XX | 21 | 25 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 150 | | MG/L |
| WP-99-15 | WP9915025XX | 21 | 25 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-15 | WP9915026XX | 26 | 30 | 11-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0173 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-15 | WP9915026XX | 26 | 30 | 11-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 347 | | MG/L |
| WP-99-15 | WP9915030XX | 26 | 30 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 360 | | MG/L |
| WP-99-15 | WP9915026XX | 26 | 30 | 11-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 433 | | MG/L |
| WP-99-15 | WP9915030XX | 26 | 30 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 360 | | MG/L |
| WP-99-15 | WP9915026XX | 26 | 30 | 11-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-15 | WP9915026XX | 26 | 30 | 11-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.535 | | MG/L |
| WP-99-15 | WP9915026XX | 26 | 30 | 11-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.535 | | MG/L |
| WP-99-15 | WP9915030XX | 26 | 30 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-15 | WP9915026XX | 26 | 30 | 11-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.25 | | MG/L |
| WP-99-15 | WP9915026XX | 26 | 30 | 11-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-15 | WP9915034XX | 30 | 34 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 950 | | MG/L |
| WP-99-15 | WP9915034XX | 30 | 34 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 950 | | MG/L |
| WP-99-15 | WP9915034XX | 30 | 34 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-15 | WP9915040XX | 36 | 40 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 900 | | MG/L |
| WP-99-15 | WP9915040XX | 36 | 40 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 900 | | MG/L |
| WP-99-15 | WP9915040XX | 36 | 40 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-15 | WP9915044XX | 40 | 44 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 700 | | MG/L |
| WP-99-15 | WP9915044XX | 40 | 44 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 700 | | MG/L |
| WP-99-15 | WP9915044XX | 40 | 44 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-15 | WP9915050XX | 46 | 50 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 13 | | MG/L |
| WP-99-15 | WP9915050XX | 46 | 50 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 13 | | MG/L |
| WP-99-15 | WP9915050XX | 46 | 50 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-15 | WP991560XX | 56 | 60 | 20-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.0029 | | MG/L |
| WP-99-15 | WP9915060XX | 56 | 60 | 20-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-15 | WP991560XX | 56 | 60 | 20-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-15 | WP9915060XX | 56 | 60 | 20-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-15 | WP991560XX | 56 | 60 | 20-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-15 | WP991560XX | 56 | 60 | 20-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-15 | WP991560XX | 56 | 60 | 20-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-15 | WP991560XX | 56 | 60 | 20-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-15 | WP9915060XX | 56 | 60 | 20-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-15 | WP991560XX | 56 | 60 | 20-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-15 | WP991560XX | 56 | 60 | 20-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-16 | WP9916012XX | 8 | 12 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-16 | WP9916012XX | 8 | 12 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-16 | WP9916012XX | 8 | 12 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-16 | WP9916019XX | 15 | 19 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-16 | WP9916019XX | 15 | 19 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-16 | WP9916019XX | 15 | 19 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-16 | WP9916024XX | 20 | 24 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-16 | WP9916024XX | 20 | 24 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-16 | WP9916024XX | 20 | 24 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-16 | WP9916029XX | 25 | 29 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-16 | WP9916029XX | 25 | 29 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-16 | WP9916029XX | 25 | 29 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-16 | WP9916034XX | 30 | 34 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-16 | WP9916034XX | 30 | 34 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-16 | WP9916034XX | 30 | 34 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-16 | WP9916040XX | 36 | 40 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-16 | WP9916040XX | 36 | 40 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-16 | WP9916040XX | 36 | 40 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-16 | WP9916050XX | 46 | 50 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-16 | WP9916050XX | 46 | 50 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-16 | WP9916050XX | 46 | 50 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-17 | WP9917012XX | 8 | 12 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-17 | WP9917012XX | 8 | 12 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-17 | WP9917012XX | 8 | 12 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.3 | | MG/L |
| WP-99-17 | WP9917019XX | 15 | 19 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-17 | WP9917019XX | 15 | 19 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-17 | WP9917019XX | 15 | 19 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-17 | WP9917024XX | 20 | 24 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-17 | WP9917024XX | 20 | 24 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-17 | WP9917024XX | 20 | 24 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-17 | WP9917029XX | 25 | 29 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-17 | WP9917029XX | 25 | 29 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-17 | WP9917029XX | 25 | 29 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-17 | WP9917034XX | 30 | 34 | 26-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-17 | WP9917040XX | 36 | 40 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-17 | WP9917040XX | 36 | 40 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-17 | WP9917040XX | 36 | 40 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.3 | | MG/L |
| WP-99-17 | WP9917050XX | 46 | 50 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-17 | WP9917050XX | 46 | 50 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-17 | WP9917050XX | 46 | 50 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-18 | WP9918012XX | 8 | 12 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 2.25 | | MG/L |
| WP-99-18 | WP9918012XX | 8 | 12 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 2.25 | | MG/L |
| WP-99-18 | WP9918012XX | 8 | 12 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-18 | WP9918019XX | 15 | 19 | 27-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-18 | WP9918019XX | 15 | 19 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 1.2 | | MG/L |
| WP-99-18 | WP9918019XX | 15 | 19 | 27-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 1.57 | | MG/L |
| WP-99-18 | WP9918019XX | 15 | 19 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 1.2 | | MG/L |
| WP-99-18 | WP9918019XX | 15 | 19 | 27-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 1.56 | | MG/L |
| WP-99-18 | WP9918019XX | 15 | 19 | 27-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-18 | WP9918019XX | 15 | 19 | 27-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.009 | | MG/L |
| WP-99-18 | WP9918019XX | 15 | 19 | 27-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.009 | | MG/L |
| WP-99-18 | WP9918019XX | 15 | 19 | 27-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-18 | WP9918019XX | 15 | 19 | 27-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-18 | WP9918024XX | 20 | 24 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.25 | | MG/L |
| WP-99-18 | WP9918024XX | 20 | 24 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.25 | | MG/L |
| WP-99-18 | WP9918024XX | 20 | 24 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-18 | WP9918029XX | 25 | 29 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-18 | WP9918029XX | 25 | 29 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-18 | WP9918029XX | 25 | 29 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-18 | WP9918034XX | 30 | 34 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-18 | WP9918034XX | 30 | 34 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-18 | WP9918034XX | 30 | 34 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.4 | | MG/L |
| WP-99-18 | WP9918040XX | 36 | 40 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-18 | WP9918040XX | 36 | 40 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-18 | WP9918040XX | 36 | 40 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-18 | WP9918050XX | 46 | 50 | 27-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-18 | WP9918050XX | 46 | 50 | 27-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-18 | WP9918050XX | 46 | 50 | 27-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-19 | WP9919014XX | 10 | 14 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-19 | WP9919014XX | 10 | 14 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-19 | WP9919014XX | 10 | 14 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.3 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-19 | WP9919024XX | 20 | 24 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-19 | WP9919024XX | 20 | 24 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-19 | WP9919024XX | 20 | 24 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-19 | WP9919034XX | 30 | 34 | 26-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-19 | WP9919034XX | 30 | 34 | 26-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-19 | WP9919034XX | 30 | 34 | 26-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-20 | WP9920012XX | 8 | 12 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-20 | WP9920012XX | 8 | 12 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-20 | WP9920012XX | 8 | 12 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-20 | WP9920019XX | 15 | 19 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 35 | | MG/L |
| WP-99-20 | WP9920019XX | 15 | 19 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 35 | | MG/L |
| WP-99-20 | WP9920019XX | 15 | 19 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-20 | WP9920024XX | 20 | 24 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 300 | | MG/L |
| WP-99-20 | WP9920024XX | 20 | 24 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 300 | | MG/L |
| WP-99-20 | WP9920024XX | 20 | 24 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 6.32 | | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 15 | | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 15 | | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 5.94 | | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-20 | WP9920029XX | 25 | 29 | 28-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-20 | WP9920034XX | 30 | 34 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 450 | | MG/L |
| WP-99-20 | WP9920034XX | 30 | 34 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 450 | | MG/L |
| WP-99-20 | WP9920034XX | 30 | 34 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-20 | WP9920040XX | 36 | 40 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 95 | | MG/L |
| WP-99-20 | WP9920040XX | 36 | 40 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 95 | | MG/L |
| WP-99-20 | WP9920040XX | 36 | 40 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-20 | WP9920050XX | 46 | 50 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-20 | WP9920050XX | 46 | 50 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-20 | WP9920050XX | 46 | 50 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-20 | WP9920060XX | 56 | 60 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-20 | WP9920060XX | 56 | 60 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-20 | WP9920060XX | 56 | 60 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-21 | WP9921014XX | 10 | 14 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-21 | WP9921014XX | 10 | 14 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-21 | WP9921014XX | 10 | 14 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-21 | WP9921024XX | 20 | 24 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-21 | WP9921024XX | 20 | 24 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-21 | WP9921024XX | 20 | 24 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-21 | WP9921029XX | 25 | 29 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-21 | WP9921029XX | 25 | 29 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-21 | WP9921029XX | 25 | 29 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-21 | WP9921034XX | 30 | 34 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-21 | WP9921034XX | 30 | 34 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-21 | WP9921034XX | 30 | 34 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-21 | WP9921040XX | 36 | 40 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-21 | WP9921040XX | 36 | 40 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-21 | WP9921040XX | 36 | 40 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-21 | WP9921050XX | 46 | 50 | 28-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-21 | WP9921050XX | 46 | 50 | 28-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-21 | WP9921050XX | 46 | 50 | 28-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-22 | WP9922012XX | 8 | 12 | 29-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-22 | WP9922012XX | 8 | 12 | 29-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-22 | WP9922012XX | 8 | 12 | 29-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-22 | WP9922019XX | 15 | 19 | 29-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-22 | WP9922019XX | 15 | 19 | 29-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-22 | WP9922019XX | 15 | 19 | 29-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-22 | WP9922024MD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-22 | WP9922024MS | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-22 | WP9922024MD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-22 | WP9922024XD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-22 | WP9922024MD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.019 | | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-22 | WP9922024MD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-22 | WP9922024XD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-22 | WP9922024MS | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-22 | WP9922024MD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-22 | WP9922024XD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-22 | WP9922024MS | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-22 | WP9922024MD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-22 | WP9922024MD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-22 | WP9922024MD | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-22 | WP9922024XX | 20 | 24 | 29-Jan-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-22 | WP9922029XX | 25 | 29 | 29-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-22 | WP9922029XX | 25 | 29 | 29-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-22 | WP9922029XX | 25 | 29 | 29-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-22 | WP9922034XX | 30 | 34 | 29-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-22 | WP9922034XX | 30 | 34 | 29-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-22 | WP9922034XX | 30 | 34 | 29-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-22 | WP9922040XX | 36 | 40 | 29-Jan-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-22 | WP9922040XX | 36 | 40 | 29-Jan-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-22 | WP9922040XX | 36 | 40 | 29-Jan-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-23 | WP9923012XX | 8 | 12 | 03-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-23 | WP9923012XX | 8 | 12 | 03-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-23 | WP9923012XX | 8 | 12 | 03-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-23 | WP9923019XX | 15 | 19 | 03-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.15 | | MG/L |
| WP-99-23 | WP9923019XX | 15 | 19 | 03-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.15 | | MG/L |
| WP-99-23 | WP9923019XX | 15 | 19 | 03-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-23 | WP9923025XX | 21 | 25 | 03-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 40 | | MG/L |
| WP-99-23 | WP9923025XX | 21 | 25 | 03-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 40 | | MG/L |
| WP-99-23 | WP9923025XX | 21 | 25 | 03-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-24 | WP9924015XX | 11 | 15 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-24 | WP9924015XX | 11 | 15 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-24 | WP9924015XX | 11 | 15 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.2 | | MG/L |
| WP-99-24 | WP9924024XX | 20 | 24 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-24 | WP9924024XX | 20 | 24 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-24 | WP9924024XX | 20 | 24 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-24 | WP9924029XX | 25 | 29 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-24 | WP9924029XX | 25 | 29 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-24 | WP9924029XX | 25 | 29 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-24 | WP9924034XX | 30 | 34 | 04-Feb-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-24 | WP9924040XX | 36 | 40 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-24 | WP9924040XX | 36 | 40 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-24 | WP9924040XX | 36 | 40 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-24 | WP9924050XX | 46 | 50 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-24 | WP9924050XX | 46 | 50 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-24 | WP9924050XX | 46 | 50 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 2.5 | | MG/L |
| WP-99-25 | WP9925012XX | 8 | 12 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-25 | WP9925012XX | 8 | 12 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-25 | WP9925012XX | 8 | 12 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-25 | WP9925019XX | 15 | 19 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-25 | WP9925019XX | 15 | 19 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-25 | WP9925019XX | 15 | 19 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-25 | WP9925024XX | 20 | 24 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-25 | WP9925024XX | 20 | 24 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-25 | WP9925024XX | 20 | 24 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-25 | WP9925029XX | 25 | 29 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-25 | WP9925029XX | 25 | 29 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-25 | WP9925029XX | 25 | 29 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.2 | | MG/L |
| WP-99-25 | WP9925034XX | 30 | 34 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-25 | WP9925034XX | 30 | 34 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-25 | WP9925034XX | 30 | 34 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-25 | WP9925040XX | 36 | 40 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-25 | WP9925040XX | 36 | 40 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-25 | WP9925040XX | 36 | 40 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-25 | WP9925050XX | 46 | 50 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-25 | WP9925050XX | 46 | 50 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-25 | WP9925050XX | 46 | 50 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-26 | WP9926012XX | 8 | 12 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.3 | | MG/L |
| WP-99-26 | WP9926012XX | 8 | 12 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.3 | | MG/L |
| WP-99-26 | WP9926012XX | 8 | 12 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-26 | WP9926019XX | 15 | 19 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.6 | | MG/L |
| WP-99-26 | WP9926019XX | 15 | 19 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.6 | | MG/L |
| WP-99-26 | WP9926019XX | 15 | 19 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-26 | WP9926026XX | 22 | 26 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 12 | | MG/L |
| WP-99-26 | WP9926026XX | 22 | 26 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 12 | | MG/L |
| WP-99-26 | WP9926026XX | 22 | 26 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-27 | WP9927012XX | 8 | 12 | 05-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 3.2 | | MG/L |
| WP-99-27 | WP9927012XX | 8 | 12 | 05-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 3.2 | | MG/L |
| WP-99-27 | WP9927012XX | 8 | 12 | 05-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-27 | WP9927016XX | 12 | 16 | 05-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 4.5 | | MG/L |
| WP-99-27 | WP9927016XX | 12 | 16 | 05-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 4.5 | | MG/L |
| WP-99-27 | WP9927016XX | 12 | 16 | 05-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-27 | WP9927024XX | 20 | 24 | 05-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-27 | WP9927024XX | 20 | 24 | 05-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-27 | WP9927024XX | 20 | 24 | 05-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Averill Environmental | 7440-43-9 | Cadmium | 0.001 | U | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.005 | U | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.005 | U | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-27 | WP9927029XX | 25 | 29 | 05-Feb-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-27 | WP9927034XX | 30 | 34 | 05-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-27 | WP9927034XX | 30 | 34 | 05-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-27 | WP9927034XX | 30 | 34 | 05-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-27 | WP9927040XX | 36 | 40 | 05-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-27 | WP9927040XX | 36 | 40 | 05-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-27 | WP9927040XX | 36 | 40 | 05-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-27 | WP9927050XX | 46 | 50 | 05-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-27 | WP9927050XX | 46 | 50 | 05-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-27 | WP9927050XX | 46 | 50 | 05-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-28 | WP9928012XX | 8 | 12 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-28 | WP9928012XX | 8 | 12 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-28 | WP9928012XX | 8 | 12 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-28 | WP9928019XX | 15 | 19 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-28 | WP9928019XX | 15 | 19 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-28 | WP9928019XX | 15 | 19 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Averill Environmental | 7440-43-9 | | 0.001 | | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Averill Environmental | 18540-29-9 | Chromium, | 0.01 | U | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Averill Environmental | 7440-47-3 | Chromium, Total | 0.015 | U | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Averill Environmental | 7440-50-8 | Copper | 0.04 | U | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Averill Environmental | 57-12-5 | Cyanide | 0.009 | | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Averill Environmental | | Cyanide, Reactive | 0.009 | | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Averill Environmental | 7440-02-0 | Nickel | 0.1 | U | MG/L |
| WP-99-28 | WP9928024XX | 20 | 24 | 04-Feb-99 | Inorganics | Averill Environmental | 7440-66-6 | Zinc | 0.05 | U | MG/L |
| WP-99-28 | WP9928029XX | 25 | 29 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-28 | WP9928029XX | 25 | 29 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-28 | WP9928029XX | 25 | 29 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-28 | WP9928034XX | 30 | 34 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-28 | WP9928034XX | 30 | 34 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-28 | WP9928040XX | 37 | 40 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-28 | WP9928040XX | 37 | 40 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-28 | WP9928040XX | 37 | 40 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.1 | | MG/L |
| WP-99-29 | WP9929012XX | 8 | 12 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-29 | WP9929012XX | 8 | 12 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-29 | WP9929012XX | 8 | 12 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-29 | WP9929017XX | 13 | 17 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-29 | WP9929017XX | 13 | 17 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-29 | WP9929017XX | 13 | 17 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.8 | | MG/L |
| WP-99-29 | WP9929022XX | 18 | 22 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-29 | WP9929022XX | 18 | 22 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-29 | WP9929022XX | 18 | 22 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.8 | | MG/L |
| WP-99-29 | WP9929029XX | 25 | 29 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-29 | WP9929029XX | 25 | 29 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-29 | WP9929029XX | 25 | 29 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-29 | WP9929040XX | 36 | 40 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 11 | | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-29 | WP9929040XX | 36 | 40 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 11 | | MG/L |
| WP-99-29 | WP9929040XX | 36 | 40 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1 | | MG/L |
| WP-99-29 | WP9929050XX | 46 | 50 | 04-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-29 | WP9929050XX | 46 | 50 | 04-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-29 | WP9929050XX | 46 | 50 | 04-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.8 | | MG/L |
| WP-99-30 | WP9930012XX | 8 | 12 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-30 | WP9930012XX | 8 | 12 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-30 | WP9930012XX | 8 | 12 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-30 | WP9930019XX | 15 | 19 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-30 | WP9930019XX | 15 | 19 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-30 | WP9930024XX | 21 | 24 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-30 | WP9930024XX | 21 | 24 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-30 | WP9930024XX | 21 | 24 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-30 | WP9930030XX | 28 | 30 | 06-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-30 | WP9930030XX | 28 | 30 | 06-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-30 | WP9930030XX | 28 | 30 | 06-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 1.8 | | MG/L |
| WP-99-31 | WP9931012XX | 8 | 12 | 05-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 2.5 | | MG/L |
| WP-99-31 | WP9931012XX | 8 | 12 | 05-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 2.5 | | MG/L |
| WP-99-31 | WP9931012XX | 8 | 12 | 05-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-31 | WP9931019XX | 15 | 19 | 05-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 4.5 | | MG/L |
| WP-99-31 | WP9931019XX | 15 | 19 | 05-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 4.5 | | MG/L |
| WP-99-31 | WP9931019XX | 15 | 19 | 05-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | U | MG/L |
| WP-99-31 | WP9931024XX | 20 | 24 | 05-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.15 | | MG/L |
| WP-99-31 | WP9931024XX | 20 | 24 | 05-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.15 | | MG/L |
| WP-99-31 | WP9931024XX | 20 | 24 | 05-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-32 | WP9932012XX | 8 | 12 | 08-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-32 | WP9932012XX | 8 | 12 | 08-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-32 | WP9932012XX | 8 | 12 | 08-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-32 | WP9932019XX | 15 | 19 | 08-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-32 | WP9932019XX | 15 | 19 | 08-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-32 | WP9932019XX | 15 | 19 | 08-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.6 | | MG/L |
| WP-99-32 | WP9932025XX | 21 | 25 | 08-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-32 | WP9932025XX | 21 | 25 | 08-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-32 | WP9932025XX | 21 | 25 | 08-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.4 | | MG/L |
| WP-99-32 | WP9932031XX | 27 | 31 | 08-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |
| WP-99-32 | WP9932031XX | 27 | 31 | 08-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-32 | WP9932031XX | 27 | 31 | 08-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |
| WP-99-32 | WP9932040XX | 36 | 40 | 08-Feb-99 | Inorganics | Harding Lawson | 18540-29-9 | Chromium, | 0.1 | U | MG/L |

**TABLE N-2**
**1998/1999 CHROMIUM PLATING FACILITY INVESTIGATION - GROUNDWATER INORGANICS DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (feet, bgs) | END DEPTH (feet, bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99-32 | WP9932040XX | 36 | 40 | 08-Feb-99 | Inorganics | Harding Lawson | 7440-47-3 | Chromium, Total | 0.1 | U | MG/L |
| WP-99-32 | WP9932040XX | 36 | 40 | 08-Feb-99 | Inorganics | Harding Lawson | FE2 | Iron, Ferrous | 0.2 | | MG/L |

# N-3 1999 VOC INVESTIGATION – GROUNDWATER

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-01 | CP990142XX | 40 | 42 | 05-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-01 | CP990156XX | 54 | 56 | 05-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.016 | | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-01 | CP9901080XX | 78 | 80 | 05-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.002 | | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-01 | CP9901098XX | 96 | 98 | 05-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-01 | CP9901130XX | 128 | 130 | 05-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.005 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.42 | E | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.002 | | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.002 | | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.002 | | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902006XX | 4 | 6 | 06-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.005 | | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.008 | | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.02 | E | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.015 | | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | | MG/L |
| CP-99-02 | CP9902020XX | 18 | 20 | 06-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.002 | | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.003 | | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.008 | | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902032XX | 30 | 32 | 06-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902044XX | 42 | 44 | 06-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902096XX | 94 | 96 | 06-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.006 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.006 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.006 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.005 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.005 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.004 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.004 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.006 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.006 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.004 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.005 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.005 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.005 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.004 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.004 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.005 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.005 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.004 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.004 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.006 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.005 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.004 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.004 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.006 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.005 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.004 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.004 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.004 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.004 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.005 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.005 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.004 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.004 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.005 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.005 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.004 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.004 | | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.004 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.004 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.009 | | MG/L |
| CP-99-02 | CP9902133M | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.008 | | MG/L |
| CP-99-02 | CP9902133XX | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-02 | CP9902133XD | 131 | 133 | 06-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-03 | CP9903039XX | 37 | 39 | 10-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-03 | CP9903056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-03 | CP9903076XX | 74 | 76 | 10-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-03 | CP9903097XX | 95 | 97 | 10-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-03 | CP9903114XX | 112 | 114 | 10-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.012 | | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.013 | | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.038 | | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.091 | | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.004 | | MG/L |
| CP-99-04 | CP9904034XX | 32 | 34 | 07-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.012 | | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.005 | | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.013 | | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.089 | | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.003 | | MG/L |
| CP-99-04 | CP9904045XX | 43 | 45 | 07-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.003 | | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.003 | | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.002 | | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.03 | | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-04 | CP9904088XX | 86 | 88 | 07-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.008 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.039 | | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-04 | CP9904112XX | 110 | 112 | 07-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.003 | | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.003 | | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.081 | | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-04 | CP9904159XX | 157 | 159 | 07-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.042 | E | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-05 | CP9905032XX | 30 | 32 | 07-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.002 | | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-05 | CP9905057XX | 55 | 57 | 07-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.002 | | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-05 | CP9905074XX | 72 | 74 | 07-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-05 | CP9905099XX | 97 | 99 | 07-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.017 | E | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-05 | CP9905131XX | 129 | 131 | 07-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.023 | E | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.014 | | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.29 | E | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.76 | | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.017 | E | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.002 | | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 3.5 | | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.005 | | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.02 | E | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 1.6 | | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.014 | | MG/L |
| CP-99-06 | CP9906030XX | 28 | 30 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.012 | | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906052XX | 50 | 52 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.02 | E | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.014 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.025 | E | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.024 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.006 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.005 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.005 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.005 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.004 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.004 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.005 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.005 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.004 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.004 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.005 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.005 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.005 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.004 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.004 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.004 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.004 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.003 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.003 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.004 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.004 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.004 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.004 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.005 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.005 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.003 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.004 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.003 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.005 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.005 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.004 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.004 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.004 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.004 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.005 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.005 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.006 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.002 | | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.006 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.002 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.008 | | MG/L |
| CP-99-06 | CP9906080XD | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-06 | CP9906080M | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.009 | | MG/L |
| CP-99-06 | CP9906080XX | 78 | 80 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.008 | | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.003 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906114XX | 112 | 114 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.036 | | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.004 | | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-06 | CP9906128XX | 126 | 128 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.002 | | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.002 | | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.003 | | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.002 | | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-07 | CP9907020XX | 18 | 20 | 11-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.005 | | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.002 | | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.002 | | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.002 | | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-07 | CP9907039XX | 37 | 39 | 11-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-07 | CP9907070XX | 68 | 70 | 11-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-07 | CP9907086XX | 84 | 86 | 11-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-07 | CP9907115XX | 113 | 115 | 11-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 280 | E | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 2.5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 10 | | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 9 | | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 15 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 100 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 30 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 10 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 2.5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 10 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 10 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 10 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 10 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 2 | | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 2.5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 28 | | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 15 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 5 | U | MG/L |
| CP-99-08 | CP9908034XX | 32 | 34 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 10 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 170 | E | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 2.5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 7.5 | | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 15 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 5 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 100 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 30 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 10 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 2.5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 10 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 10 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 10 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 10 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 1.3 | | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 2.5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 19 | | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 15 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 5 | U | MG/L |
| CP-99-08 | CP9908046XX | 44 | 46 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 10 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 13 | E | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.25 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.71 | | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 1.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 10 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 3 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 1 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.25 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 1 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 1 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.25 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 1.6 | | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 1.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.5 | U | MG/L |
| CP-99-08 | CP9908062XX | 60 | 62 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 4.6 | | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 3 | E | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 4.5 | | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 4.3 | | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.05 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.05 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.05 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.008 | | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.075 | | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.005 | | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.3 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.3 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.3 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 2 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 2 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 2 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.6 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.6 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.6 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.2 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.2 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.2 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.05 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.05 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.05 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.2 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.2 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.2 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.2 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.2 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.2 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.2 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.2 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.2 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.2 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.2 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.2 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.038 | | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.05 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.05 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.05 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.48 | | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.47 | | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.53 | E | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.46 | | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.3 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.3 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.3 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| CP-99-08 | CP9908073XX | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-08 | CP9908073XD | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.2 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.2 | U | MG/L |
| CP-99-08 | CP9908073M | 71 | 73 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.2 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 3.3 | E | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.002 | | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.007 | | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.13 | | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.008 | | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.004 | | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.049 | | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.81 | E | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-08 | CP9908101XX | 99 | 101 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 160 | | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 2.2 | | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 3 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 20 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 6 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 2 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.5 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 2 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 2 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 2 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 2 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 1.5 | | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.5 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 19 | E | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 3 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| CP-99-08 | CP9908135XX | 133 | 135 | 08-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 2 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 210 | | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.5 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 3.1 | | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 3 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 20 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 6 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 2 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.5 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 2 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 2 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 2 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 2 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 1.6 | | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.5 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 20 | E | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 3 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| CP-99-08 | CP9908158XX | 156 | 158 | 08-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 2 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.003 | | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.013 | | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.011 | | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.048 | E | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.66 | | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.002 | | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.054 | E | MG/L |
| CP-99-09 | CP9909011XX | 9 | 11 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.027 | E | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.093 | E | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.074 | E | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.006 | | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.004 | | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 5.1 | | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.004 | | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.01 | | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.35 | E | MG/L |
| CP-99-09 | CP9909035XX | 33 | 35 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 12 | E | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.25 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 1.2 | | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 1.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 10 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 3 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 1 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.25 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 1 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 1 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.25 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 1.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.5 | U | MG/L |
| CP-99-09 | CP9909090XX | 88 | 90 | 09-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 1 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.03 | | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.06 | | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.03 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.2 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.06 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.02 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.025 | | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.032 | | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.02 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.02 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.02 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.02 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.046 | | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 21 | E | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.03 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.01 | U | MG/L |
| CP-99-10 | CP9910029XX | 27 | 29 | 18-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.02 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.005 | | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.003 | | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.017 | E | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.24 | | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.002 | | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.006 | | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.019 | E | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.003 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.039 | E | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 1.4 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-10 | CP9910036XX | 34 | 36 | 18-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.006 | | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.044 | E | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.67 | | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.007 | | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.024 | E | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.024 | E | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.054 | E | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 1.4 | | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-10 | CP9910043XX | 41 | 43 | 18-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.008 | | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.002 | | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.002 | | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 1 | | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-10 | CP9910050XX | 48 | 50 | 18-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.018 | E | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.002 | | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.05 | | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-10 | CP9910060XX | 58 | 60 | 18-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.059 | | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.013 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.55 | E | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.075 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.5 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.15 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.05 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.013 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.05 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.05 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.05 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.05 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.013 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.065 | | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.075 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.025 | U | MG/L |
| CP-99-10 | CP9910075XX | 73 | 75 | 18-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.05 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.004 | | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.012 | | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.003 | | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.002 | | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.004 | | MG/L |
| CP-99-11 | CP9911016XX | 14 | 16 | 12-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.002 | | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.003 | | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.019 | E | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-11 | CP9911047XX | 45 | 47 | 12-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.005 | | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-11 | CP9911060XX | 58 | 60 | 12-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | UJ | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | UJ | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | UJ | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | UJ | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | UJ | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-11 | CP9911078XD | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-11 | CP9911078XX | 76 | 78 | 12-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.023 | EJ | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.002 | | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.004 | | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.004 | | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.003 | | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.047 | EJ | MG/L |
| CP-99-12 | CP9912011XX | 9 | 11 | 10-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.022 | | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.027 | EJ | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.006 | | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.006 | | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.15 | EJ | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.004 | | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.007 | | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.16 | EJ | MG/L |
| CP-99-12 | CP9912021XX | 19 | 21 | 10-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.022 | | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.013 | | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.003 | | MG/L |
| CP-99-12 | CP9912056XX | 54 | 56 | 10-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-12 | CP9912092XX | 90 | 92 | 10-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-12 | CP9912122XX | 120 | 122 | 10-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.019 | E | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.006 | | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.025 | E | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.007 | | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.007 | | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.003 | | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.006 | | MG/L |
| CP-99-14 | CP9914018XX | 16 | 18 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.25 | | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.07 | | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.03 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.2 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.06 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.02 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.098 | | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.02 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.02 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.02 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.02 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.013 | | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.01 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.015 | | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.03 | U | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.065 | | MG/L |
| CP-99-14 | CP9914031XX | 29 | 31 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.02 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.24 | | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.066 | | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.03 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.2 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.06 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.02 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.44 | | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.02 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.02 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.02 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.02 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.012 | | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.044 | | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.01 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.03 | U | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.067 | | MG/L |
| CP-99-14 | CP9914042XX | 40 | 42 | 19-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.02 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 93 | E | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.25 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 1.6 | | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 11 | E | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 8.9 | E | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 1.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 10 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 3 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 1 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.25 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 1 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 1 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 2.3 | | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.25 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 94 | E | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 1.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.5 | U | MG/L |
| CP-99-17 | CP99170XXXX | 18 | 20 | 26-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 1 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 97 | E | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.25 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 1.7 | | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 15 | E | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 8.1 | E | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 1.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 10 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 3 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 1 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.25 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 1 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 1 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 2.2 | | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.25 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 92 | E | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 1.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.5 | U | MG/L |
| CP-99-17 | CP9917032XX | 30 | 32 | 26-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 1 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.73 | | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.25 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 1.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 10 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 3 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 1 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.25 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 1 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 1 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.25 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 10 | E | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 1.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.5 | U | MG/L |
| CP-99-17 | CP9917046XX | 44 | 46 | 26-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 1 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.74 | | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.023 | | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.012 | | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.03 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.2 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.06 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.02 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.01 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.02 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.02 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.02 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.02 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.6 | | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.03 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.01 | U | MG/L |
| CP-99-17 | CP9917063XX | 61 | 63 | 26-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.02 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.005 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.004 | | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.005 | | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.004 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.004 | | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.005 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.004 | | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.004 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.006 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.007 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.007 | | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.007 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.007 | | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.007 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.004 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.003 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.003 | | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.003 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.041 | | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.035 | | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.035 | | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.037 | | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-18 | CP9918013XD | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-18 | CP9918013XX | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-18 | CP9918013M | 11 | 13 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.075 | | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.059 | | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.03 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.2 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.06 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.02 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.02 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.02 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.02 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.02 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.034 | | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.03 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.01 | U | MG/L |
| CP-99-18 | CP9918035XX | 33 | 35 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.02 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.041 | | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.034 | | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.002 | | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.009 | | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918046XX | 44 | 46 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.003 | | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-18 | CP991861XX | 59 | 61 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.003 | | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.003 | | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.002 | | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.02 | | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| CP-99-18 | CP9918073XX | 71 | 73 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.016 | | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.3 | | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.097 | | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.03 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.2 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.06 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.02 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.03 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.02 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.02 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.02 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.03 | | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.03 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.01 | U | MG/L |
| CP-99-18 | CP9918100XX | 98 | 100 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.02 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.26 | | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.11 | | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.03 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.2 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.06 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.02 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.02 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.02 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.02 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.02 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.018 | | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.03 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.01 | U | MG/L |
| CP-99-18 | CP9918134XX | 132 | 134 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.02 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.4 | | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.11 | | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.03 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.2 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.06 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.02 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.02 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.02 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.02 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.02 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.025 | | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.03 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.01 | U | MG/L |
| CP-99-18 | CP9918148XX | 146 | 148 | 25-May-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.02 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.01 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.002 | J | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.003 | J | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.05 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.05 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.002 | J | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.041 | | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.01 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 1E-03 | J | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.05 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.05 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.001 | J | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.005 | U | MG/L |
| DP2-1 | DP21-07 | 4 | 7 | 04-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.005 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.003 | J | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.001 | J | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.025 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.025 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.008 | | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.005 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.008 | | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 2.9 | | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.005 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | J | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.005 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.009 | | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.025 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.025 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 5E-04 | J | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 8E-04 | J | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.003 | U | MG/L |
| DP2-1 | DP21-15 | 12 | 15 | 04-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.003 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.01 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.011 | | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.017 | | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.05 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.025 | J | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.005 | | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.65 | | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.025 | | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.01 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.006 | | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.05 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.05 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.001 | J | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.003 | J | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.002 | J | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.001 | J | MG/L |
| DP2-1 | DP21-30 | 27 | 30 | 04-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.011 | | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| DP2-1 | DP21-50 | 47 | 50 | 03-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.002 | J | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | UJ | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.003 | | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 9E-04 | J | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 2E-04 | J | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 3E-04 | J | MG/L |
| DP2-1 | DP21-60 | 57 | 60 | 03-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.48 | | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.002 | | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.16 | | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.22 | | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.006 | | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.005 | | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.11 | | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.006 | | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.04 | J | MG/L |
| DP2-2 | DP22-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.02 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.073 | J | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.003 | | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.31 | | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 2E-04 | J | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 3E-04 | J | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.007 | | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.011 | | MG/L |
| DP2-2 | DP22-20 | 17 | 20 | 05-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.62 | | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.11 | J | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.008 | J | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.002 | j | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.76 | J | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 7E-04 | J | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 4E-04 | J | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.012 | J | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.058 | J | MG/L |
| DP2-2 | DP22-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 1.4 | J | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 9E-04 | J | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.014 | | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.036 | | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 4E-04 | J | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.006 | | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 1.9 | | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.032 | | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.001 | | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.024 | | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 1.4 | | MG/L |
| DP2-2 | DP22-40 | 37 | 40 | 04-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.097 | J | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.006 | J | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.017 | J | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.014 | J | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.003 | J | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 8E-04 | J | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.47 | J | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.031 | J | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 3E-04 | J | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.005 | J | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | UJ | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 1.6 | J | MG/L |
| DP2-2 | DP22-50 | 47 | 50 | 04-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.025 | J | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | UJ | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.004 | | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.007 | | MG/L |
| DP2-2 | DP22-60 | 57 | 60 | 04-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.52 | | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.056 | | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.001 | | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.002 | | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.23 | | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 8E-04 | J | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.005 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.036 | | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.007 | | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| DP2-3 | DP23-08 | 5 | 8 | 05-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.011 | | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.004 | | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 6E-04 | J | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.005 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.003 | | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.015 | | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 3.8 | | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 8E-04 | J | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.001 | | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 5E-04 | J | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.004 | | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 5E-04 | J | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| DP2-3 | DP23-15 | 12 | 15 | 05-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.11 | | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.076 | | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 78-87-5 | 1,2-Dichloropropane | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-15-0 | Carbon disulfide | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.17 | | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.34 | | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.002 | J | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.002 | J | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.001 | J | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 108-05-4 | Vinyl Acetate | 0.01 | U | MG/L |
| DP2-3 | DP23-30 | 27 | 30 | 05-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.013 | | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.003 | J | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 4E-04 | J | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.15 | J | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.036 | J | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.005 | J | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 4E-04 | J | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | J | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.058 | J | MG/L |
| DP2-3 | DP23-50 | 47 | 50 | 05-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.04 | J | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.006 | J | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.002 | J | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | UJ | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 6E-04 | J | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.11 | J | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.078 | J | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.019 | J | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 3E-04 | J | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.011 | J | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | UJ | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.34 | J | MG/L |
| DP2-3 | DP23-60 | 57 | 60 | 05-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.28 | J | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.006 | | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.005 | | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.005 | J | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 8E-04 | J | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.002 | | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 2E-04 | J | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.003 | | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| DP2-4 | DP24-08 | 5 | 8 | 06-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 9E-04 | J | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 3E-04 | J | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.005 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.002 | | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.005 | | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 2E-04 | J | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.007 | | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| DP2-4 | DP24-15 | 12 | 15 | 06-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.074 | J | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.034 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.005 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 9E-04 | J | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 8E-04 | J | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 4E-04 | J | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.17 | | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.41 | | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.74 | | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| DP2-4 | DP24-25 | 22 | 25 | 06-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.009 | | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.002 | | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.081 | J | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.04 | J | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.002 | | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.005 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.2 | | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.33 | | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.002 | | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.94 | | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| DP2-4 | DP24-35 | 32 | 35 | 06-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.012 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.002 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.13 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.068 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.002 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.002 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 2E-04 | J | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 0.001 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 3E-04 | J | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.25 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.39 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.002 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 1.3 | | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| DP2-4 | DP24-45 | 42 | 45 | 06-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.019 | | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 75-34-3 | 1,1-Dichloroethane | 0.052 | | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 75-35-4 | 1,1-Dichloroethene | 0.022 | J | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 107-06-2 | 1,2-Dichloroethane | 0.001 | | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 71-43-2 | Benzene | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 75-27-4 | Bromodichloromethane | 0.001 | | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 75-00-3 | Chloroethane | 7E-04 | J | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 67-66-3 | Chloroform | 4E-04 | J | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 156-59-2 | cis-1,2-Dichloroethene | 0.087 | | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 100-42-5 | Styrene | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 127-18-4 | Tetrachloroethene | 0.095 | | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 79-01-6 | Trichloroethene | 0.37 | | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| DP2-4 | DP24-55 | 52 | 55 | 06-May-99 | VOA | EMAX Laboratories | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.034 | | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.065 | | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.041 | | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.13 | | MG/L |
| DP2-5 | C-56-04 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.248 | | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.335 | | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.155 | | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.006 | | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.01 | | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.235 | | MG/L |
| DP2-5 | C-56-03 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.063 | | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.029 | | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.106 | | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.014 | | MG/L |
| DP2-5 | C-56-02 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.29 | | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.265 | | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 1.9 | | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.025 | | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.028 | | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.055 | | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.625 | | MG/L |
| DP2-5 | C-56-01 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.084 | | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.019 | | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.05 | | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.005 | | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.007 | | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.015 | | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.013 | | MG/L |
| DP2-5 | C-55-11 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.023 | | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.045 | | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.013 | | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.01 | | MG/L |
| DP2-6 | C-57-13 | 5 | 8 | 24-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0.015 | | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.16 | | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.21 | | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.09 | | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.013 | | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.01 | | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.09 | | MG/L |
| DP2-6 | C-57-12 | 17 | 20 | 24-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.215 | | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.27 | | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.325 | | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.02 | | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.038 | | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.11 | | MG/L |
| DP2-6 | C-57-08 | 27 | 30 | 24-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.25 | | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.32 | | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.9 | | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.085 | | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.15 | | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.078 | | MG/L |
| DP2-6 | C-57-08 | 37 | 40 | 24-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.028 | | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.009 | | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | | | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.15 | | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.014 | | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.012 | | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.062 | | MG/L |
| DP2-7 | C-58-09 | 5 | 8 | 25-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.019 | | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.05 | | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.31 | | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.275 | | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.475 | | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP2-7 | C-58-08 | 17 | 20 | 25-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0.12 | | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.173 | | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.225 | | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 2.7 | | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.42 | | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 3.1 | | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.075 | | MG/L |
| DP2-7 | C-58-07 | 27 | 30 | 25-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0.013 | | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.079 | | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.21 | | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.985 | | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.29 | | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 4.1 | | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.012 | | MG/L |
| DP2-7 | C-58-06 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.015 | | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.03 | | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.6 | | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 1.6 | | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 3.9 | | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP2-7 | C-58-04 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.043 | | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.034 | | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 1.13 | | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.075 | | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.76 | | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP2-7 | C-58-03 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.009 | | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0.007 | | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0.042 | | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.029 | | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.005 | | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0.01 | | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.017 | | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.021 | | MG/L |
| DP2-8 | C-61-01 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.1 | | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.175 | | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 1.575 | | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.35 | | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 1.05 | | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.175 | | MG/L |
| DP2-8 | C-60-11 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.006 | | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.12 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.12 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.158 | | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.15 | J | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.11 | | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.155 | | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.071 | | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.083 | J | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.004 | | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.12 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.25 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.002 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.001 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.001 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.12 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 1.2 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 1.2 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.01 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.002 | | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.12 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.12 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.002 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.25 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.25 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 1.275 | | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.004 | | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.002 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.25 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.058 | | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.57 | | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.001 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.12 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1.2 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 1.2 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.25 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.002 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.75 | | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.12 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.72 | | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 3E-04 | J | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 2.4 | | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.12 | U | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.013 | | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.107 | | MG/L |
| DP2-8 | DP28-30 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP2-8 | DP28-30R2 | 28 | 30 | 27-May-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.12 | U | MG/L |
| DP2-8 | C-60-10 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.125 | | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.091 | | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 2.65 | | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.585 | | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 2.045 | | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.065 | | MG/L |
| DP2-8 | C-60-09 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.34 | | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.24 | | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 1.175 | | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP2-8 | C-60-08 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.525 | | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.51 | | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 2.3 | | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP2-8 | C-60-07 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0.005 | | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.106 | | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.07 | | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.071 | | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.015 | | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.058 | | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.03 | | MG/L |
| DP2-9 | C-62-02 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0.13 | | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.58 | | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.41 | | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0.013 | | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.71 | | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.165 | | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.333 | | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.15 | | MG/L |
| DP2-9 | C-62-01 | 20 | 23 | 01-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.244 | | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.21 | | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.071 | | MG/L |
| DP5-1 | C-47-03 | 5 | 8 | 07-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.056 | | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.068 | | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.094 | | MG/L |
| DP5-1 | C-47-02 | 17 | 20 | 07-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.102 | | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.029 | | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.176 | | MG/L |
| DP5-1 | C-47-01 | 28 | 31 | 07-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.035 | | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.028 | | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.044 | | MG/L |
| DP5-1 | C-47-06 | 37 | 40 | 07-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.015 | | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.055 | | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.064 | | MG/L |
| DP5-1 | C-47-05 | 47 | 50 | 07-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.096 | | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.078 | | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.195 | | MG/L |
| DP5-1 | C-47-04 | 57 | 60 | 07-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.081 | | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.05 | | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-10 | C-56-11 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.002 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.001 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.001 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.01 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.002 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.002 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.002 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.019 | | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.019 | | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.02 | | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-10 | DP510-20 | 18 | 20 | 21-May-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP5-10 | C-56-10 | 17 | 20 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 3E-04 | J | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.005 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.01 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.01 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.002 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.05 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.05 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.01 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 3E-04 | J | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.005 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.002 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.025 | | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.002 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.01 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.014 | | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.014 | | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.005 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.05 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.05 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.002 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.01 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.033 | | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.005 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.005 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.039 | | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.039 | | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.055 | | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.005 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-10 | DP510-30 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| DP5-10 | DP510-30R2 | 28 | 30 | 21-May-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.005 | U | MG/L |
| DP5-10 | C-56-09 | 27 | 30 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.09 | | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.165 | | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.31 | | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-10 | C-56-07 | 37 | 40 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.056 | | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.034 | | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.205 | | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-10 | C-56-06 | 47 | 50 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0.005 | | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.007 | | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-10 | C-56-05 | 57 | 60 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-11 | C-63-10 | 5 | 8 | 01-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.009 | | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.014 | | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-11 | C-63-09 | 17 | 20 | 01-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.007 | | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.014 | | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-11 | C-63-08 | 27 | 30 | 01-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.009 | | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.05 | | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.088 | | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.17 | | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-11 | C-63-07 | 37 | 40 | 01-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.035 | | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.06 | | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-11 | C-63-06 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.01 | | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.038 | | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-11 | C-63-05 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.03 | | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.069 | | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.066 | | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-2 | C-48-03 | 5 | 8 | 10-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.055 | | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.14 | | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.2 | | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-2 | C-48-02 | 17 | 20 | 10-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.034 | | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.14 | | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.45 | | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.65 | | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-2 | C-48-01 | 27 | 30 | 10-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.052 | | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.08 | | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.11 | | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.024 | | MG/L |
| DP5-3 | C-40-04 | 7 | 10 | 11-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.03 | | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.02 | | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.055 | | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-3 | C-40-03 | 17 | 20 | 11-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.05 | | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.16 | | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.35 | | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-3 | C-40-02 | 27 | 30 | 11-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.014 | | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.016 | | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.11 | | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.12 | | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 1.1 | | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-3 | C-40-01 | 37 | 40 | 11-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.05 | | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.03 | | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.115 | | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-3 | C-48-04 | 47 | 50 | 10-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.025 | | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.155 | | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.41 | | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.53 | | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.005 | | MG/L |
| DP5-4 | C-50-03 | 27 | 30 | 12-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.2 | | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.165 | | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.36 | | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.04 | | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.087 | | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.035 | | MG/L |
| DP5-4 | C-50-02 | 37 | 40 | 12-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.02 | | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.005 | | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.43 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.015 | | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.11 | | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.005 | | MG/L |
| DP5-4 | C-50-01 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.021 | | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.36 | | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.05 | | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.27 | | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-4 | C-49-05 | 57 | 60 | 11-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.017 | | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-5 | C-51-04 | 7 | 10 | 13-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.005 | | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.015 | | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.017 | | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-5 | C-51-03 | 17 | 20 | 13-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.005 | | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.04 | | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.02 | | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.017 | | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-5 | C-51-02 | 27 | 30 | 13-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.195 | | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.175 | | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.45 | | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.15 | | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.24 | | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.035 | | MG/L |
| DP5-5 | C-51-01 | 37 | 40 | 13-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.055 | | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.04 | | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.17 | | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.1 | | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.135 | | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-5 | C-50-05 | 47 | 50 | 12-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-5 | C-50-04 | 57 | 60 | 12-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.013 | | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.012 | | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.012 | | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-6 | C-54-07 | 5 | 8 | 19-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.006 | | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.026 | | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.028 | | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-6 | C-54-05 | 17 | 20 | 19-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.005 | | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-6 | C-54-02 | 27 | 30 | 19-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.008 | | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.028 | | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-6 | C-53-05 | 37 | 40 | 18-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.063 | | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-6 | C-53-04 | 47 | 50 | 18-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.15 | | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.35 | | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.83 | | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.015 | | MG/L |
| DP5-6 | C-53-03 | 57 | 60 | 18-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-7 | C-56-08 | 5 | 8 | 21-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.03 | | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.019 | | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.018 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-7 | C-55-09 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.05 | | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.125 | | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.23 | | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-7 | C-55-08 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.025 | | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.175 | | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.34 | | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.7 | | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-7 | C-55-07 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.04 | | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.033 | | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.14 | | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-7 | C-55-06 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.023 | | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.05 | | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.12 | | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-7 | C-55-05 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.026 | | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.008 | | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.036 | | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.04 | | MG/L |
| DP5-8 | C-55-04 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.025 | | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.043 | | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-8 | C-55-03 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.03 | | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.05 | | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.098 | | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-8 | C-55-02 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.015 | | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.15 | | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.18 | | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.685 | | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-8 | C-55-01 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.023 | | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.01 | | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.17 | | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-8 | C-54-13 | 47 | 50 | 19-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0.005 | | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.01 | | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.009 | | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-8 | C-54-12 | 57 | 60 | 19-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.035 | | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.005 | | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-9 | C-55-17 | 5 | 8 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.013 | | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.035 | | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.063 | | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-9 | C-55-16 | 17 | 20 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.023 | | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.04 | | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-9 | C-55-15 | 27 | 30 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.007 | | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.095 | | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.215 | | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.365 | | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-9 | C-55-14 | 37 | 40 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.006 | | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.11 | | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-9 | C-55-13 | 47 | 50 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0.005 | | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP5-9 | C-55-12 | 57 | 60 | 20-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.005 | | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.005 | | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-1 | C-59-04 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.008 | | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.009 | | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.013 | | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.016 | | MG/L |
| DP6-1 | C-59-03 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.006 | | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.15 | | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.008 | | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-1 | C-59-02 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.11 | | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.008 | | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-1 | C-52-03 | 37 | 40 | 25-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.009 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.125 | | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.016 | | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-1 | C-52-02 | 47 | 50 | 25-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.01 | | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0.088 | | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.016 | | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-1 | C-52-01 | 57 | 60 | 25-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.008 | | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.014 | | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-2 | C-59-10 | 5 | 8 | 26-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.012 | | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.011 | | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-2 | C-59-09 | 17 | 20 | 26-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.02 | | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.026 | | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-2 | C-59-08 | 27 | 30 | 26-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.028 | | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.14 | | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.325 | | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.67 | | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.005 | | MG/L |
| DP6-2 | C-59-07 | 37 | 40 | 26-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.011 | | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.1 | | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-2 | C-59-06 | 47 | 50 | 26-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.038 | | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-2 | C-59-05 | 57 | 60 | 26-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0.675 | | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 1.5 | | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 3.9 | | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.038 | | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0.06 | | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.15 | | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.97 | | MG/L |
| DP6-3 | C-61-02 | 5 | 8 | 28-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.043 | | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.027 | | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.24 | | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.02 | | MG/L |
| DP6-3 | C-60-05 | 17 | 20 | 27-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-3 | C-60-04 | 27 | 30 | 27-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.074 | | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.035 | | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.21 | | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.063 | | MG/L |
| DP6-3 | C-60-03 | 37 | 40 | 27-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.14 | | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.11 | | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.18 | | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.008 | | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.048 | | MG/L |
| DP6-3 | C-60-02 | 47 | 50 | 27-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.038 | | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-3 | C-60-01 | 57 | 60 | 27-May-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.007 | | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.012 | | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-4 | C-63-04 | 5 | 8 | 02-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0.057 | | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.068 | | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.088 | | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.096 | | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.027 | | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.05 | | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.065 | | MG/L |
| DP6-4 | C-63-03 | 17 | 20 | 02-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.133 | | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.124 | | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.57 | | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0.034 | | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.027 | | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.2 | | MG/L |
| DP6-4 | C-63-02 | 27 | 30 | 02-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.18 | | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0.055 | | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.404 | | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.015 | | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0.33 | | MG/L |
| DP6-4 | C-63-01 | 37 | 40 | 02-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.015 | | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-4 | C-62-04 | 47 | 50 | 01-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 71-55-6 | 1,1,1-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 79-00-5 | 1,1,2-Trichloroethane | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 75-34-3 | 1,1-Dichloroethane | 0.015 | | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 75-35-4 | 1,1-Dichloroethene | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 107-06-2 | 1,2-Dichloroethane | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | | 1,3 or 1,4-Dimethylbenzene | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 71-43-2 | Benzene | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 56-23-5 | Carbon tetrachloride | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 67-66-3 | Chloroform | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 156-59-2 | cis-1,2-Dichloroethene | 0.14 | | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 75-09-2 | Dichloromethane | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 100-41-4 | Ethylbenzene | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 127-18-4 | Tetrachloroethene | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 108-88-3 | Toluene | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 156-60-5 | trans-1,2-Dichloroethene | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 79-01-6 | Trichloroethene | 0.005 | | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 75-01-4 | Vinyl Chloride | 0 | U | MG/L |
| DP6-4 | C-62-03 | 57 | 60 | 01-Jun-99 | VOA | VIRONEX | 1330-20-7 | Xylenes, Total | 0 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.003 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.003 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.002 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.002 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.002 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.012 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.012 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.056 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.056 | | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.001 | U | MG/L |
| ECD-4 | WCECD4000 | 8 | 18 | 11-Feb-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.001 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 71-55-6 | 1,1,1-Trichloroethane | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 79-34-5 | 1,1,2,2-Tetrachloroethane | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 79-00-5 | 1,1,2-Trichloroethane | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 75-34-3 | 1,1-Dichloroethane | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 75-35-4 | 1,1-Dichloroethene | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 107-06-2 | 1,2-Dichloroethane | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 78-87-5 | 1,2-Dichloropropane | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 78-93-3 | 2-Butanone | 120 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 67-64-1 | Acetone | 120 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 71-43-2 | Benzene | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 75-27-4 | Bromodichloromethane | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 75-25-2 | Bromoform | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 74-83-9 | Bromomethane | 25 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 75-15-0 | Carbon disulfide | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 56-23-5 | Carbon tetrachloride | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 108-90-7 | Chlorobenzene | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 75-00-3 | Chloroethane | 25 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 67-66-3 | Chloroform | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 74-87-3 | Chloromethane | 25 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 156-59-2 | cis-1,2-Dichloroethene | 6.2 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 10061-01-5 | cis-1,3-Dichloropropylene | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 124-48-1 | Dibromochloromethane | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 75-09-2 | Dichloromethane | 7.1 | J | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 100-41-4 | Ethylbenzene | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 120 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 591-78-6 | Methyl n-butyl ketone | 120 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 100-42-5 | Styrene | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 127-18-4 | Tetrachloroethene | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 108-88-3 | Toluene | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 156-60-5 | trans-1,2-Dichloroethene | 6.2 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 10061-02-6 | trans-1,3-Dichloropropene | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 79-01-6 | Trichloroethene | 400 | | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 75-01-4 | Vinyl Chloride | 12 | U | MG/L |
| EW-99- | EW01090199 | 20 | 40 | 01-Sep-99 | VOA | Quanterra | 1330-20-7 | Xylenes, Total | 12 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | J | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.01 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.002 | J | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.01 | UJ | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.05 | UJ | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.05 | UJ | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.005 | UJ | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.01 | UJ | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.005 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.009 | | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.01 | UJ | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.05 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.05 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.069 | | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.083 | | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.01 | UJ | MG/L |
| MW-1 | MW-1 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.01 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.01 | UJ | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.05 | UJ | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.05 | UJ | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.035 | | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.005 | UJ | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.01 | UJ | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.002 | J | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.01 | UJ | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.05 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.05 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.005 | U | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.01 | UJ | MG/L |
| MW-2 | MW-2 | 2 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.002 | J | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | J | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | UJ | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | UJ | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | UJ | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.003 | | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | UJ | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | UJ | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 8E-04 | J | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | UJ | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | UJ | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 3E-04 | J | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | UJ | MG/L |
| MW-4 | MW-4 | 5 | 15 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.003 | | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.008 | | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.015 | | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| MWCR- | MWCR99010 | 4 | 8 | 11-Feb-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.001 | U | MG/L |
| PZ-11D | PZ11D034XD | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.029 | | MG/L |
| PZ-11D | PZ11D034XX | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.03 | | MG/L |
| PZ-11D | PZ11D034XD | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.26 | | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.34 | | MG/L |
| PZ-11D | PZ11D034XX | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.26 | | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.032 | | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 4E-04 | J | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.002 | | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | | UJ | |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| PZ-11D | PZ11D034XD | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| PZ-11D | PZ11D034XX | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.37 | | MG/L |
| PZ-11D | PZ11D034XX | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.43 | | MG/L |
| PZ-11D | PZ11D034XD | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.42 | | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-11D | PZ11D034XD | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| PZ-11D | PZ11D034XX | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| PZ-11D | PZ11D034XX | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.28 | | MG/L |
| PZ-11D | PZ11D034XD | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.28 | | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.25 | | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| PZ-11D | PZ11D034XD | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| PZ-11D | PZ11D034XX | 24 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| PZ-11D | PZ-11D | 24 | 34 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.013 | | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.002 | | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.006 | | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.026 | | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 3E-04 | J | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 6E-04 | J | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.076 | JE | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.63 | | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.97 | | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| PZ-13D | PZ-13D | 21.5 | 31.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.004 | | MG/L |
| PZ-13D | PZ13D032XX | 22 | 32 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| PZ-13D | PZ13D032XX | 22 | 32 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| PZ-13D | PZ13D032XX | 22 | 32 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PZ-13D | PZ13D032XX | 22 | 32 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.49 | | MG/L |
| PZ-13D | PZ13D032XX | 22 | 32 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| PZ-13D | PZ13D032XX | 22 | 32 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.5 | | MG/L |
| PZ-13D | PZ13D032XX | 22 | 32 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.041 | J | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.065 | | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.05 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.25 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.25 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.05 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.05 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.05 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.4 | | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.05 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.25 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.25 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.025 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.007 | J | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.05 | U | MG/L |
| PZ-16D | PZ-16DR2 | 19 | 29 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.092 | | MG/L |
| PZ-16D | PZ16D028XX | 21 | 31 | 29-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.055 | | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.073 | | MG/L |
| PZ-16D | PZ16D028XX | 21 | 31 | 29-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.003 | | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.002 | | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 5E-04 | J | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.31 | | MG/L |
| PZ-16D | PZ16D028XX | 21 | 31 | 29-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.49 | | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-16D | PZ16D028XX | 21 | 31 | 29-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.003 | | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.003 | | MG/L |
| PZ-16D | PZ16D028XX | 21 | 31 | 29-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.007 | | MG/L |
| PZ-16D | PZ16D028XX | 21 | 31 | 29-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| PZ-16D | PZ16D028XX | 21 | 31 | 29-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.13 | | MG/L |
| PZ-16D | PZ-16D | 21 | 31 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.1 | | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.037 | | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.06 | | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 7E-04 | J | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.11 | | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.006 | | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.49 | | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| PZ-17D | PZ-17D | 22 | 32 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.014 | | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.024 | J | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.045 | | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.05 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.25 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.25 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.05 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.05 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.05 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.085 | | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.05 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.25 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.25 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.025 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.64 | | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.05 | U | MG/L |
| PZ-17D | PZ-17DR2 | 29 | 39 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.025 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.003 | | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.15 | J | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.18 | | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.14 | | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.11 | | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.2 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.1 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.2 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | | UJ | |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.2 | UJ | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | UJ | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.002 | | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.2 | UJ | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.26 | | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.39 | | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.2 | UJ | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.1 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.79 | | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.85 | | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.002 | | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.1 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 2.5 | | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 2.3 | | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.2 | U | MG/L |
| PZ-1D | PZ-1D | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.025 | | MG/L |
| PZ-1D | PZ-1DR2 | 24 | 34 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | | MG/L |
| PZ-4D | PZ4D031799 | 29 | 39 | 17-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.09 | J | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.11 | | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.002 | | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| PZ-4D | PZ4D031799 | 29 | 39 | 17-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.013 | | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 6E-04 | J | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.2 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | UJ | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.2 | UJ | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.002 | | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.2 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.2 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | UJ | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.17 | | MG/L |
| PZ-4D | PZ4D031799 | 29 | 39 | 17-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.38 | | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.13 | | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.1 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.2 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | UJ | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.1 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| PZ-4D | PZ4D031799 | 29 | 39 | 17-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.01 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.009 | | MG/L |
| PZ-4D | PZ4D031799 | 29 | 39 | 17-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.016 | | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.1 | U | MG/L |
| PZ-4D | PZ4D031799 | 29 | 39 | 17-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.022 | | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.004 | | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.2 | U | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| PZ-4D | PZ4D031799 | 29 | 39 | 17-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 2.6 | | MG/L |
| PZ-4D | PZ-4D | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 3.4 | | MG/L |
| PZ-4D | PZ-4DR2 | 29 | 39 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 2.7 | | MG/L |
| PZ-5D | PZ5D040XX | 30 | 40 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| PZ-5D | PZ5D040XX | 30 | 40 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| PZ-5D | PZ5D040XX | 30 | 40 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| PZ-5D | PZ5D040XX | 30 | 40 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| PZ-5D | PZ5D040XX | 30 | 40 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| PZ-5D | PZ5D040XX | 30 | 40 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| PZ-5D | PZ5D040XX | 30 | 40 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.02 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | J | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 6E-04 | J | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 9E-04 | J | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.01 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.02 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 8E-04 | J | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.1 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.1 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.015 | | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.004 | J | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.02 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.2 | | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.092 | J | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.02 | UJ | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 7E-04 | J | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.02 | UJ | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.01 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.1 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.1 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.01 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 9E-04 | J | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.002 | | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.01 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.02 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| PZ-5D | PZ-5D | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 4E-04 | J | MG/L |
| PZ-5D | PZ-5DR2 | 33 | 43 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.01 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 8E-04 | J | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| PZ-7D | PZ-7D | 19 | 29 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| PZ-8D | PZ8D030XX | 20 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.83 | | MG/L |
| PZ-8D | PZ8D030XX | 20 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1.9 | | MG/L |
| PZ-8D | PZ8D030XX | 20 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.17 | | MG/L |
| PZ-8D | PZ8D030XX | 20 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.19 | | MG/L |
| PZ-8D | PZ8D030XX | 20 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.005 | | MG/L |
| PZ-8D | PZ8D030XX | 20 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 2.5 | | MG/L |
| PZ-8D | PZ8D030XX | 20 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.006 | | MG/L |
| PZ-8D | PZ8D031699 | 23 | 33 | 16-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| PZ-8D | PZ8D031699 | 23 | 33 | 16-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| PZ-8D | PZ8D031699 | 23 | 33 | 16-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| PZ-8D | PZ8D031699 | 23 | 33 | 16-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| PZ-8D | PZ8D031699 | 23 | 33 | 16-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| PZ-8D | PZ8D031699 | 23 | 33 | 16-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| PZ-8D | PZ8D031699 | 23 | 33 | 16-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 2.1 | | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 3.3 | | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.006 | | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.5 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 1 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.22 | J | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 3.7 | | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 3.1 | | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.025 | | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 1 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 5 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 1 | UJ | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.5 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.003 | | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 1 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.006 | | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 1 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.27 | J | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.27 | | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.5 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 1 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 5 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.11 | J | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.079 | J | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.5 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 5.9 | | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 6.8 | | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 1 | U | MG/L |
| PZ-8D | PZ-8D | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.018 | | MG/L |
| PZ-8D | PZ-8DR2 | 23.5 | 33.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.5 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.01 | | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.008 | | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 5E-04 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.016 | | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 2.2 | | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| PZ-99-01I | PZ9901I000XX | 14 | 19 | 11-Feb-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.001 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 71-55-6 | 1,1,1-Trichloroethane | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 79-00-5 | 1,1,2-Trichloroethane | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 75-34-3 | 1,1-Dichloroethane | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 75-35-4 | 1,1-Dichloroethene | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 107-06-2 | 1,2-Dichloroethane | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 78-87-5 | 1,2-Dichloropropane | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 78-93-3 | 2-Butanone | 50 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 67-64-1 | Acetone | 50 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 71-43-2 | Benzene | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 75-27-4 | Bromodichloromethane | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 75-25-2 | Bromoform | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 74-83-9 | Bromomethane | 10 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 75-15-0 | Carbon disulfide | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 56-23-5 | Carbon tetrachloride | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 108-90-7 | Chlorobenzene | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 75-00-3 | Chloroethane | 10 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 67-66-3 | Chloroform | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 74-87-3 | Chloromethane | 10 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 156-59-2 | cis-1,2-Dichloroethene | 2.5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 10061-01-5 | cis-1,3-Dichloropropylene | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 124-48-1 | Dibromochloromethane | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 75-09-2 | Dichloromethane | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 100-41-4 | Ethylbenzene | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 50 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 591-78-6 | Methyl n-butyl ketone | 50 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 100-42-5 | Styrene | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 127-18-4 | Tetrachloroethene | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 108-88-3 | Toluene | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 156-60-5 | trans-1,2-Dichloroethene | 2.5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 10061-02-6 | trans-1,3-Dichloropropene | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 79-01-6 | Trichloroethene | 82 | | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 75-01-4 | Vinyl Chloride | 5 | U | MG/L |
| PZ-99- | PZ2B081999 | 30 | 35 | 19-Aug-99 | VOA | Quanterra | 1330-20-7 | Xylenes, Total | 5 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 71-55-6 | 1,1,1-Trichloroethane | 34 | | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 79-00-5 | 1,1,2-Trichloroethane | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 75-34-3 | 1,1-Dichloroethane | 2.8 | | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 75-35-4 | 1,1-Dichloroethene | 9.4 | | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 107-06-2 | 1,2-Dichloroethane | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 78-87-5 | 1,2-Dichloropropane | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 78-93-3 | 2-Butanone | 10 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 67-64-1 | Acetone | 10 | UJ | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 71-43-2 | Benzene | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 75-27-4 | Bromodichloromethane | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 75-25-2 | Bromoform | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 74-83-9 | Bromomethane | 2 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 75-15-0 | Carbon disulfide | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 56-23-5 | Carbon tetrachloride | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 108-90-7 | Chlorobenzene | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 75-00-3 | Chloroethane | 2 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 67-66-3 | Chloroform | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 74-87-3 | Chloromethane | 2 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 156-59-2 | cis-1,2-Dichloroethene | 0.29 | J | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 10061-01-5 | cis-1,3-Dichloropropylene | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 124-48-1 | Dibromochloromethane | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 75-09-2 | Dichloromethane | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 100-41-4 | Ethylbenzene | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 10 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 591-78-6 | Methyl n-butyl ketone | 10 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 100-42-5 | Styrene | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 108-88-3 | Toluene | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 10061-02-6 | trans-1,3-Dichloropropene | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 79-01-6 | Trichloroethene | 1.7 | | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| PZ-99-03 | PZ03081899X | 4 | 9 | 18-Aug-99 | VOA | Quanterra | 1330-20-7 | Xylenes, Total | 1 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.013 | | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.012 | | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.045 | | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.32 | | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.004 | | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.037 | | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.004 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 5E-04 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.093 | | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 45 | | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.002 | | MG/L |
| PZ-99-04I | PZ9904I000XX | 30 | 35 | 11-Feb-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.21 | | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.002 | | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.075 | | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 1.2 | | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.002 | | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.19 | | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 5E-04 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.003 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.007 | | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.2 | U | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.025 | | MG/L |
| PZ-99-12I | PZ9912I000XX | 16 | 21 | 11-Feb-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.003 | | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.016 | | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.032 | J | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 9E-04 | J | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.97 | | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | UJ | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.003 | | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.002 | | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 1.5 | | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| PZ-9D | PZ-9D | 27 | 37 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.003 | | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.015 | | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.029 | J | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.28 | | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 3E-04 | J | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.19 | | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.006 | | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.21 | | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC-10S | WC-10S | 3 | 13 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 1E-03 | J | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 1.8 | | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.27 | | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.96 | | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.023 | J | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.084 | J | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.2 | UJ | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.2 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.2 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.036 | J | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.2 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.056 | J | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.1 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.14 | | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.2 | U | MG/L |
| WC-12S | WC-12S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 5E-04 | J | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.004 | | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | UJ | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | UJ | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.003 | | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.021 | | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC-14S | WC-14S | 3 | 13 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.11 | | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.052 | | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.02 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.1 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.1 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.01 | UJ | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.02 | UJ | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.01 | UJ | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.02 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.02 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.034 | | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.02 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.1 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.1 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.011 | | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.01 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.012 | | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.02 | U | MG/L |
| WC-1S | WC-1S | 4 | 14 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.037 | | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.025 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.05 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.086 | J | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.082 | | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.025 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.05 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.1 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.5 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.25 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.5 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.25 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.025 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.025 | UJ | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.05 | UJ | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.1 | UJ | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.05 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.05 | UJ | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.025 | UJ | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.1 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.05 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.1 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.05 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.32 | | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.3 | | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.1 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.05 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.025 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.25 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.5 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.5 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.25 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.025 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.007 | J | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.05 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.025 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.015 | J | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.018 | J | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.05 | U | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.1 | U | MG/L |
| WC-2D | WC-2D | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 1.8 | | MG/L |
| WC-2D | WC-2DR2 | 24.5 | 34.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 1.9 | | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.005 | | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC-3S | WC-3S | 3 | 13 | 12-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.77 | | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.24 | | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.73 | | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.2 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.2 | UJ | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.2 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.2 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.059 | J | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.2 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.1 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.067 | J | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.2 | U | MG/L |
| WC-4S | WC-4S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.5 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 1 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.02 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.5 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.01 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.022 | J | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.27 | | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.22 | J | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.1 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.1 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 5 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.038 | | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 1 | UJ | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.02 | UJ | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.01 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.003 | J | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 13 | | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.87 | J | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 1 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.02 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 8.5 | | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 8.9 | | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.01 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.01 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.02 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 1 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.064 | J | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.1 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.1 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 5 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.01 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.033 | J | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.5 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.037 | J | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.01 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.5 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.5 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.007 | J | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.02 | U | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 1 | U | MG/L |
| WC-5S | WC-5S | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 3 | | MG/L |
| WC-5S | WC-5SR2 | 3 | 13 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 3 | | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | UJ | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC-9D2 | WC-9D2 | 140 | 150 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.001 | J | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.003 | | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | J | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 7E-04 | J | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.003 | | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC-9S | WC-9S | 3 | 13 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 7E-04 | J | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 9E-04 | J | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC1-1S | WC1-1S | 2 | 12 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC2-1D | WC2-1D | 140 | 150 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 8E-04 | J | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 8E-04 | J | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC2-1I | WC2-1I | 45 | 55 | 02-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.5 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 1 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 8E-04 | J | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 4E-04 | J | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.002 | | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.001 | J | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 1 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 5 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.002 | | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 1 | UJ | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.003 | | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.5 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 1.1 | J | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.58 | | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.5 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 1 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | UJ | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | UJ | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 1 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 3E-04 | J | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 9E-04 | J | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.004 | | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 1 | U | MG/L |
| WC2-1S | WC2-1SR2 | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.5 | U | MG/L |
| WC2-1S | WC2-1S | 2 | 12 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.004 | UJ | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | UJ | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | UJ | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | UJ | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.015 | UJ | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | UJ | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.004 | | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC2-2D | WC2-2D | 51.5 | 61.5 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.001 | J | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.002 | | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 4E-04 | J | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | | UJ | |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 9E-04 | J | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.23 | | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.019 | J | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.002 | | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.32 | | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC2-2I | WC2-2I | 45 | 55 | 08-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.036 | | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.2 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.003 | | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.2 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 1 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 3E-04 | J | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.1 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.2 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | | UJ | |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.2 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.002 | | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.1 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.2 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.064 | | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.045 | J | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.2 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.099 | J | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.057 | | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 5E-04 | J | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.62 | | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 3.1 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.2 | U | MG/L |
| WC2-3D | WC2-3DR2 | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WC2-3D | WC2-3D | 74.5 | 84.5 | 07-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.004 | | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.01 | | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 7E-04 | J | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 6E-04 | J | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | | UJ | |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.66 | | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.022 | | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.027 | J | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.4 | | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC2-3I | WC2-3I | 45 | 55 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.062 | | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.005 | | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.05 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.05 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.25 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.25 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.05 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.032 | J | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.029 | | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.32 | J | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.24 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.05 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.002 | | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.05 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 5E-04 | J | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.25 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.25 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.025 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | UJ | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.05 | UJ | MG/L |
| WC2-3S | WC2-3S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.002 | | MG/L |
| WC2-3S | WC2-3SR2 | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.025 | UJ | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.002 | | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | | UJ | |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | UJ | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.002 | | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.002 | | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.011 | | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.015 | | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC2-4S | WC2-4S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.004 | | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.13 | | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.015 | | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 4E-04 | J | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 2E-04 | J | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | UJ | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | UJ | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.022 | | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 4E-04 | J | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | UJ | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.048 | | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | UJ | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.012 | | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 4E-04 | J | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.022 | | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC2-5S | WC2-5S | 2 | 12 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.012 | | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | UJ | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC5-1D | WC5-1D | 74.5 | 84.5 | 13-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.005 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.008 | | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.008 | J | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.057 | | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.057 | | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.005 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.01 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.05 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.05 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.01 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.005 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.01 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.01 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.027 | | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.027 | | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.01 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.05 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | UJ | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | UJ | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.05 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.002 | J | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.005 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.005 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.16 | | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.15 | | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.01 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC5-1S | WC5-1S | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC5-1S | WC5-1SR2 | 1.5 | 11.5 | 06-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.005 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.005 | | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.003 | | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | UJ | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.008 | | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.004 | | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC5-2I | WC5-2I | 30 | 40 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC5-2S | WC5-2S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | UJ | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC5-3S | WC5-3S | 2 | 12 | 01-Jul-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-34-3 | 1,1-Dichloroethane | 0.002 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 95-47-6 | 1,2-Dimethylbenzene | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | | 1,3 or 1,4-Dimethylbenzene | 0.002 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 78-93-3 | 2-Butanone | 0.01 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 67-64-1 | Acetone | 0.01 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 74-97-5 | Bromochloromethane | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 74-83-9 | Bromomethane | 0.002 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-00-3 | Chloroethane | 0.002 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 74-87-3 | Chloromethane | 0.002 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 156-59-2 | cis-1,2-Dichloroethene | 4E-04 | J | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 10061-01-5 | cis-1,3-Dichloropropylene | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 127-18-4 | Tetrachloroethene | 3E-04 | J | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 10061-02-6 | trans-1,3-Dichloropropene | 0.001 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 79-01-6 | Trichloroethene | 0.007 | | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 108-05-4 | Vinyl Acetate | 0.002 | U | MG/L |
| WC6-1I | WC6-1I | 40 | 50 | 30-Jun-99 | VOA | EMAX Laboratories, I | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.02 | E | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.022 | E | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.008 | | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.017 | E | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 95-50-1 | 1,2-Dichlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 541-73-1 | 1,3-Dichlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.01 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.003 | | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.005 | | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.11 | E | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WP-99- | WP9908012X | 8 | 12 | 09-Feb-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.001 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.5 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 95-50-1 | 1,2-Dichlorobenzene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 541-73-1 | 1,3-Dichlorobenzene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.01 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 3 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 20 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 6 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 2 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.5 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 2 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 2 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 2 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 2 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.5 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 110 | E | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 3 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9908030X | 26 | 30 | 09-Feb-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 1 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 95-50-1 | 1,2-Dichlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 541-73-1 | 1,3-Dichlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.01 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.17 | | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WP-99- | WP9908050X | 46 | 50 | 09-Feb-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.001 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.05 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 95-50-1 | 1,2-Dichlorobenzene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 541-73-1 | 1,3-Dichlorobenzene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.3 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 2 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.6 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.2 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.14 | | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.05 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.2 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.2 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.2 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.2 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.12 | | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 130 | E | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.3 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9909029X | 25 | 29 | 27-Jan-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.1 | U | MG/L |
| WP-99- | WP9933030X | 26 | 30 | 08-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 100 | U | MG/L |
| WP-99- | WP9933030X | 26 | 30 | 08-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 100 | U | MG/L |
| WP-99- | WP9933030X | 26 | 30 | 08-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 100 | U | MG/L |
| WP-99- | WP9933030X | 26 | 30 | 08-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 100 | U | MG/L |
| WP-99- | WP9933030X | 26 | 30 | 08-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 100 | U | MG/L |
| WP-99- | WP9933030X | 26 | 30 | 08-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 830 | | MG/L |
| WP-99- | WP9933030X | 26 | 30 | 08-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 100 | U | MG/L |
| WP-99- | WP9933040X | 36 | 40 | 08-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 5 | U | MG/L |
| WP-99- | WP9933040X | 36 | 40 | 08-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 5 | U | MG/L |
| WP-99- | WP9933040X | 36 | 40 | 08-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 5 | U | MG/L |
| WP-99- | WP9933040X | 36 | 40 | 08-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 5 | U | MG/L |
| WP-99- | WP9933040X | 36 | 40 | 08-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 5 | U | MG/L |
| WP-99- | WP9933040X | 36 | 40 | 08-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 12 | | MG/L |
| WP-99- | WP9933040X | 36 | 40 | 08-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 5 | U | MG/L |
| WP-99- | WP9933050X | 46 | 50 | 08-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.5 | U | MG/L |
| WP-99- | WP9933050X | 46 | 50 | 08-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.5 | U | MG/L |
| WP-99- | WP9933050X | 46 | 50 | 08-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.5 | U | MG/L |
| WP-99- | WP9933050X | 46 | 50 | 08-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.5 | U | MG/L |
| WP-99- | WP9933050X | 46 | 50 | 08-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| WP-99- | WP9933050X | 46 | 50 | 08-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 2.9 | | MG/L |
| WP-99- | WP9933050X | 46 | 50 | 08-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.5 | U | MG/L |
| WP-99- | WP9933066X | 62 | 66 | 08-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9933066X | 62 | 66 | 08-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9933066X | 62 | 66 | 08-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9933066X | 62 | 66 | 08-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9933066X | 62 | 66 | 08-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9933066X | 62 | 66 | 08-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.4 | | MG/L |
| WP-99- | WP9933066X | 62 | 66 | 08-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.006 | | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.025 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.24 | | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.1 | | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.15 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 1 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.3 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.1 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.025 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.1 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.1 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.1 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.1 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.005 | | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.025 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.27 | | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.45 | | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.15 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.05 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WP-99- | WP9933080X | 76 | 80 | 09-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.05 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.05 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.3 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 2 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.6 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.2 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.05 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.2 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.2 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.2 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.2 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.05 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.6 | | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.63 | | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.3 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9934020X | 16 | 20 | 09-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.1 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 20 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 2.5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 20 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 78 | | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 100 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 30 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 10 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 20 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 2.5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 10 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 10 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 10 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 10 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 20 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 20 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 2.5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 170 | E | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 220 | | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 15 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 5 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 20 | U | MG/L |
| WP-99- | WP9934030X | 26 | 30 | 09-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 5 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 1 | U | MG/L |
| WP-99- | WP9934040X | 36 | 40 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.5 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 1 | U | MG/L |
| WP-99- | WP9934040X | 36 | 40 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 3 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 20 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 6 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9934040X | 36 | 40 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.5 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9934040X | 36 | 40 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 1 | U | MG/L |
| WP-99- | WP9934040X | 36 | 40 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.5 | U | MG/L |
| WP-99- | WP9934040X | 36 | 40 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 31 | | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 29 | E | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 3 | U | MG/L |
| WP-99- | WP9934040X | 36 | 40 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 2 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP99034040 | 36 | 40 | 09-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 1 | U | MG/L |
| WP-99- | WP9935026X | 22 | 26 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.023 | E | MG/L |
| WP-99- | WP9935026X | 22 | 26 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 2.5 | | MG/L |
| WP-99- | WP9935026X | 22 | 26 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.47 | | MG/L |
| WP-99- | WP9935026X | 22 | 26 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.022 | E | MG/L |
| WP-99- | WP9935026X | 22 | 26 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.007 | | MG/L |
| WP-99- | WP9935026X | 22 | 26 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 12 | | MG/L |
| WP-99- | WP9935026X | 22 | 26 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.004 | | MG/L |
| WP-99- | WP9936022X | 18 | 22 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9936022X | 18 | 22 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9936022X | 18 | 22 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9936022X | 18 | 22 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9936022X | 18 | 22 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9936022X | 18 | 22 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.4 | | MG/L |
| WP-99- | WP9936022X | 18 | 22 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9936034X | 30 | 34 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 10 | U | MG/L |
| WP-99- | WP9936034X | 30 | 34 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9936034X | 30 | 34 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9936034X | 30 | 34 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 10 | U | MG/L |
| WP-99- | WP9936034X | 30 | 34 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9936034X | 30 | 34 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 23 | | MG/L |
| WP-99- | WP9936034X | 30 | 34 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 10 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.26 | | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 10 | | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 11 | | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9936048X | 44 | 48 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9937020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 1 | J | MG/L |
| WP-99- | WP9937020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1 | J | MG/L |
| WP-99- | WP9937020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | J | MG/L |
| WP-99- | WP9937020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | J | MG/L |
| WP-99- | WP9937020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | J | MG/L |
| WP-99- | WP9937020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1 | J | MG/L |
| WP-99- | WP9937020X | 16 | 20 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | J | MG/L |
| WP-99- | WP9937030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 10 | U | MG/L |
| WP-99- | WP9937030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9937030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9937030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 10 | U | MG/L |
| WP-99- | WP9937030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9937030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 18 | | MG/L |
| WP-99- | WP9937030X | 26 | 30 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 10 | U | MG/L |
| WP-99- | WP9937044X | 40 | 44 | 09-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 10 | U | MG/L |
| WP-99- | WP9937044X | 40 | 44 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9937044X | 40 | 44 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9937044X | 40 | 44 | 09-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 10 | U | MG/L |
| WP-99- | WP9937044X | 40 | 44 | 09-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9937044X | 40 | 44 | 09-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 17 | | MG/L |
| WP-99- | WP9937044X | 40 | 44 | 09-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 10 | U | MG/L |
| WP-99- | WP9938026X | 22 | 26 | 10-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9938026X | 22 | 26 | 10-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9938026X | 22 | 26 | 10-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9938026X | 22 | 26 | 10-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9938026X | 22 | 26 | 10-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9938026X | 22 | 26 | 10-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 5 | | MG/L |
| WP-99- | WP9938026X | 22 | 26 | 10-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9939027X | 23 | 27 | 10-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9939027X | 23 | 27 | 10-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9939027X | 23 | 27 | 10-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9939027X | 23 | 27 | 10-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9939027X | 23 | 27 | 10-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9939027X | 23 | 27 | 10-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.27 | | MG/L |
| WP-99- | WP9939027X | 23 | 27 | 10-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9940020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9940020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9940020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9940020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9940020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9940020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.1 | | MG/L |
| WP-99- | WP9940020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9940031X | 27 | 31 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 2 | U | MG/L |
| WP-99- | WP9940031X | 27 | 31 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 2 | U | MG/L |
| WP-99- | WP9940031X | 27 | 31 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 2 | U | MG/L |
| WP-99- | WP9940031X | 27 | 31 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 2 | U | MG/L |
| WP-99- | WP9940031X | 27 | 31 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 2 | U | MG/L |
| WP-99- | WP9940031X | 27 | 31 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 29 | | MG/L |
| WP-99- | WP9940031X | 27 | 31 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 2 | U | MG/L |
| WP-99- | WP9941010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.44 | | MG/L |
| WP-99- | WP9941010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1.4 | | MG/L |
| WP-99- | WP9941010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.19 | | MG/L |
| WP-99- | WP9941010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9941010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9941010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.98 | | MG/L |
| WP-99- | WP9941010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9941022X | 18 | 22 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 5.1 | | MG/L |
| WP-99- | WP9941022X | 18 | 22 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 3.7 | | MG/L |
| WP-99- | WP9941022X | 18 | 22 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.48 | | MG/L |
| WP-99- | WP9941022X | 18 | 22 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9941022X | 18 | 22 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9941022X | 18 | 22 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.9 | | MG/L |
| WP-99- | WP9941022X | 18 | 22 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 10 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.05 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.21 | | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.11 | | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.3 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 2 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.6 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.2 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.63 | | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.05 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.2 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.2 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.2 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.2 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 10 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.42 | | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 10 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.05 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 23 | | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 48 | | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.3 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 10 | U | MG/L |
| WP-99- | WP9941030X | 26 | 30 | 11-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.2 | U | MG/L |
| WP-99- | WP9941040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| WP-99- | WP9941040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.065 | | MG/L |
| WP-99- | WP9941040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.079 | | MG/L |
| WP-99- | WP9941040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.3 | | MG/L |
| WP-99- | WP9941040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| WP-99- | WP9941040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 7.6 | | MG/L |
| WP-99- | WP9941040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.013 | | MG/L |
| WP-99- | WP9941060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| WP-99- | WP9941060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.01 | U | MG/L |
| WP-99- | WP9941060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | U | MG/L |
| WP-99- | WP9941060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.013 | | MG/L |
| WP-99- | WP9941060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| WP-99- | WP9941060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | | MG/L |
| WP-99- | WP9941060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.01 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.007 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.007 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.006 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.003 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.009 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.011 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.01 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.015 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.1 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.03 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.01 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.002 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.002 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.003 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.01 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.01 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.01 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.01 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.002 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.002 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.003 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.02 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.026 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.02 | | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.015 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.005 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WP-99- | WP9941081X | 77 | 81 | 11-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.01 | U | MG/L |
| WP-99- | WP9942023X | 19 | 23 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9942023X | 19 | 23 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.16 | | MG/L |
| WP-99- | WP9942023X | 19 | 23 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9942023X | 19 | 23 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9942023X | 19 | 23 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9942023X | 19 | 23 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.4 | | MG/L |
| WP-99- | WP9942023X | 19 | 23 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9943010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.31 | | MG/L |
| WP-99- | WP9943010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1.5 | | MG/L |
| WP-99- | WP9943010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.15 | | MG/L |
| WP-99- | WP9943010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.2 | | MG/L |
| WP-99- | WP9943010X | 6 | 10 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9943020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.99 | | MG/L |
| WP-99- | WP9943020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 2.4 | | MG/L |
| WP-99- | WP9943020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.28 | | MG/L |
| WP-99- | WP9943020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.12 | | MG/L |
| WP-99- | WP9943020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.8 | | MG/L |
| WP-99- | WP9943020X | 16 | 20 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.43 | | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.44 | | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.17 | | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.15 | | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.42 | | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.48 | | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.8 | | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.7 | | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9943030X | 26 | 30 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9943040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9943040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.12 | | MG/L |
| WP-99- | WP9943040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.75 | | MG/L |
| WP-99- | WP9943040X | 36 | 40 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9943060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9943060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.017 | | MG/L |
| WP-99- | WP9943060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9943060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.05 | | MG/L |
| WP-99- | WP9943060X | 56 | 60 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9943082X | 78 | 82 | 11-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.004 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9943082X | 78 | 82 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.05 | | MG/L |
| WP-99- | WP9943082X | 78 | 82 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.004 | | MG/L |
| WP-99- | WP9943082X | 78 | 82 | 11-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.005 | | MG/L |
| WP-99- | WP9943082X | 78 | 82 | 11-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9943082X | 78 | 82 | 11-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | | MG/L |
| WP-99- | WP9943082X | 78 | 82 | 11-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WP-99- | WP9944029X | 25 | 29 | 12-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9944029X | 25 | 29 | 12-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.2 | | MG/L |
| WP-99- | WP9944029X | 25 | 29 | 12-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.45 | | MG/L |
| WP-99- | WP9944029X | 25 | 29 | 12-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.58 | | MG/L |
| WP-99- | WP9944029X | 25 | 29 | 12-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9944029X | 25 | 29 | 12-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 4.9 | | MG/L |
| WP-99- | WP9944029X | 25 | 29 | 12-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.11 | | MG/L |
| WP-99- | WP9944050X | 46 | 50 | 12-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9944050X | 46 | 50 | 12-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9944050X | 46 | 50 | 12-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9944050X | 46 | 50 | 12-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9944050X | 46 | 50 | 12-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9944050X | 46 | 50 | 12-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.64 | | MG/L |
| WP-99- | WP9944050X | 46 | 50 | 12-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9944069X | 65 | 69 | 12-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9944069X | 65 | 69 | 12-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9944069X | 65 | 69 | 12-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9944069X | 65 | 69 | 12-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9944069X | 65 | 69 | 12-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9944069X | 65 | 69 | 12-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.13 | | MG/L |
| WP-99- | WP9944069X | 65 | 69 | 12-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9945015X | 11 | 15 | 16-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 1.5 | | MG/L |
| WP-99- | WP9945015X | 11 | 15 | 16-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 4.5 | | MG/L |
| WP-99- | WP9945015X | 11 | 15 | 16-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1.2 | | MG/L |
| WP-99- | WP9945015X | 11 | 15 | 16-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1.9 | | MG/L |
| WP-99- | WP9945015X | 11 | 15 | 16-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9945015X | 11 | 15 | 16-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 5.9 | | MG/L |
| WP-99- | WP9945015X | 11 | 15 | 16-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9945030X | 26 | 30 | 16-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 100 | U | MG/L |
| WP-99- | WP9945030X | 26 | 30 | 16-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 100 | U | MG/L |
| WP-99- | WP9945030X | 26 | 30 | 16-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 100 | U | MG/L |
| WP-99- | WP9945030X | 26 | 30 | 16-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 100 | U | MG/L |
| WP-99- | WP9945030X | 26 | 30 | 16-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 100 | U | MG/L |
| WP-99- | WP9945030X | 26 | 30 | 16-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 264 | | MG/L |
| WP-99- | WP9945030X | 26 | 30 | 16-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 100 | U | MG/L |
| WP-99- | WP9945040X | 36 | 40 | 16-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 100 | U | MG/L |
| WP-99- | WP9945040X | 36 | 40 | 16-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 100 | U | MG/L |
| WP-99- | WP9945040X | 36 | 40 | 16-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 100 | U | MG/L |
| WP-99- | WP9945040X | 36 | 40 | 16-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 100 | U | MG/L |
| WP-99- | WP9945040X | 36 | 40 | 16-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 100 | U | MG/L |
| WP-99- | WP9945040X | 36 | 40 | 16-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 246 | | MG/L |
| WP-99- | WP9945040X | 36 | 40 | 16-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 100 | U | MG/L |
| WP-99- | WP9945060X | 56 | 60 | 16-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9945060X | 56 | 60 | 16-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.002 | | MG/L |
| WP-99- | WP9945060X | 56 | 60 | 16-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.11 | | MG/L |
| WP-99- | WP9945060X | 56 | 60 | 16-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.002 | | MG/L |
| WP-99- | WP9945060X | 56 | 60 | 16-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9945060X | 56 | 60 | 16-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.008 | | MG/L |
| WP-99- | WP9945060X | 56 | 60 | 16-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.001 | | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 2.6 | | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 2.5 | | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.34 | | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.33 | | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | | MG/L |
| WP-99- | WP9946035X | 31 | 35 | 17-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1.1 | | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 4.5 | | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.25 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 2.2 | | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 1.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 10 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 3 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 1 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.12 | | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.25 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 1 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 1 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 1 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.13 | | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.25 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.18 | | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 1.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.5 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9947010X | 6 | 10 | 17-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 9.8 | | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 8.6 | | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 0.5 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 3.9 | | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 4.8 | | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 3 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 20 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 6 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 2 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 0.5 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 2 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 2 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 2 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 2 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1.1 | | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 0.5 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.9 | | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 3 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9947021X | 17 | 21 | 17-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 2 | U | MG/L |
| WP-99- | WP9948009X | 5 | 9 | 18-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 100 | | MG/L |
| WP-99- | WP9948009X | 5 | 9 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 8.5 | | MG/L |
| WP-99- | WP9948009X | 5 | 9 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9948009X | 5 | 9 | 18-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9948009X | 5 | 9 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9948009X | 5 | 9 | 18-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.5 | | MG/L |
| WP-99- | WP9948009X | 5 | 9 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9948019X | 15 | 19 | 18-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 82 | | MG/L |
| WP-99- | WP9948019X | 15 | 19 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 14 | | MG/L |
| WP-99- | WP9948019X | 15 | 19 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1.2 | | MG/L |
| WP-99- | WP9948019X | 15 | 19 | 18-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9948019X | 15 | 19 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9948019X | 15 | 19 | 18-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 5.9 | | MG/L |
| WP-99- | WP9948019X | 15 | 19 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9949008X | 4 | 8 | 18-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.01 | U | MG/L |
| WP-99- | WP9949008X | 4 | 8 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.01 | U | MG/L |
| WP-99- | WP9949008X | 4 | 8 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.01 | U | MG/L |
| WP-99- | WP9949008X | 4 | 8 | 18-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.01 | U | MG/L |
| WP-99- | WP9949008X | 4 | 8 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| WP-99- | WP9949008X | 4 | 8 | 18-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.028 | | MG/L |
| WP-99- | WP9949008X | 4 | 8 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.01 | U | MG/L |
| WP-99- | WP9949021X | 17 | 21 | 18-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.06 | | MG/L |
| WP-99- | WP9949021X | 17 | 21 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.25 | | MG/L |
| WP-99- | WP9949021X | 17 | 21 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.12 | | MG/L |
| WP-99- | WP9949021X | 17 | 21 | 18-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.015 | | MG/L |
| WP-99- | WP9949021X | 17 | 21 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.01 | U | MG/L |
| WP-99- | WP9949021X | 17 | 21 | 18-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.16 | | MG/L |
| WP-99- | WP9949021X | 17 | 21 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.01 | U | MG/L |
| WP-99- | WP9949043X | 39 | 43 | 18-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9949043X | 39 | 43 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9949043X | 39 | 43 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9949043X | 39 | 43 | 18-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9949043X | 39 | 43 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9949043X | 39 | 43 | 18-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 7.1 | | MG/L |
| WP-99- | WP9949043X | 39 | 43 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9950013X | 9 | 13 | 18-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9950013X | 9 | 13 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9950013X | 9 | 13 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9950013X | 9 | 13 | 18-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9950013X | 9 | 13 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9950013X | 9 | 13 | 18-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 8.4 | | MG/L |
| WP-99- | WP9950013X | 9 | 13 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9950054X | 50 | 54 | 18-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9950054X | 50 | 54 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9950054X | 50 | 54 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9950054X | 50 | 54 | 18-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.16 | | MG/L |
| WP-99- | WP9950054X | 50 | 54 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9950054X | 50 | 54 | 18-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 44 | | MG/L |
| WP-99- | WP9950054X | 50 | 54 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9950055X | 51 | 55 | 18-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9950055X | 51 | 55 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9950055X | 51 | 55 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9950055X | 51 | 55 | 18-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.16 | | MG/L |
| WP-99- | WP9950055X | 51 | 55 | 18-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9950055X | 51 | 55 | 18-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.27 | | MG/L |
| WP-99- | WP9950055X | 51 | 55 | 18-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9953010X | 6 | 10 | 22-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.27 | | MG/L |
| WP-99- | WP9953010X | 6 | 10 | 22-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.41 | | MG/L |
| WP-99- | WP9953010X | 6 | 10 | 22-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9953010X | 6 | 10 | 22-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9953010X | 6 | 10 | 22-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9953010X | 6 | 10 | 22-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.17 | | MG/L |
| WP-99- | WP9953010X | 6 | 10 | 22-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9953020X | 16 | 20 | 22-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 2.5 | | MG/L |
| WP-99- | WP9953020X | 16 | 20 | 22-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 4.4 | | MG/L |
| WP-99- | WP9953020X | 16 | 20 | 22-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9953020X | 16 | 20 | 22-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9953020X | 16 | 20 | 22-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9953020X | 16 | 20 | 22-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.3 | | MG/L |
| WP-99- | WP9953020X | 16 | 20 | 22-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9953032X | 28 | 32 | 22-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9953032X | 28 | 32 | 22-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.11 | | MG/L |
| WP-99- | WP9953032X | 28 | 32 | 22-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.46 | | MG/L |
| WP-99- | WP9953032X | 28 | 32 | 22-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.67 | | MG/L |
| WP-99- | WP9953032X | 28 | 32 | 22-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9953032X | 28 | 32 | 22-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 7.9 | | MG/L |
| WP-99- | WP9953032X | 28 | 32 | 22-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9954010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9954010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9954020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9954020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.21 | | MG/L |
| WP-99- | WP9954020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.25 | | MG/L |
| WP-99- | WP9954020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9954030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9954030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.4 | | MG/L |
| WP-99- | WP9954030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.5 | | MG/L |
| WP-99- | WP9954030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9954050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9954050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 3 | | MG/L |
| WP-99- | WP9954050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.006 | | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.006 | | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.002 | | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.003 | | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.026 | E | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.028 | E | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.42 | | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.36 | | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.41 | | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.34 | | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| WP-99- | WP9954062X | 58 | 62 | 23-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| WP-99- | WP9955010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.67 | | MG/L |
| WP-99- | WP9955010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.14 | | MG/L |
| WP-99- | WP9955010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.27 | | MG/L |
| WP-99- | WP9955010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9955020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9955020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9955030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9955030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955030X | 26 | 30 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9955050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9955050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 71-55-6 | 1,1,1-Trichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5E-04 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 79-00-5 | 1,1,2-Trichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 75-34-3 | 1,1-Dichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 75-35-4 | 1,1-Dichloroethene | 0.001 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 96-18-4 | 1,2,3-Trichloropropane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 107-06-2 | 1,2-Dichloroethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 78-87-5 | 1,2-Dichloropropane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 106-46-7 | 1,4-Dichlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 78-93-3 | 2-Butanone | 0.003 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 110-75-8 | 2-chloroethyl Vinyl Ether | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 95-49-8 | 2-Chlorotoluene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 1634-04-4 | 2-Methoxy-2-methylpropane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 106-43-4 | 4-Chlorotoluene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 67-64-1 | Acetone | 0.02 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 107-02-8 | Acrolein | 0.006 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 107-13-1 | Acrylonitrile | 0.002 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 71-43-2 | Benzene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 108-86-1 | Bromobenzene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 75-27-4 | Bromodichloromethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 75-25-2 | Bromoform | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 74-83-9 | Bromomethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 75-15-0 | Carbon disulfide | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 56-23-5 | Carbon tetrachloride | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 108-90-7 | Chlorobenzene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 75-00-3 | Chloroethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 67-66-3 | Chloroform | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 74-87-3 | Chloromethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 156-59-2 | cis-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 10061-01-5 | cis-1,3-Dichloropropylene | 5E-04 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 124-48-1 | Dibromochloromethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 75-71-8 | Dichlorodifluoromethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 75-09-2 | Dichloromethane | 0.002 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 100-41-4 | Ethylbenzene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 108-10-1 | Methyl Isobutyl Ketone / 4-methyl-2- | 0.002 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 591-78-6 | Methyl n-butyl ketone | 0.002 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 74-95-3 | Methylene bromide | 0.002 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 100-42-5 | Styrene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 127-18-4 | Tetrachloroethene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 108-88-3 | Toluene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 156-60-5 | trans-1,2-Dichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 10061-02-6 | trans-1,3-Dichloropropene | 5E-04 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 79-01-6 | Trichloroethene | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 75-69-4 | Trichlorofluoromethane | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 108-05-4 | Vinyl Acetate | 0.003 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 75-01-4 | Vinyl Chloride | 0.001 | U | MG/L |
| WP-99- | WP9955070X | 66 | 70 | 23-Mar-99 | VOA | Averill Environmental | 1330-20-7 | Xylenes, Total | 0.002 | U | MG/L |
| WP-99- | WP9956010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9956010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956010X | 6 | 10 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9956020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9956020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956020X | 16 | 20 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9956050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9956050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.15 | | MG/L |
| WP-99- | WP9956050X | 46 | 50 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9956052X | 48 | 52 | 23-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9956052X | 48 | 52 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956052X | 48 | 52 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956052X | 48 | 52 | 23-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.14 | | MG/L |
| WP-99- | WP9956052X | 48 | 52 | 23-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9956052X | 48 | 52 | 23-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.17 | | MG/L |
| WP-99- | WP9956052X | 48 | 52 | 23-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9957010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9957010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9957020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9957020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9957030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9957030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9957050X | 46 | 50 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9958010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9958010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9958010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9958010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9958010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9958010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9958010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9958020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9958020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9958020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9958020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9958020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9958020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.35 | | MG/L |
| WP-99- | WP9958020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9959010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9959010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9959020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9959020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9959030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9959030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9959040X | 36 | 40 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9959040X | 36 | 40 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959040X | 36 | 40 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959040X | 36 | 40 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959040X | 36 | 40 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959040X | 36 | 40 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959040X | 36 | 40 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9959054X | 50 | 54 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.11 | U | MG/L |
| WP-99- | WP9959054X | 50 | 54 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959054X | 50 | 54 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959054X | 50 | 54 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959054X | 50 | 54 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.11 | | MG/L |
| WP-99- | WP9959054X | 50 | 54 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9959054X | 50 | 54 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9960010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9960010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960010X | 6 | 10 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9960020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9960020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.101 | U | MG/L |
| WP-99- | WP9960020X | 16 | 20 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.15 | | MG/L |
| WP-99- | WP9960030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9960030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960030X | 26 | 30 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9960044X | 40 | 44 | 24-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9960044X | 40 | 44 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960044X | 40 | 44 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960044X | 40 | 44 | 24-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960044X | 40 | 44 | 24-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960044X | 40 | 44 | 24-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9960044X | 40 | 44 | 24-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9961010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9961010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9961010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9961010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9961010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9961010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9961010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9961020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9961020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.16 | | MG/L |
| WP-99- | WP9961020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9961020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9961020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9961020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.15 | | MG/L |
| WP-99- | WP9961020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9961028X | 24 | 28 | 25-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9961028X | 24 | 28 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.53 | | MG/L |
| WP-99- | WP9961028X | 24 | 28 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.84 | | MG/L |
| WP-99- | WP9961028X | 24 | 28 | 25-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | | MG/L |
| WP-99- | WP9961028X | 24 | 28 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9961028X | 24 | 28 | 25-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.3 | | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9961028X | 24 | 28 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9962010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9962010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962010X | 6 | 10 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9962020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9962020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.13 | | MG/L |
| WP-99- | WP9962020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.16 | | MG/L |
| WP-99- | WP9962020X | 16 | 20 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.18 | | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.15 | | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.21 | | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.22 | | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9962030X | 26 | 30 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9962050X | 46 | 50 | 25-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9962050X | 46 | 50 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.12 | | MG/L |
| WP-99- | WP9962050X | 46 | 50 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | | MG/L |
| WP-99- | WP9962050X | 46 | 50 | 25-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1.1 | | MG/L |
| WP-99- | WP9962050X | 46 | 50 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962050X | 46 | 50 | 25-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 11 | | MG/L |
| WP-99- | WP9962050X | 46 | 50 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9962063X | 59 | 63 | 25-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9962063X | 59 | 63 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962063X | 59 | 63 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962063X | 59 | 63 | 25-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962063X | 59 | 63 | 25-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9962063X | 59 | 63 | 25-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.57 | | MG/L |
| WP-99- | WP9962063X | 59 | 63 | 25-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9963010X | 6 | 10 | 26-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9963010X | 6 | 10 | 26-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963010X | 6 | 10 | 26-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963010X | 6 | 10 | 26-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963010X | 6 | 10 | 26-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963010X | 6 | 10 | 26-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963010X | 6 | 10 | 26-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9963020X | 16 | 20 | 26-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9963020X | 16 | 20 | 26-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963020X | 16 | 20 | 26-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963020X | 16 | 20 | 26-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963020X | 16 | 20 | 26-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963020X | 16 | 20 | 26-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963020X | 16 | 20 | 26-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9963030X | 26 | 30 | 26-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9963030X | 26 | 30 | 26-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963030X | 26 | 30 | 26-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963030X | 26 | 30 | 26-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963030X | 26 | 30 | 26-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9963030X | 26 | 30 | 26-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 4.4 | | MG/L |
| WP-99- | WP9963030X | 26 | 30 | 26-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9963040X | 36 | 40 | 26-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 1 | U | MG/L |
| WP-99- | WP9963040X | 36 | 40 | 26-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9963040X | 36 | 40 | 26-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9963040X | 36 | 40 | 26-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 1 | U | MG/L |
| WP-99- | WP9963040X | 36 | 40 | 26-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 1 | U | MG/L |
| WP-99- | WP9963040X | 36 | 40 | 26-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.6 | | MG/L |
| WP-99- | WP9963040X | 36 | 40 | 26-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 1 | U | MG/L |
| WP-99- | WP9964010X | 6 | 10 | 29-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9964010X | 6 | 10 | 29-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964010X | 6 | 10 | 29-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964010X | 6 | 10 | 29-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964010X | 6 | 10 | 29-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964010X | 6 | 10 | 29-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964010X | 6 | 10 | 29-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9964020X | 16 | 20 | 29-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9964020X | 16 | 20 | 29-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964020X | 16 | 20 | 29-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964020X | 16 | 20 | 29-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964020X | 16 | 20 | 29-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964020X | 16 | 20 | 29-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964020X | 16 | 20 | 29-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9964030X | 26 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9964030X | 26 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964030X | 26 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964030X | 26 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964030X | 26 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9964030X | 26 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.12 | | MG/L |
| WP-99- | WP9964030X | 26 | 30 | 29-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9965010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9965010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9965020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9965020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9965035X | 31 | 35 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9965035X | 31 | 35 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965035X | 31 | 35 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965035X | 31 | 35 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965035X | 31 | 35 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9965035X | 31 | 35 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.16 | | MG/L |
| WP-99- | WP9965035X | 31 | 35 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9966010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9966010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966010X | 6 | 10 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9966020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9966020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966020X | 16 | 20 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9966030X | 26 | 30 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9966030X | 26 | 30 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966030X | 26 | 30 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966030X | 26 | 30 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966030X | 26 | 30 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966030X | 26 | 30 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966030X | 26 | 30 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9966D050 | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9966050X | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9966050X | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966D050 | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966050X | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966D050 | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966050X | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966D050 | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966D050 | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966050X | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966D050 | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.26 | | MG/L |
| WP-99- | WP9966050X | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.29 | | MG/L |
| WP-99- | WP9966D050 | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9966050X | 46 | 50 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9966063X | 59 | 63 | 30-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9966063X | 59 | 63 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966063X | 59 | 63 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966063X | 59 | 63 | 30-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966063X | 59 | 63 | 30-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966063X | 59 | 63 | 30-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9966063X | 59 | 63 | 30-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9967010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9967010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9967010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9967010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9967010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9967010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9967010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9967020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9967020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9967020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9967020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9967020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9967020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9967020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9968010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.2 | | MG/L |
| WP-99- | WP9968010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.21 | | MG/L |
| WP-99- | WP9968010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.32 | | MG/L |
| WP-99- | WP9968010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9968020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.12 | | MG/L |
| WP-99- | WP9968020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.74 | | MG/L |
| WP-99- | WP9968020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.71 | | MG/L |
| WP-99- | WP9968020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.38 | | MG/L |
| WP-99- | WP9968020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9968030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9968030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 5.5 | | MG/L |
| WP-99- | WP9968030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.61 | | MG/L |
| WP-99- | WP9968030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.18 | | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.18 | | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9968050X | 46 | 50 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9968070X | 66 | 70 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9968070X | 66 | 70 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968070X | 66 | 70 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968070X | 66 | 70 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968070X | 66 | 70 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968070X | 66 | 70 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968070X | 66 | 70 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9968080X | 76 | 80 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9968080X | 76 | 80 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968080X | 76 | 80 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |

**TABLE N-3**
**1999 VOC INVESTIGATIONS - GROUNDWATER VOC DATA**

**OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**STRATFORD ARMY ENGINE PLANT**

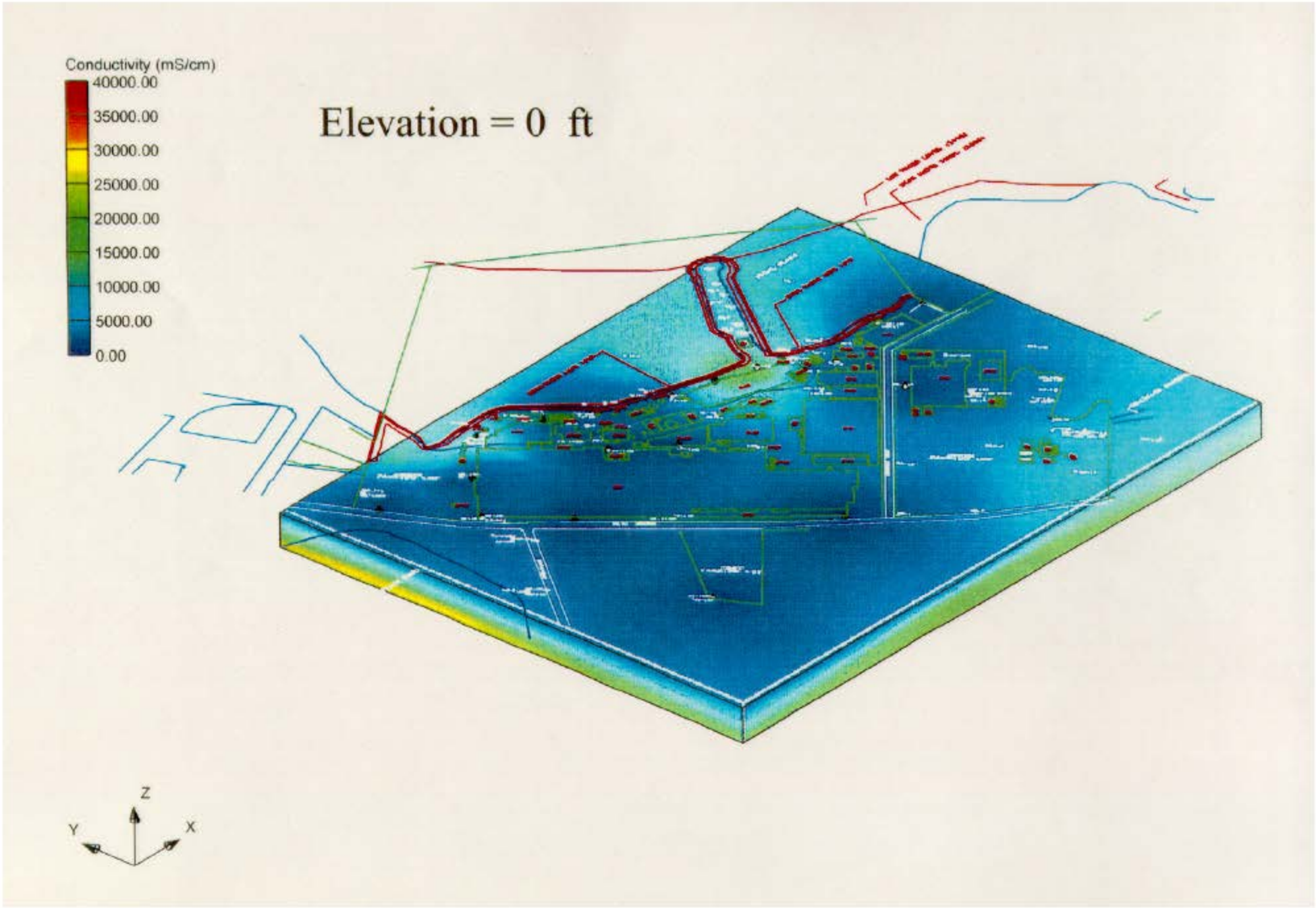
| LOCATION ID | SAMPLE ID | START DEPTH (ft bgs) | DEPTH (ft bgs) | SAMPLE DATE | CLASS | LAB NAME | CAS # | PARAMETER | VALUE | Q | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WP-99- | WP9968080X | 76 | 80 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968080X | 76 | 80 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968080X | 76 | 80 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9968080X | 76 | 80 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9969010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9969010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.34 | | MG/L |
| WP-99- | WP9969010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | | MG/L |
| WP-99- | WP9969010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9969010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9969010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.27 | | MG/L |
| WP-99- | WP9969010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9969020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9969020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.64 | | MG/L |
| WP-99- | WP9969020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 2.1 | | MG/L |
| WP-99- | WP9969020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9969020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9969020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 2.3 | | MG/L |
| WP-99- | WP9969020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9969030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9969030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.75 | | MG/L |
| WP-99- | WP9969030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 2.7 | | MG/L |
| WP-99- | WP9969030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9969030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9969030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 2.5 | | MG/L |
| WP-99- | WP9969030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9970010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9970010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970010X | 6 | 10 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9970020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9970020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.2 | | MG/L |
| WP-99- | WP9970020X | 16 | 20 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9970030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9970030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.85 | | MG/L |
| WP-99- | WP9970030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 1.3 | | MG/L |
| WP-99- | WP9970030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9970030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 1.4 | | MG/L |
| WP-99- | WP9970030X | 26 | 30 | 31-Mar-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9971010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9971010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.42 | | MG/L |
| WP-99- | WP9971010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9971020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9971020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 1.2 | | MG/L |
| WP-99- | WP9971020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.25 | | MG/L |
| WP-99- | WP9971020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9971030X | 26 | 30 | 01-Apr-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9971030X | 26 | 30 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971030X | 26 | 30 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971030X | 26 | 30 | 01-Apr-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971030X | 26 | 30 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971030X | 26 | 30 | 01-Apr-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.44 | | MG/L |
| WP-99- | WP9971030X | 26 | 30 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9971040X | 36 | 40 | 01-Apr-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9971040X | 36 | 40 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971040X | 36 | 40 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971040X | 36 | 40 | 01-Apr-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971040X | 36 | 40 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971040X | 36 | 40 | 01-Apr-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9971040X | 36 | 40 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9972010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9972010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972010X | 6 | 10 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9972020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9972020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972020X | 16 | 20 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |
| WP-99- | WP9972034X | 30 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 71-55-6 | 1,1,1-Trichloroethane | 0.1 | U | MG/L |
| WP-99- | WP9972034X | 30 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-35-4 | 1,1-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972034X | 30 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-59-2 | cis-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972034X | 30 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 127-18-4 | Tetrachloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972034X | 30 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 156-60-5 | trans-1,2-Dichloroethene | 0.1 | U | MG/L |
| WP-99- | WP9972034X | 30 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 79-01-6 | Trichloroethene | 28 | | MG/L |
| WP-99- | WP9972034X | 30 | 34 | 01-Apr-99 | VOA | Harding Lawson Ass | 75-01-4 | Vinyl Chloride | 0.1 | U | MG/L |

# GROUNDWATER CONDUCTIVITY AND REDOX POTENTIAL PLOTS

## O-1 GROUNDWATER CONDUCTIVITY PLOTS

## O-2 GROUNDWATER REDOX POTENTIAL PLOTS

# O-1 GROUNDWATER CONDUCTIVITY PLOTS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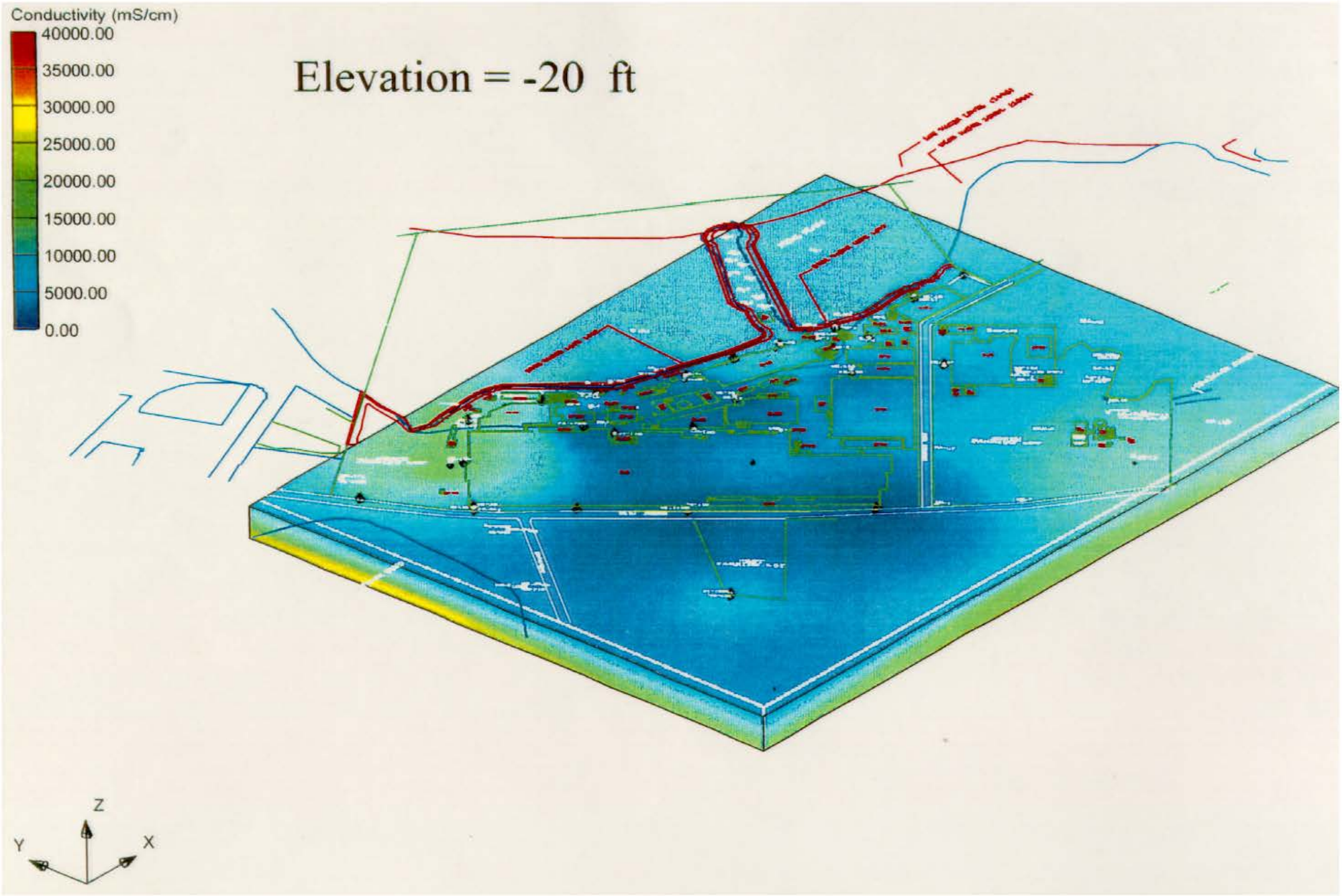
Y
X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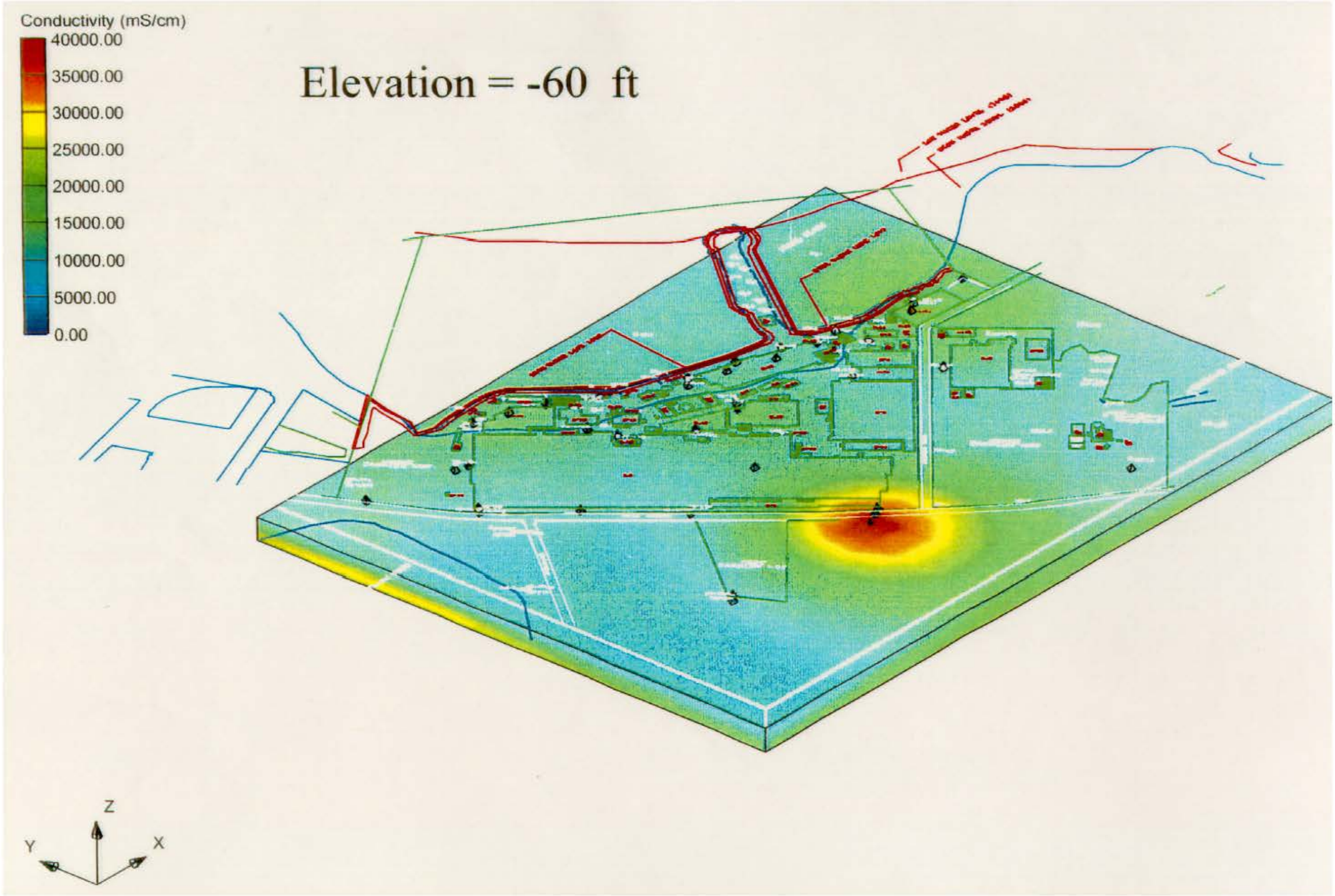
Z
Y
X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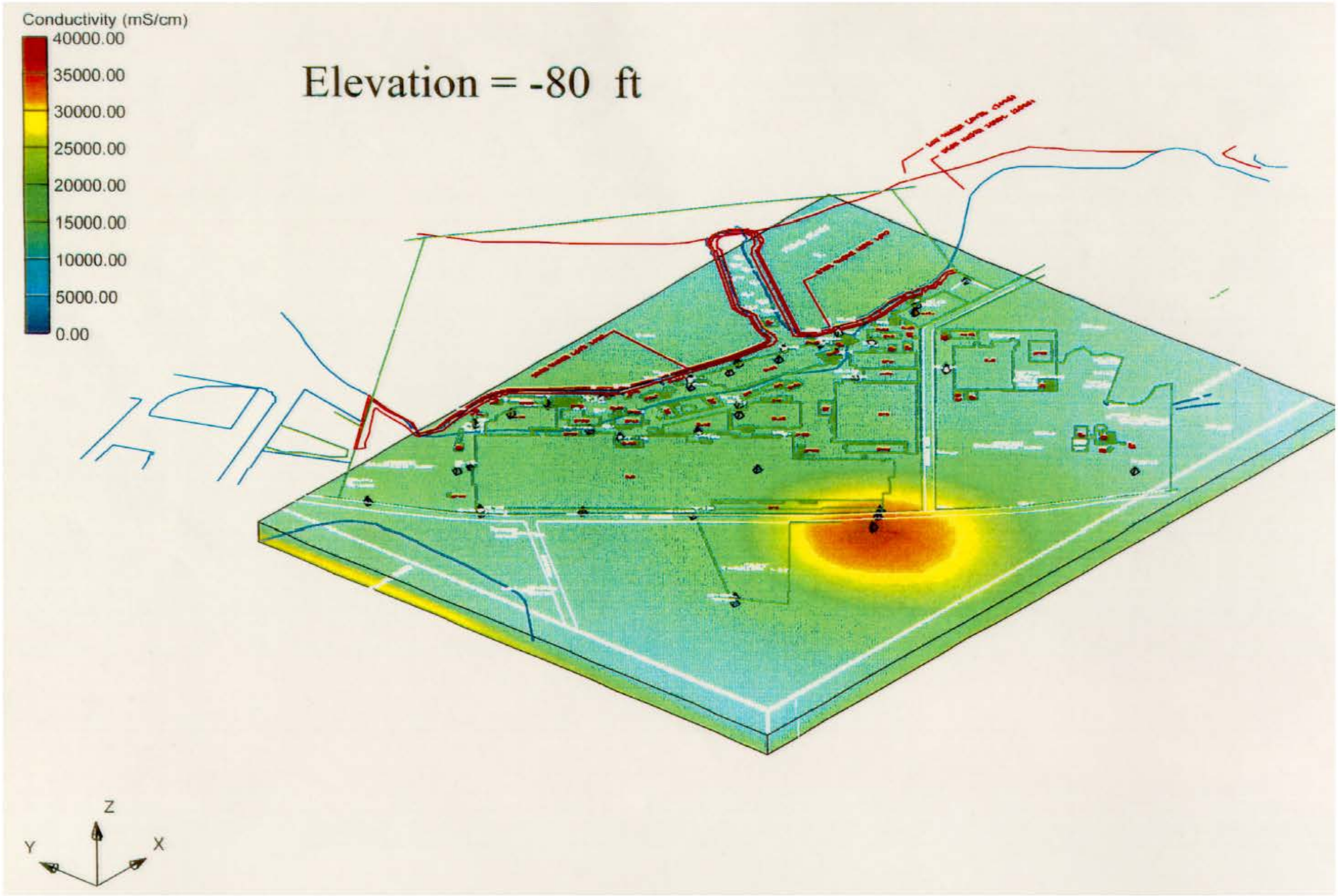
0.00
Elevation = -60 ft
Z
Y
X


Conductivity (mS/cm)
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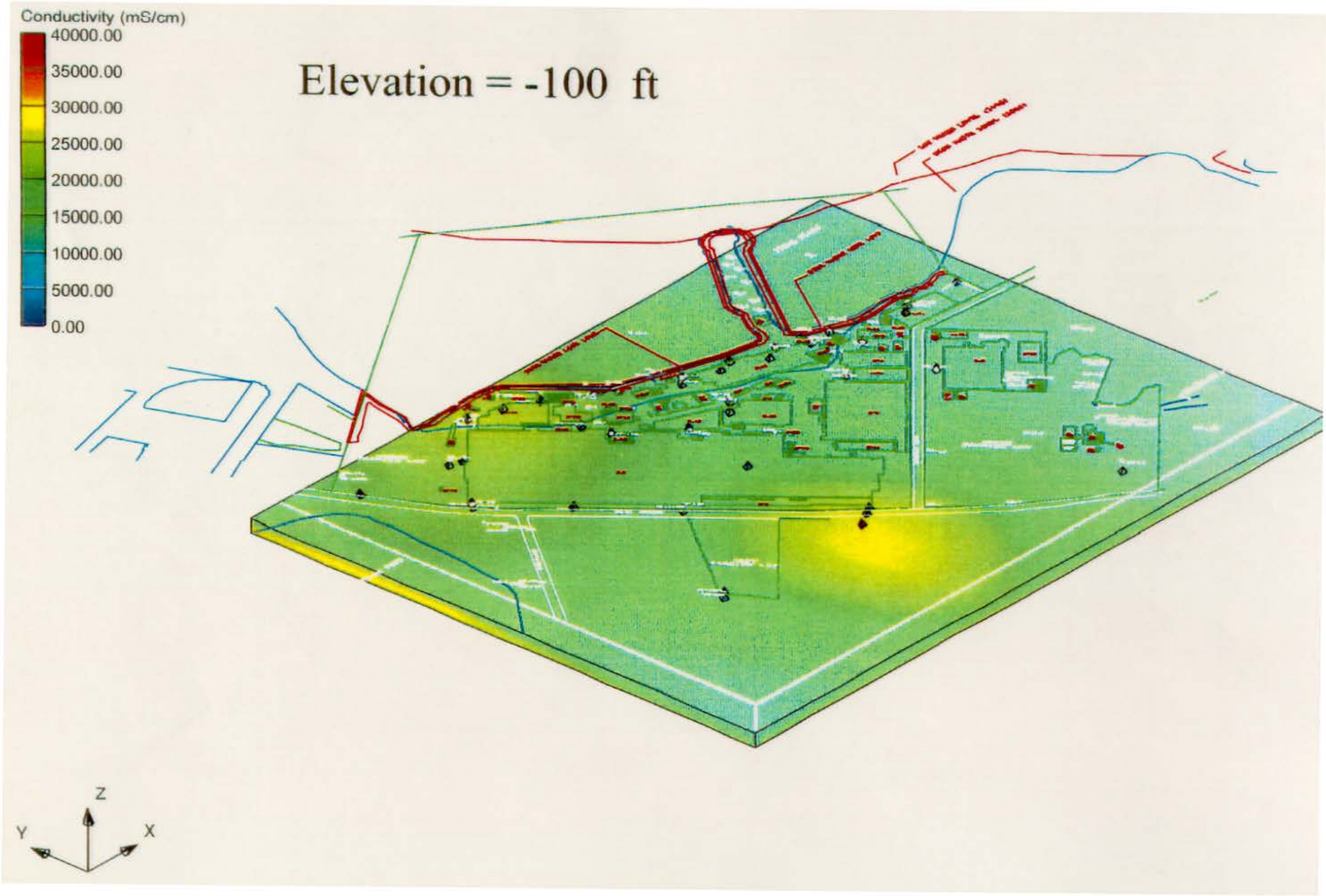
Elevation = -80 ft
Z
Y
X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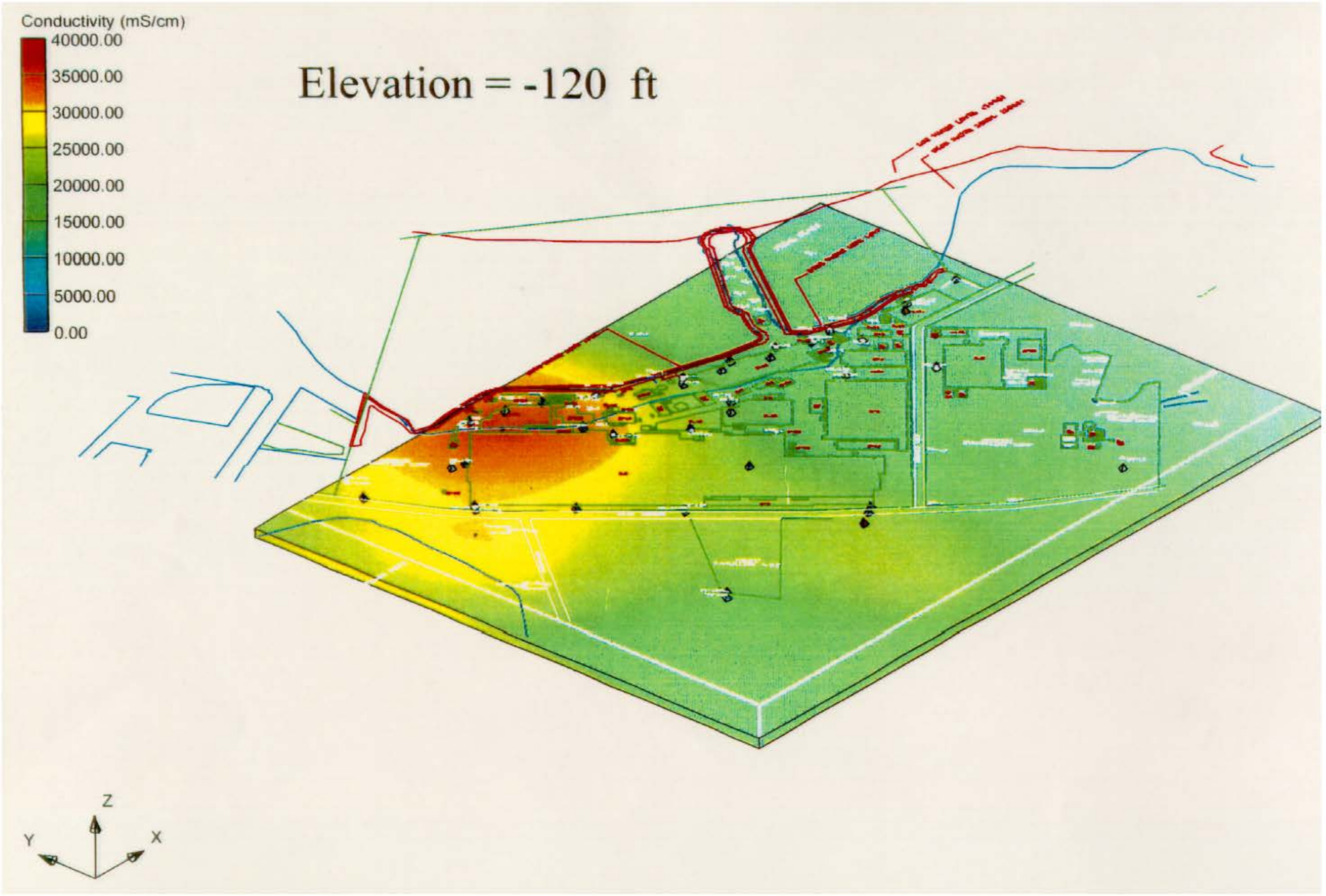
Y
X


Conductivity (mS/cm)
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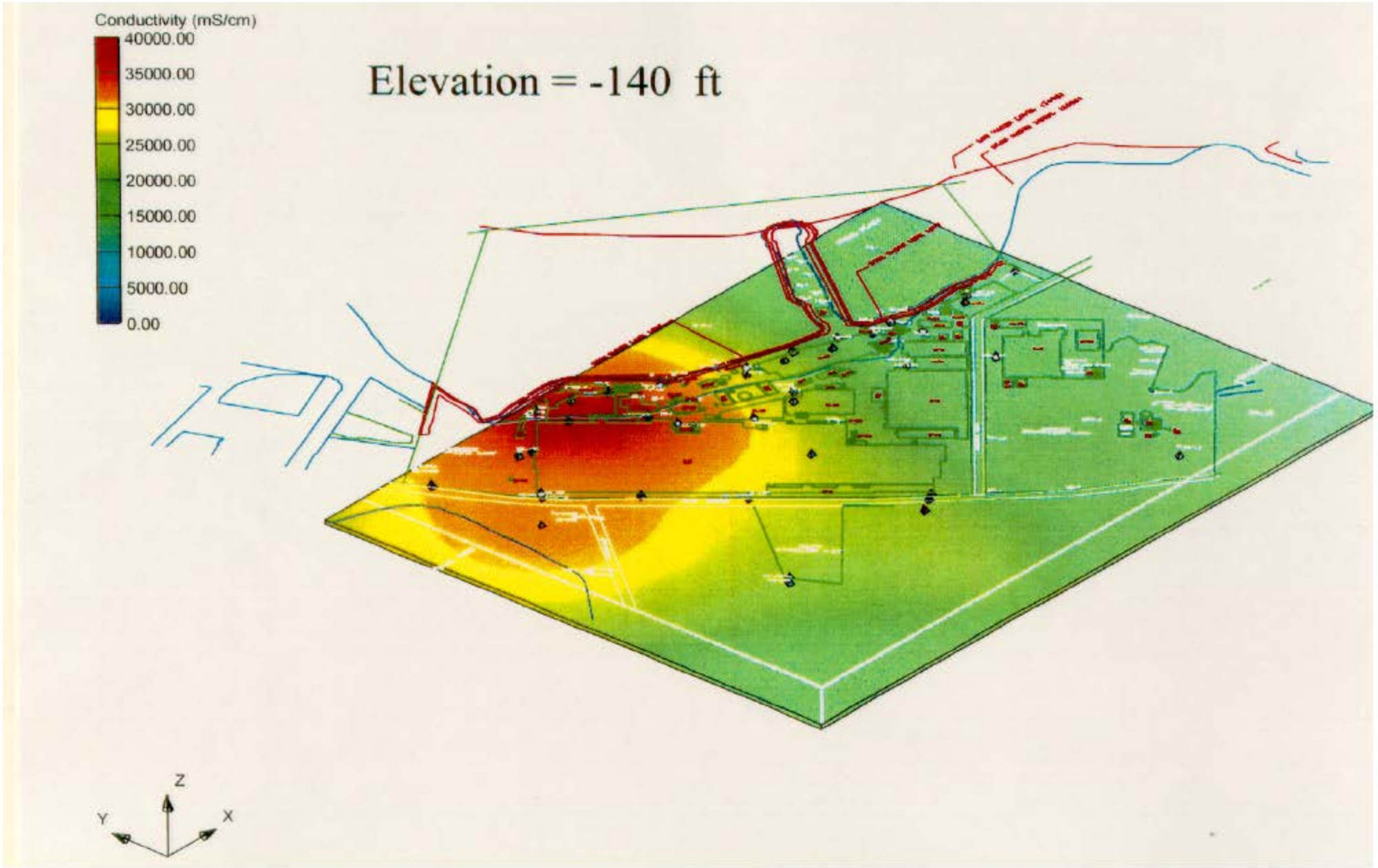
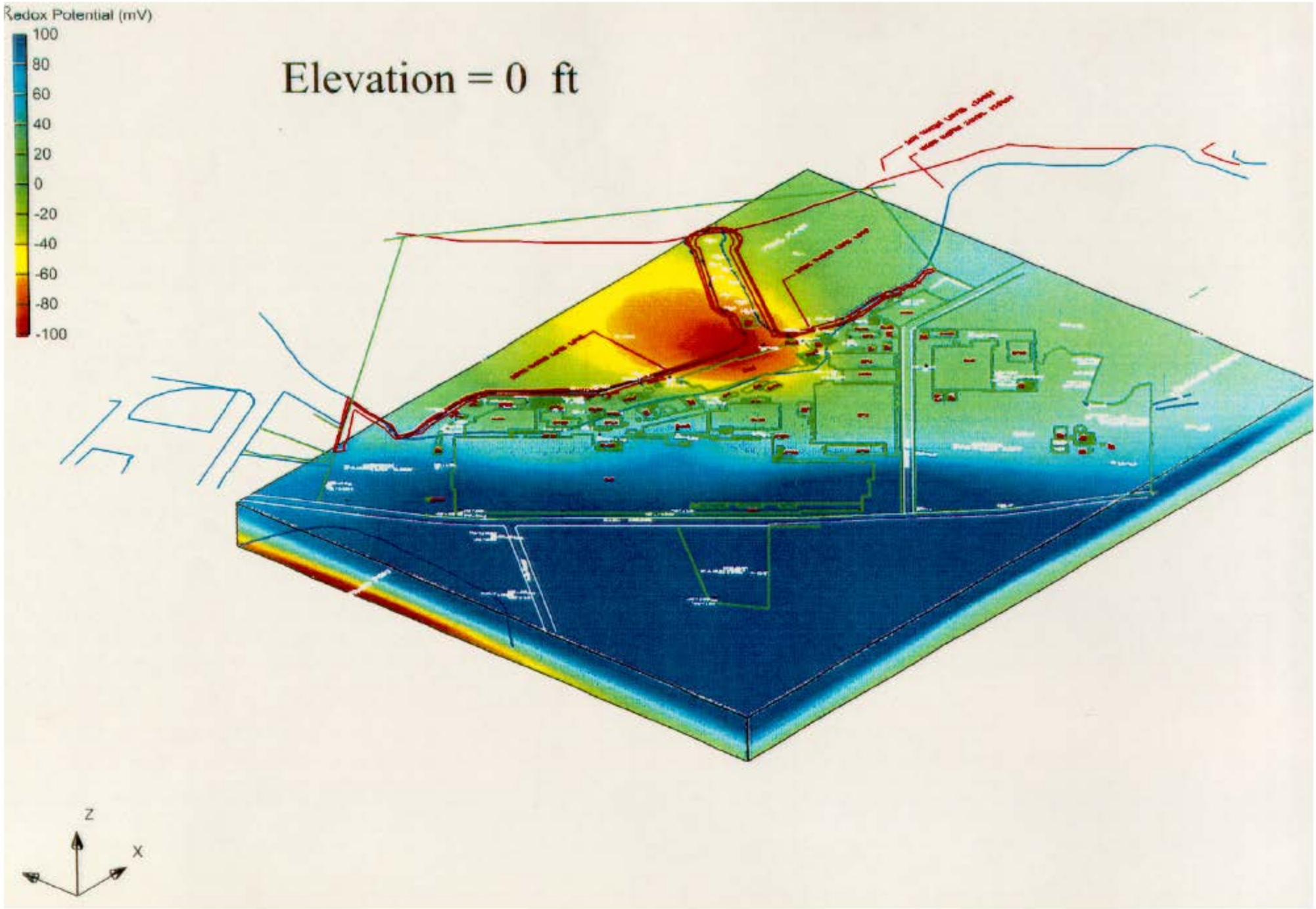
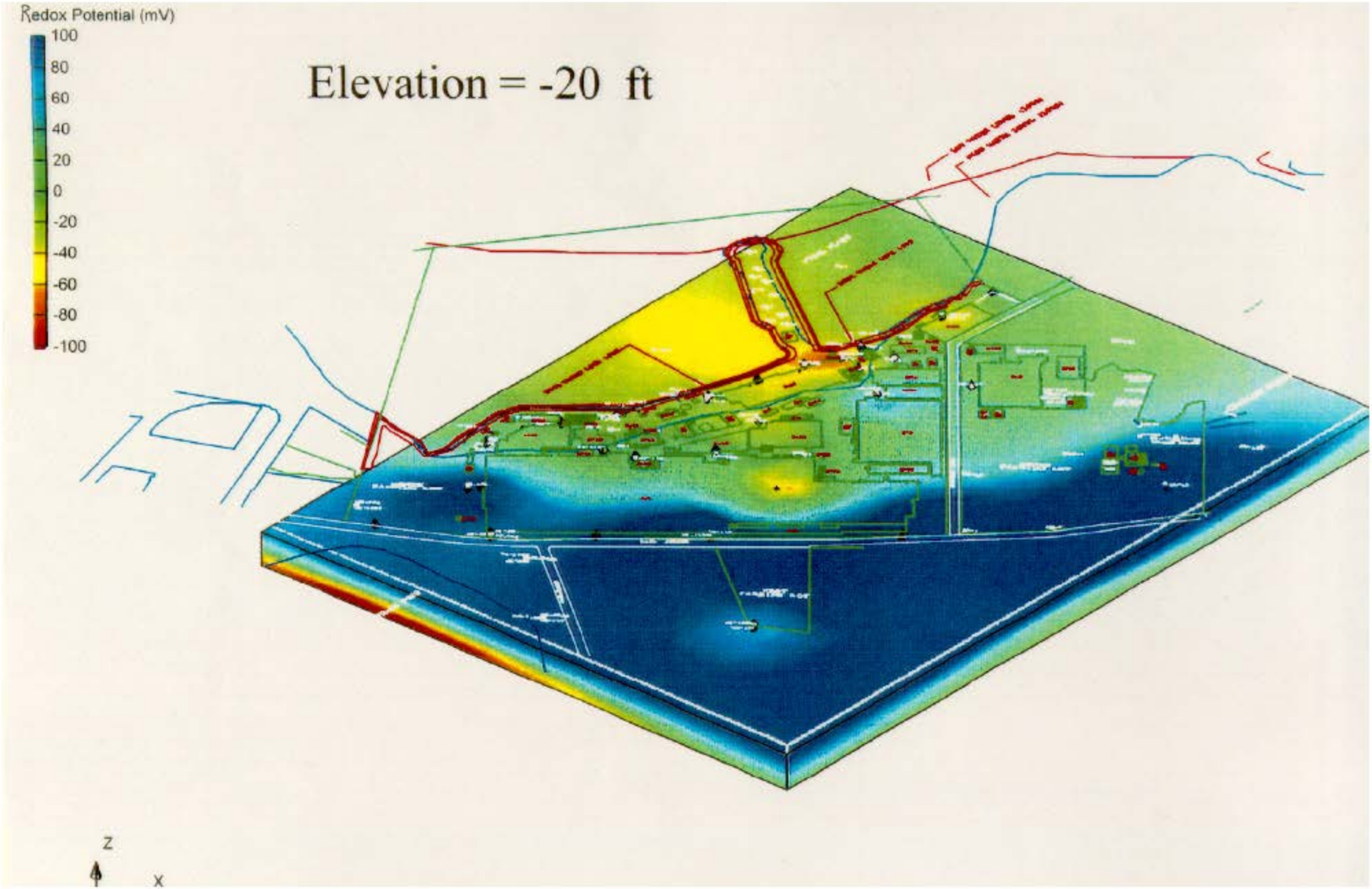
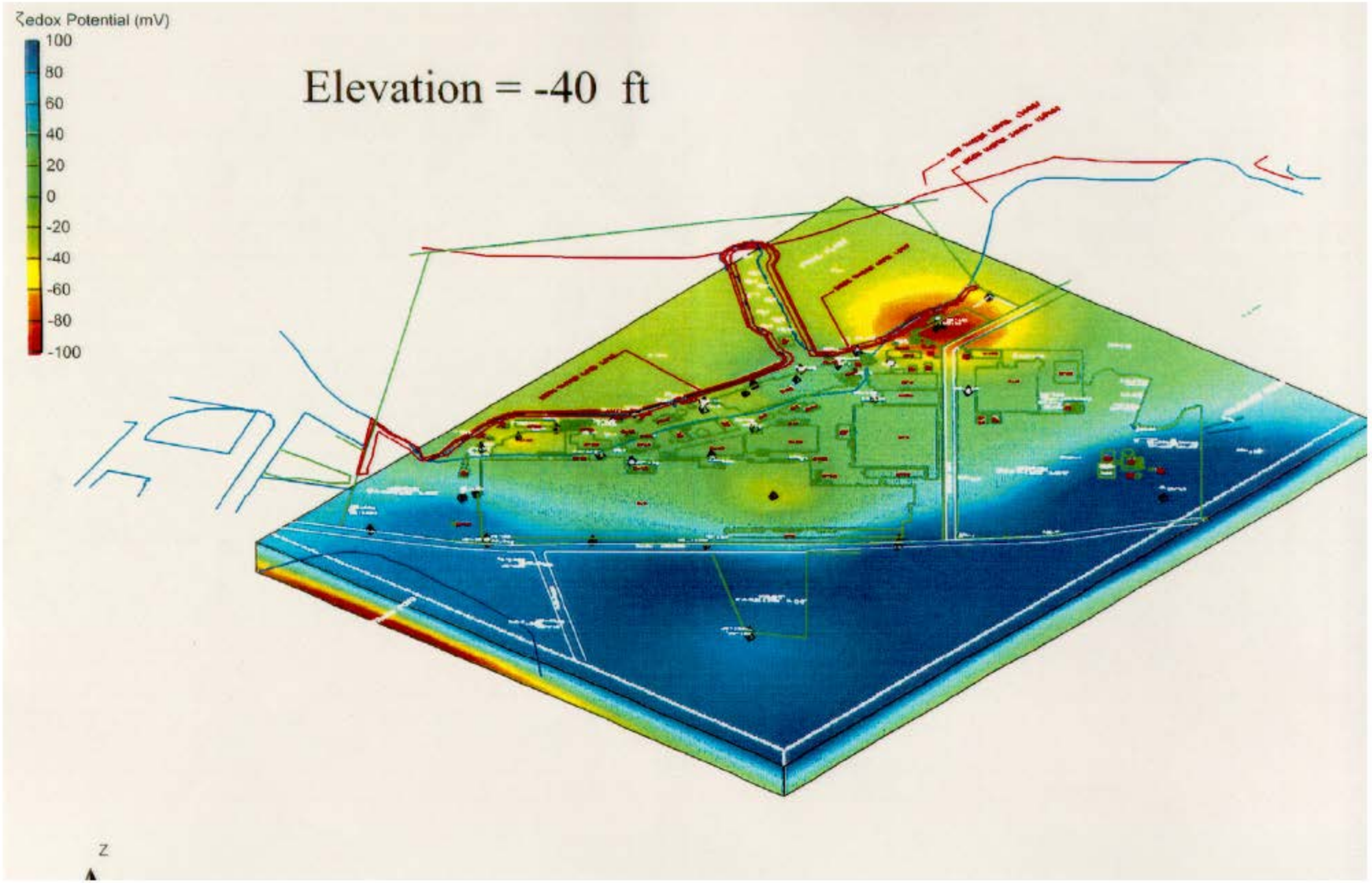
0.00
Elevation = -120 ft
Z
Y
X

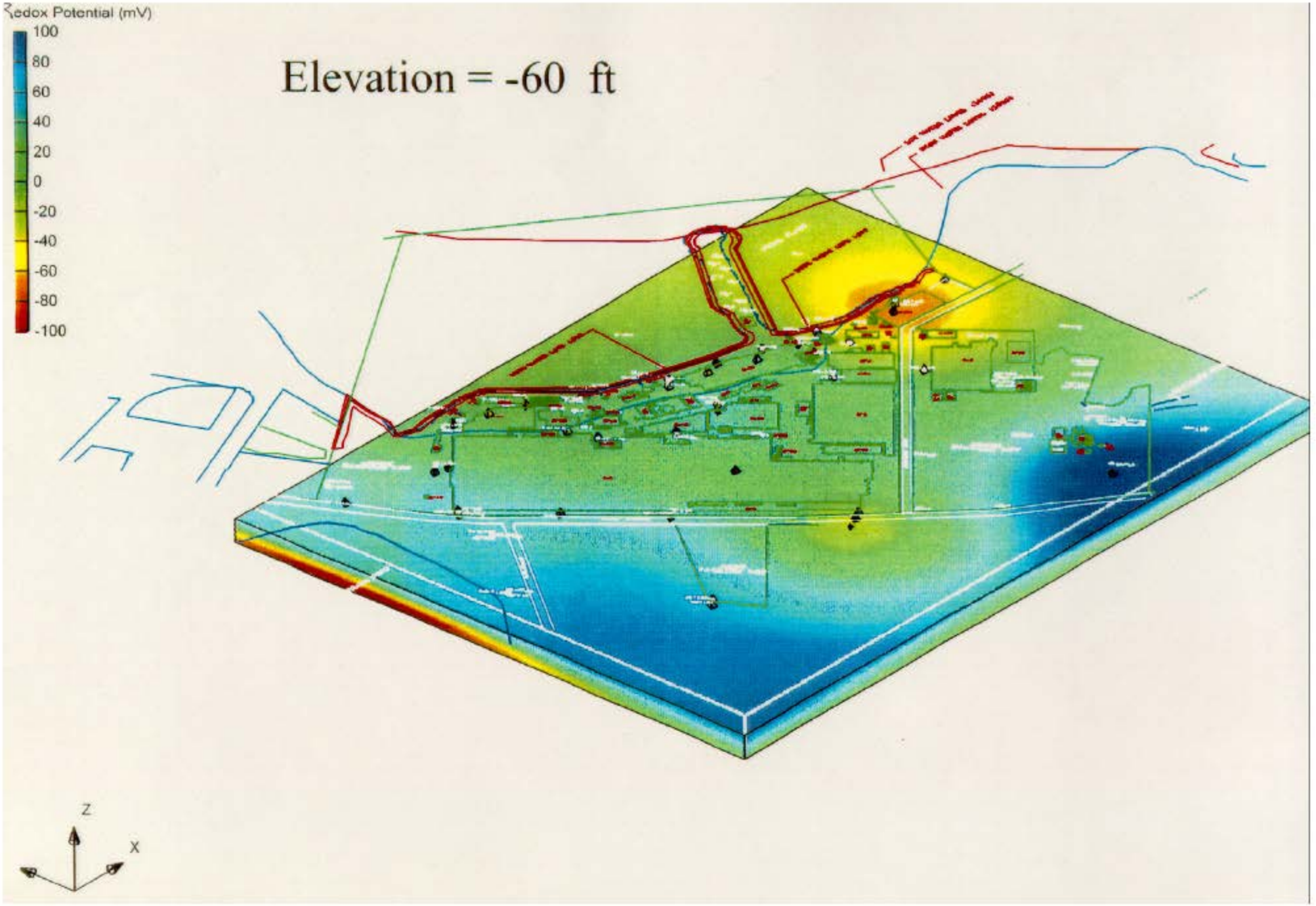

Conductivity (mS/cm)
40000.00
35000.00
30000.00
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
Elevation = -140 ft
Z
Y
X

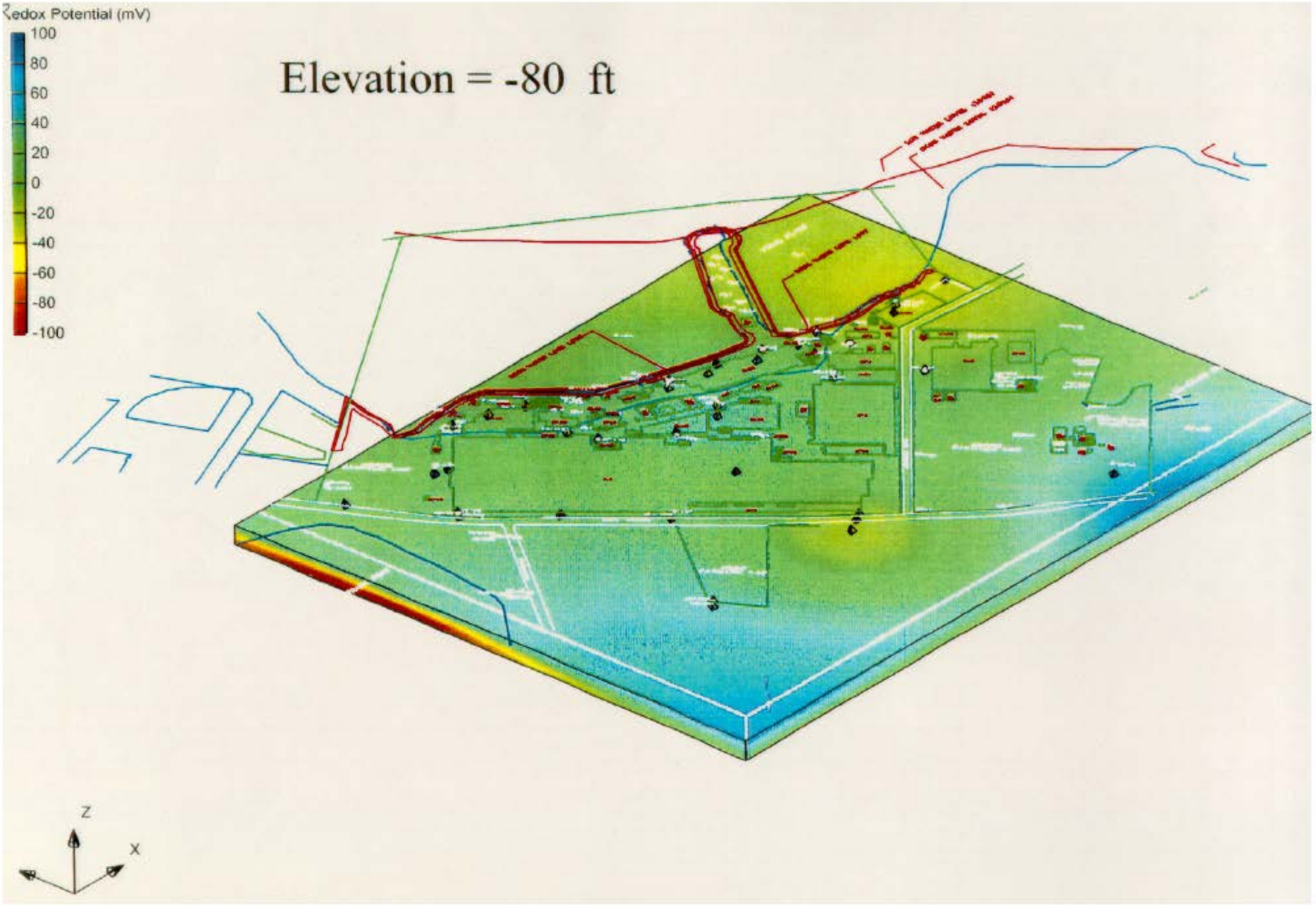
# O-2 GROUNDWATER REDOX POTENTIAL PLOTS

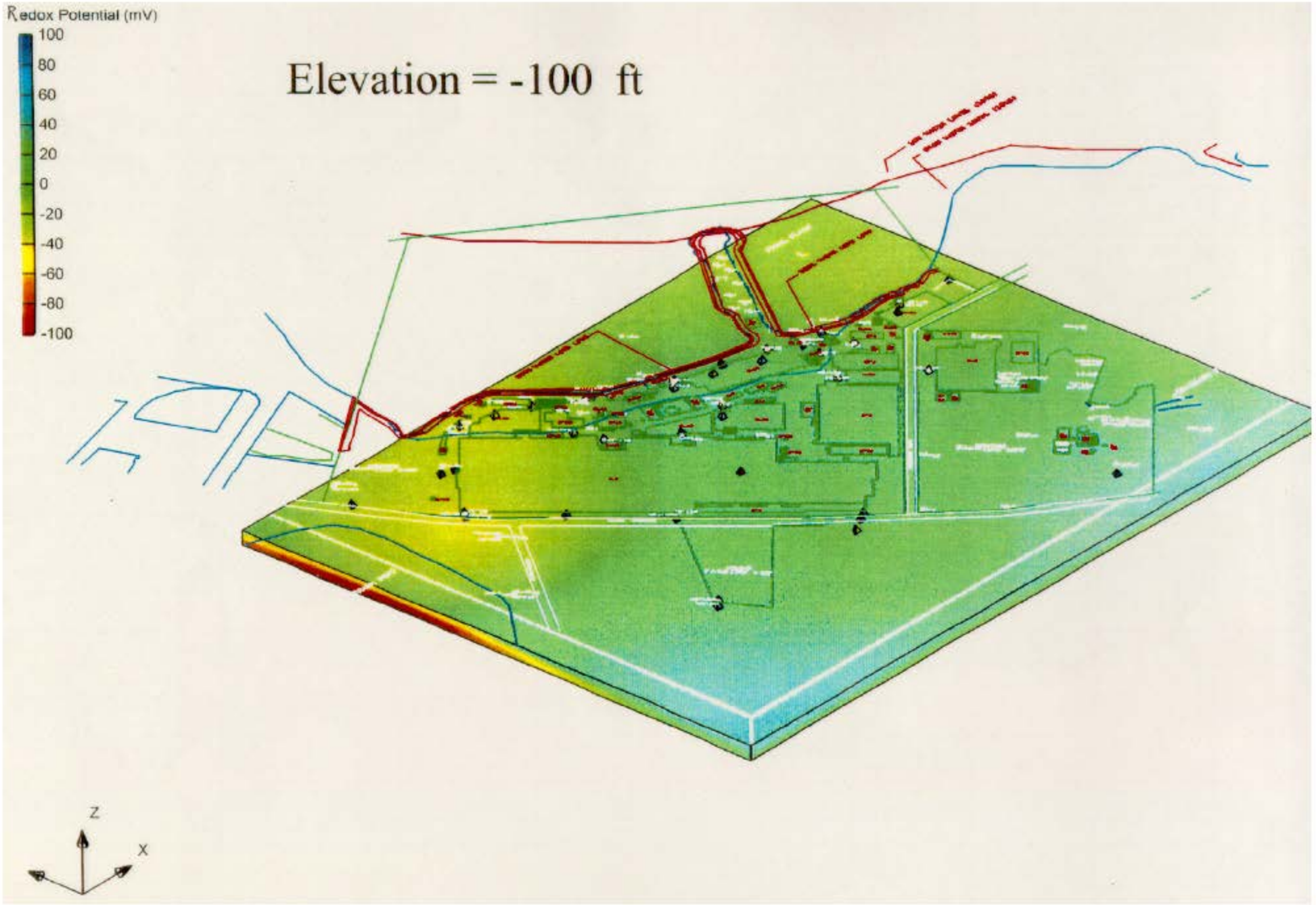

Redox Potential (mV)
100
80
60
40
20
0
-20
-40
-60
-80
-100
Elevation = 0 ft
Z
X

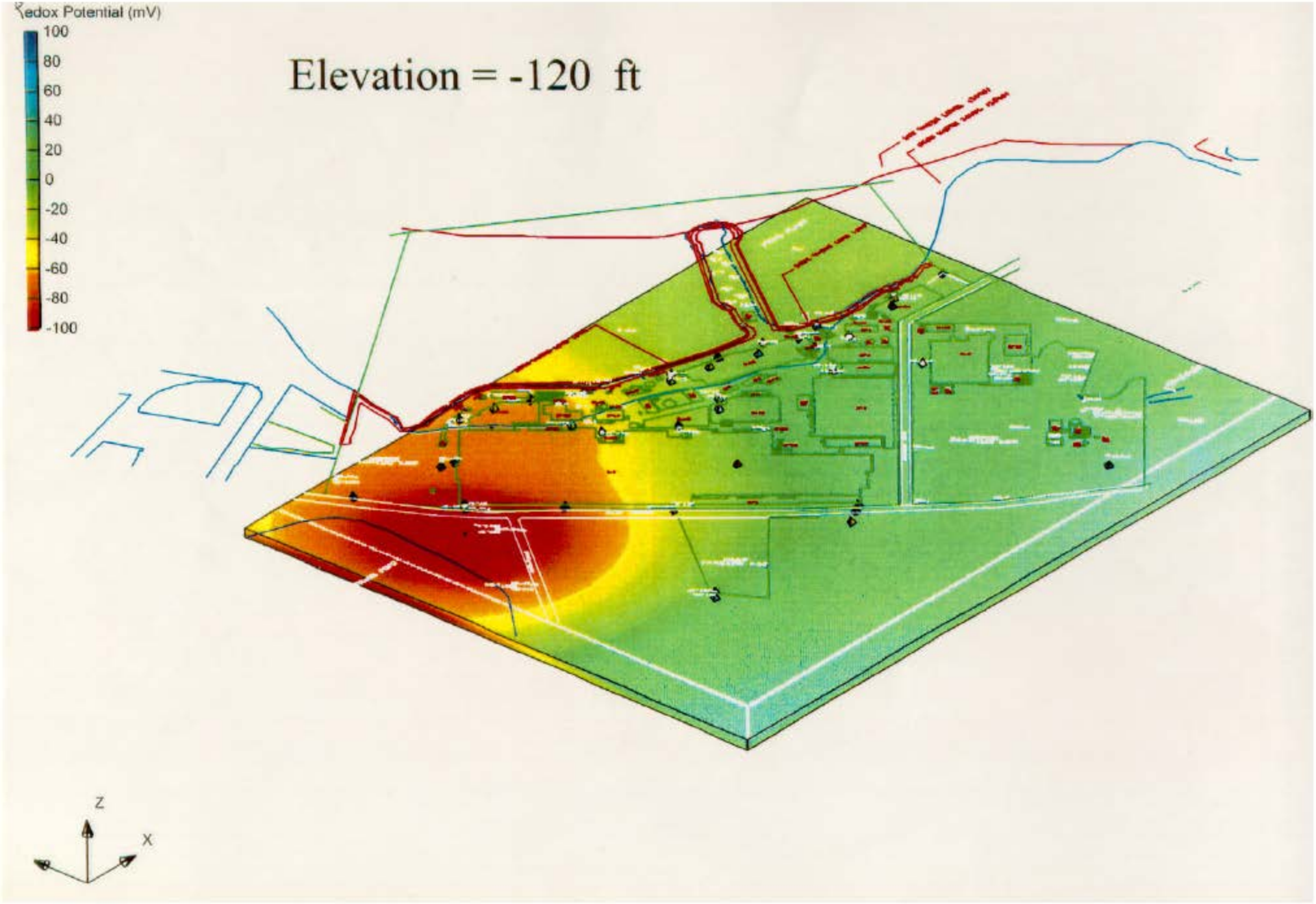

Redox Potential (mV)
100
80
60
40
20
0
-20
-40
-60
-80
-100
Elevation = -20 ft
Z
X

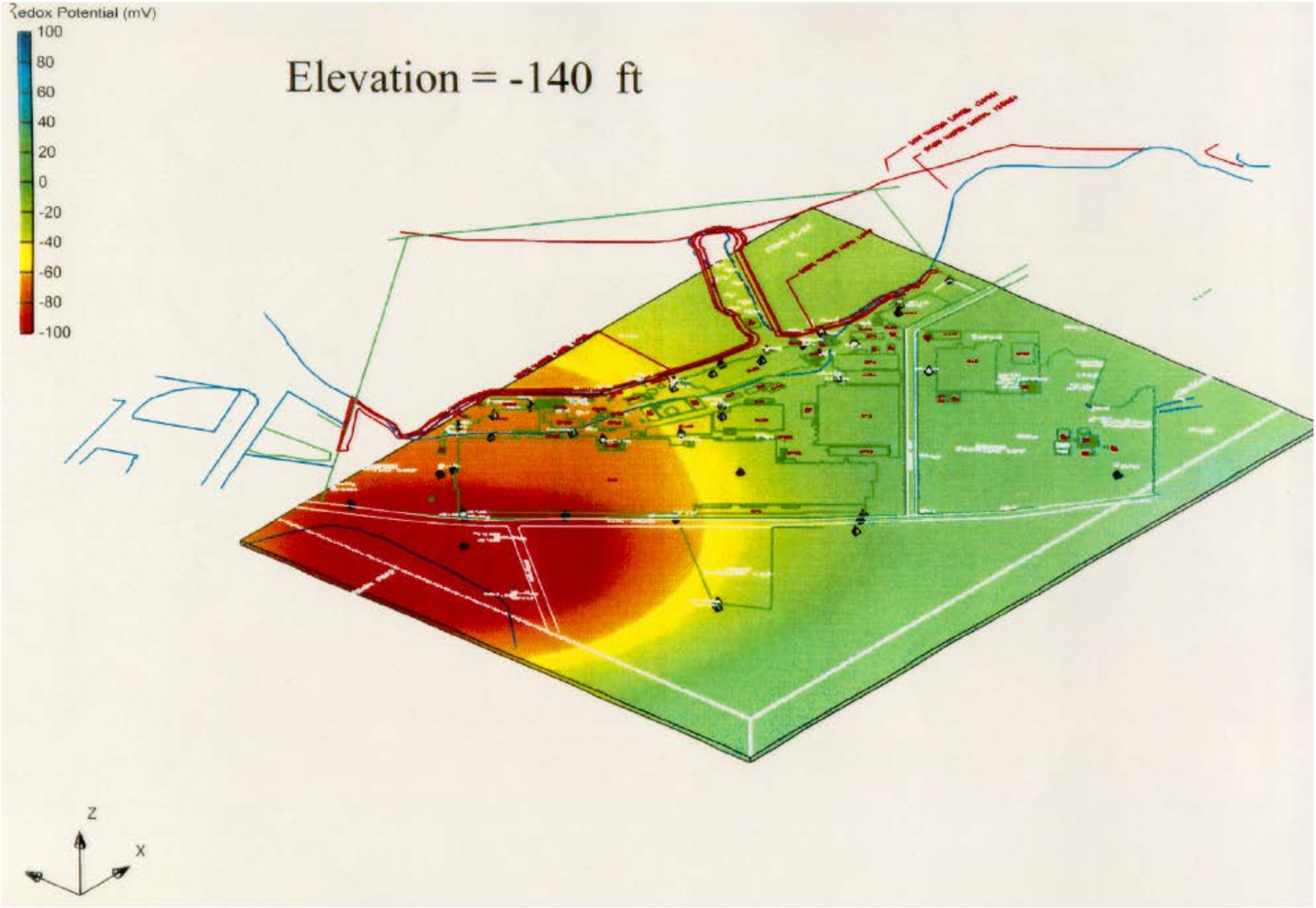

Redox Potential (mV)
100
80
60
40
20
0
-20
-40
-60
-80
-100
Elevation = -40 ft
Z


Redox Potential (mV)
100
80
60
40
20
0
-20
-40
-60
-80
-100
Elevation = -60 ft
Z
X


Redox Potential (mV)
100
80
60
40
20
0
-20
-40
-60
-80
-100
Elevation = -80 ft
Z
X


Redox Potential (mV)
100
80
60
40
20
0
-20
-40
-60
-80
-100
Elevation = -100 ft
Z
X


Redox Potential (mV)
100
80
60
40
20
0
-20
-40
-60
-80
-100
Elevation = -120 ft
Z
X


Redox Potential (mV)
100
80
60
40
20
0
-20
-40
-60
-80
-100
Elevation = -140 ft
Z
X

**RESPONSE TO REGULATORY AGENCY COMMENTS ON DRAFT FINAL OU 2 PRE-DESIGN INVESTIGATION REPORT**

# RESPONSE TO REGULATORY AGENCY COMMENTS ON DRAFT FINAL OU 2 PRE-DESIGN INVESTIGATION REPORT

**P-1 CTDEP COMMENTS**

**P-2 USEPA REGION I COMMENTS**

# RESPONSE TO COMMENTS ON DRAFT FINAL OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT (DATED MARCH 17, 2000) STRATFORD ARMY ENGINE PLANT STRATFORD, CONNECTICUT

**U.S. ARMY CORPS OF ENGINEERS**
**NEW ENGLAND DISTRICT**
**CONCORD, MASSACHUSETTS**

**by**

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**
**and**
**HARDING LAWSON ASSOCIATES**

**May 2000**

# CTDEP COMMENTS

**RESPONSE TO COMMENTS ON**
**DRAFT FINAL OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**(DATED MARCH 17, 2000)**
**STRATFORD ARMY ENGINE PLANT**
**STRATFORD, CONNECTICUT**

**Comment # Comment/Response**

## CTDEP Comments dated May 4, 2000 on Draft Final Pre-Design Investigation Report OU 2 NCRA, SAEP, Stratford, CT

March 2000

### GENERAL COMMENTS

1. **Comment:** Please review the bedrock contour map and supporting information and revise as necessary to address the following points:

   - Consider if the seismic data model should include more than two unconsolidated layers, consistent with the hydrogeologic Conceptual Site Model. I understand that saturated seismic velocity differences may not mandate more than one saturated overburden layer in the seismic model.
   - What effect might the reported cemented layers have on seismic interpretations?
   - Revisit the data interpretation of the seismic study report. The current report fails to incorporate "ground truth data" such as water table elevation and borehole data within the data analysis. On several profiles the "picked" elevation of the water table is tens of feet below sea level. Please discuss further the limitations on the seismic based bedrock data, and refine the bedrock contour map accordingly.
   - Describe in more detail how boring data were used to supplement and refine the seismic data and create the presented map.

   **Response:** Although the "picked" elevation of the water table in some instances does not agree with observed elevations, the general consistency of the seismic-based bedrock data with the borehole-confirmed bedrock data supports the use of the current seismic data model (see Figure 6-9). The correlation between the seismic-based data and the boring-confirmed data will be presented in the text of the OU 2 Pre-Design Investigation Report.

2. **Comment:** Please also estimate aquifer hydraulic conductivity from grain size analyses to complement other approaches. Provide a more extensive discussion of conductivity determinations including the above-requested grain-size based estimate, cone penetrometer hydrostatic pressure dissipation tests, slug tests, and the pump tests. If possible provide a graphic summary of the spatial variability of permeability. Were the pump test data reinterpreted in consideration of the revised conceptual model of a 20 foot thick yielding layer with a leaky overlying layer with limited vertical conductivity? If so, what were the results?

**Comment # Comment/Response**

**Response:** Grain-size analytical results will be used to estimate aquifer hydraulic conductivity, and compared to cone penetrometer, slug test, and pumping test results. The report will be revised to present a comparative discussion of the results of each type of test. The spatial variability of permeability is graphically presented on the geologic cross-sections, Figures 6-2 through 6-8.

The revised conceptual model was developed directly from the pumping test results. As discussed in the aquifer testing report (Appendix J), the test well's observed specific capacity coupled with the limited drawdown response in observation wells, led to a conclusion that the pumping zone had a relatively high aquifer transmissivity, and that geologic stratification was limiting the vertical propagation of pumping stresses. The limited drawdown does not allow for reinterpretation using another analytical methodology.

3. **Comment:** Please provide additional discussion of the consistency of the hydrogeologic data set, observations, and interpretations with the conceptual site model; consider the following:

   - Potentiometric data indicate a groundwater mound under building 2, suggesting recharge. What are possible sources of recharge given the impermeable nature of the surface?
   - Was the study of tidal fluctuation conducted within a three dimensional conceptual framework; if so, why is only a map presented?
   - Documented horizontal and vertical groundwater gradients are similar in magnitude. Please incorporate consideration of three dimensional flow vectors in all interpretations with respect to "downgradient" direction.

   **Response:** Comments are pertinent, and should be addressed by URS Greiner Woodward Clyde (URSGWC) under the scope of the Remedial Investigation (RI) Report. These comments will be forwarded to URSGWC for consideration in the development of the RI Report.

   The OU 2 Pre-Design Investigation Report will be revised to include a discussion of the potential for groundwater flow from beneath Building B-2 off-site, to the southwest**.**

4. **Comment**: DEP's Remediation Standard Regulations preclude use of the Surface Water Protection Criteria listed in Appendix D in cases where a groundwater plume discharges to a wetland (such as the tidal flat), and require instead the use of applicable aquatic life criteria in DEP's Water Quality Standards. It is, however, appropriate to use the Surface Water Protection

**Comment # Comment/Response**

Criteria, which include an attenuation factor, as an evaluation criteria for triggering interim actions. Note that the long term remedy must also satisfy the aquatic life criteria, and in the case of volatile organic pollution, such criteria must be developed in consultation with DEP staff. I expect that the long term remedy will address this issue through the ecological risk study and groundwater model being developed in conjunction with the RI.

**Response:** As the OU 2 Non-Time Critical Removal Action (NCRA) is focused on "interim actions", the OU 2 PDIR usage of the CTDEP Surface Water Protection Criteria will not be altered. However, the use of aquatic life criteria in CTDEP's Water Quality Standards will be considered in the evaluation of long-term remedies evaluated as part of the future Feasibility Study for the SAEP facility.

5. **Comment:** DEP requests that chrome analytical data to support compliance with remediation standard regulations include, for each field sampling mobilization, a minimum 20 percent confirmation laboratory analyses to re-verify adequacy of Hach test results, as implemented during each mobilization. Please also note that the Hach test sensitivity threshold may not be low enough to provide good data confirming compliance, especially with the potentially lower long term aquatic criteria noted above, although it provides adequate characterization data for a concentrated chromium plume.

   **Response:** Comment noted. The detection limit for hexavalent chromium analyses with the Hach test kit is 0.1 mg/L, which is slightly below the CTDEP SWPC of 0.11 mg/L. The detection limit of the Hach test kits for hexavalent chromium will be compared to aquatic life criteria in CTDEP's Water Quality Standards to ensure compliance with respect to the evaluation of potential long-term remedies for the SAEP facility. The 20% off-site laboratory confirmation can be completed for future sampling programs, although given the good correlation between Hach test and laboratory results achieved thus far, a lower percentage may still provide an adequate level of quality assurance for this test method.

6. **Comment:** DEP has not approved the cited interior cleanup standard for hexavalent chrome. DEP does not explicitly regulate indoor environments, and recommends you contact the local director of health for specific guidance; DEP would also be willing to coordinate any risk evaluation review with the state Department of Health. Please note that the OU2 investigation report lacks supporting details of exposure assumptions from the referenced cleanup criterion development document, and also lacks an evaluation of how the exposure assumptions incorporated in that document are consistent with those typically used in Connecticut, as

**Comment # Comment/Response**

exemplified by the remediation standard regulations. Note also that Connecticut uses the 10E-6 risk level as a threshold for evaluations of potential risk associated with pollutants.

**Response:** HLA will forward the supporting details of exposure assumptions from the referenced cleanup criterion development document to the Stratford Department of Health for review.

7. **Comment:** Please provide additional discussion of the consistency of the hexavalent chrome data set, observations, and interpretations with the conceptual site model; consider the following:

7a. Comment**:** Are other inorganic pollutants from the plating area associated with the hexavalent chromium plume? If not, are such pollutants present and migrating as dissolved pollutants without a density-driven transport mechanism.

7a. Response: HLA collected limited amounts of data on other inorganic consituents (i.e., cadmium, copper, cyanide, nickel, and zinc) in groundwater in the vicinity of the Chromium Plating Facility during investigations in 1998 and 1999. A summary of the results will be incorporated into the OU 2 Pre-Design Investigation Report. Complete groundwater data is presented in Appendix N, Table N-2.

7b. Comment: Is the distribution of hexavalent chromium consistent with the posited source, the groundwater flow direction, flow rate, and the dip of the stratification as it may influence gravity driven migration?

7b. Response: In short, the answer is yes, as indicated in Section 6.4.2 of the OU 2 Pre-Design Investigation Report.

7c. Comment: What is the estimated density of the hexavalent chromium release relative to fresh and salty water; is the hypothesis of a downward density-based limitation on gravity migration consistent with this information and the actual distribution of salinity as documented during groundwater profiling?

7c. Response: : The OU 2 Pre-Design Investigation Report will be revised to include a discussion of the relative densities of salty water and hexavalent chromium.

7d. Comment: Do Redox potential, iron speciation, solvent distribution, and chrome speciation

**Comment # Comment/Response**

data support the hypothesis that the "gap" in the chrome plume is due to reduction associated with solvent?

7d. Response: The referenced data will be reviewed, and the question addressed in revisions to the OU 2 Pre-Design Investigation Report.

7e. Comment: Is the mapped area of local reducing conditions under the plating room consistent with the understanding of geochemical activity associated with the plume?

7e. Response: The referenced data will be reviewed, and the question addressed in revisions to the OU 2 Pre-Design Investigation Report.

8. **Comment:** Please provide additional discussion regarding consistency of the solvent groundwater and soil gas data sets, observations, and interpretations with the conceptual site model; consider the following:

8a. Comment: Given the extent of concrete contamination by hexavalent chrome, has an evaluation of concrete saturation by solvents been conducted?

8a. Response: An evaluation of the concrete for solvent contamination has not been addressed.

8b. Comment: Is the distribution of solvent groundwater pollution consistent with the CSM, posited source locations, stratification, and groundwater flow regimes?

8c. Response: The distribution of solvents in groundwater is generally consistent with the CSM. However, adjustments to the CSM may be necessary following completion of the groundwater model, which is currently being prepared by the U.S. Army Corps of Engineers New England District.

8d. Comment: Please discuss specifically the apparent upgradient "tail" for solvent hot spot 2; is it potentially related to tidal action?

8d. Response: The referenced upgradient "tail" may be related to tidal action, but is more likely related to the upgradient source of Hot Spot No. 1 (trichloroethene) beneath the Chromium Plating Facility.

**Comment # Comment/Response**

8e. Comment: How is the vertical distribution of pollution along the flow gradient of hot spot 3 consistent with the concept of a single elongate source?

8e. Response: As indicated in the OU 2 Pre-Design Investigation Report, the vertical distribution of contaminants at Hot Spot No. 3 has not been completely delineated. However, from a horizontal or aerial perspective, the single elongate source is consistent with the historical use of this portion of Building B-2 for degreasing operations.

8f. Comment: Is the distribution of reducing conditions in the aquifer consistent with the posited methanogeneis-related solvent degradation?

8f. Response: Yes, reducing conditions are present within the aquifer at increasing depths from ground surface (see Appendix O-2).

8g. Comment: What controls the shape of depicted exceedances of solvent surface water criteria; is it consistent with the identified hot spot source areas and the groundwater flow regime?

8g. Response: Currently, we believe the shape of the solvent SWPC exceedance plumes is controlled predominantly by groundwater flow (including tidal fluctuations), and the locations of source deposition (i.e., the hot spots). Development of the groundwater model should assist in the refinement of this conceptual model.

8h. Comment: In particular, is the mapped shape of the PCE plume associated with the presence of TCA; and, if so, what are the controlling mechanisms?

8h. Response: The shape of the PCE plume is generally consistent with the locations of the three hot-spots as source areas, and the interpretive groundwater flow direction. It is possible that the PCE entered the subsurface in the same locations as 1,1,1-TCA, although a PCE "hot spot" was not identified in OU 2 investigations.

8i. Comment: Does the identification of three (or four) hot spots generally explain the entire extent of groundwater pollution with organic constituents on site, or are there also other potential sources suggested by the water quality data? See especially the eastern corner of the site.

**Comment # Comment/Response**

8i. Response: The identification of three VOC hot spots defines the locations of solvent concentrations in excess of 100,000 ug/L in groundwater beneath SAEP. There are potentially other, less significant, source areas with lower concentrations present beneath SAEP.

8j. Comment: What limits the extent of solvent contamination at the downgradient dike area? Is the limit a result of degradation or other attenuation, a result of transport time from the source, or an effect of tidal activity? Consider particle tracking as a way to evaluate the tidal effect on actual groundwater pollutant transport.

8j. Response: These questions will be evaluated following completion of the groundwater flow and transport model.

8k. Comment: Are there vadose zone preferential pathways or barriers for migration which affect the soil gas pollution distribution?

8k. Response: Utility trenches are one preferential pathway for migration which may affect soil gas distribution in the vadose zone. Building foundations at SAEP are typically quite shallow, but may provide potential barriers to soil vapor migration.

8l. Comment: Are there vadose zone interstitial solvent residuals which affect the soil gas pollution distribution?

8l. Response: There are likely some solvent residuals present in the vadose zone; however, the 100+ shallow soil borings conducted during the RI did not detect any significant solvent residuals.

8m. Comment: How does the soil gas pollutant distribution relate to groundwater pollutant distribution, hot spots and sources, and potential migration paths and processes?

8m. Response: Soil gas pollutant distribution is generally co-located with groundwater contamination by the same compounds, as indicated in the last paragraph of Section 6.4.4. However, the distribution of soil gas is not as uniform, and is likely a function of preferential pathways and barriers, as well as potential vadose zone solvent residuals, mentioned above.

**Comment # Comment/Response**

9. **Comment:** Are there supporting data for indicators of microbial activity to corroborate the hypothesis of microbial degradation of solvents which is based on temperature data? Could elevated groundwater temperatures at hot spot 1 be associated with inorganic reactions between the hexavalent chrome and the aquifer, rather than microbial activity?

   **Response:** No studies have been completed to evaluate microbial activity. The increased temperatures seen in groundwater may be attributable to years of use of underground steam heating lines and heat processes within the facility. Data collected as part of the RI effort may provide additional support for the hypothesis of microbial degradation.

10. **Comment:** DEP agrees that, prior to remedy design, the full lateral extent of hot spot 2 should be determined; you may wish to consider passive soil gas contouring to accomplish this task. In addition, better delineation of the deeper groundwater quality at hot spot 2 is necessary, given the indication of deeper pollution presence in RI data. Specifically, the incongruity between the soil and groundwater profiling data and the RI deep groundwater quality data needs resolution to determine if there is a lower hot spot at the top of the bedrock, as there is at hot spot 3? You may wish to revisit the deeper groundwater quality characterization at hot spot 1 regarding deep water quality evaluations. Also, will the extent of solvent pollution in bedrock be determined?

    Note that this further characterization activity can be independent of addressing the identified shallow volatile organic hot spots through an interim remedy.

    **Response:** The evaluation of deep groundwater quality at the VOC hot spots will be considered as part of the ongoing OU 2 NCRA process. Currently, there are no plans to evaluate the potential for solvent pollution in bedrock, as RI data indicates that the bedrock is very competent, and therefore relatively impermeable.

11. **Comment:** Data quality comments:

    11a. Comment: State how E qualified data were handled in interpretation.

    11a. Response: Results of E qualified data were used as the presented numerical value. It will be noted in the OU 2 Pre-Design Investigation Report that the reported concentrations for E qualified data could actually be higher

.

    11b. Comment: Please note that there are some apparent anomolous data points in the

**Comment # Comment/Response**

conductivity and oxidation potential plots of appendix O, notably at the southwest corner of building 1 and the southeast corner of the site.

11b. Response: Comment noted.

11c. Comment: Please consider in your use of RI data possible biases introduced by use of peristaltic pumps for volatile organic compound sample acquisition.

11c. Response: This comment will be forwarded to URSGWC for consideration in the development of the RI Report.

11d. Comment: Please discuss ramifications of soil gas onsite/offsite analytical differences on the data interpretation.

11d. Response: Therefore, the ramifications of soil gas onsite/offsite analytical differences are considered to be of little impact to ultimate objective of the soil gas program.

11e. Comment: Discuss the atypical trend in head data from PZ99-1 l and B during the pump test.

11e. Response: After an initial drawdown response to pumping, drawdown effects in PZ-99-01I were apparently masked by a rising background water level trend during the pumping interval. PZ-99-01I experienced a rising water level trend that was greater than the observed rising background trend of approximately 0.01 feet per day (as measured in PZ-16D). HLA does not have an explanation for the magnitude of the observed background trend. In PZ-99-01B, drawdown continued throughout the pumping interval, and is of greater magnitude than the predicted background water level trend.

12. **Comment:** Graphics editorial comments:
- Please indicate boring-confirmed bedrock elevations on the bedrock contour map.
- Please show conductivity or salinity on cross sections of pollutant chemistry.
- Please clarify if maps of contamination extent are inclusive of all data or limited to data from a particular depth range.
- Please graphically indicate which of the depicted sample locations are specifically used as data sources for each map.
- Please describe how the contours were created, especially regarding handling of outliers, or,

**Comment # Comment/Response**

alternatively, show source data on the maps.

- Show soil gas species on the map, and contour the data if possible.

**Response:** The requested changes to the referenced graphics will be provided in the Final OU 2 Pre-Design Investigation Report. However, we feel that the plots of conductivity on contaminant cross-sections would make the figures too busy, and therefore difficult to interpret. Plots of conductivity at various depth intervals is presented in Appendix O.

# USEPA REGION I COMMENTS

**RESPONSE TO COMMENTS ON**
**DRAFT FINAL OU 2 NCRA PRE-DESIGN INVESTIGATION REPORT**
**(DATED MARCH 17, 2000)**
**STRATFORD ARMY ENGINE PLANT**
**STRATFORD, CONNECTICUT**

**Comment # Comment/Response**

## USEPA Comments dated May 1, 2000 on Draft Final Pre-Design Investigation Report OU 2 NCRA, SAEP, Stratford, CT

March 2000

### GENERAL COMMENTS

1. **Comment:** OU-2 appears to have been thoroughly evaluated.

   **Response:** Comment noted.

2. **Comment:** Based on the discussion in Section 1.0, it would appear that the pilot-scale treatability results will be considered for the EE/CA for VOC and hexavalent chromium contamination in the groundwater operable unit (OU-2). However, the schedules presented in this report indicate that the pilot-scale treatability report will not be submitted until the summer of 2000 (see page 4-17) while the draft EE/CA is due March 2000. Based on the schedules it appears that the pilot-scale treatability results are not pertinent to development of the EE/CA. Please clarify this apparent conflict.

   **Response:** The Draft OU 2 Pilot-Scale Treatability Study Report (submitted to the U.S. Army in April 2000) incorporates some early rebound sampling data. Rebound data is being collected through July 2000, when an addendum to the report will be issued containing an evaluation of all rebound data. Rebound data is being assessed concurrently with development of the OU 2 EE/CA for evaluation of removal action alternatives.

3. **Comment:** The Army should discuss and consider the need whether mor work is needed to develop a sound conceptual understanding of the factors controlling the fate and transport of hexavalent chromium in the system. In particular, it is recommend that further Cr work include some deeper soil sampling and analysis in the core of the plume. While the summary (sec. 7.3) notes correctly that Cr(VI) in soils has not generally exceeded the I/C DEC of 100 mg/kg, soil sampling has been limited to shallow soils in the vadose zone and immediately below the water table, while maximum dissolved Cr(VI) hits within the plume are tens of feet below ground surface. Possible Cr(VI) in solid phases should be characterized; for example, sulfates may be present (e.g., gypsum, jarosite, etc.) in which chromium substitutes for sulfer. This could represent a continuing source to the dissolved Cr(VI) in groundwater, both at present and following remedial action. The possible presence of sulfates containing Cr(VI) should be evaluated prior to initiating remedial schemes that involve, for example, the use of ferrous sulfate as a reductant. Addition of more sulfate may result in retention of Cr(VI)-

**Comment # Comment/Response**

containing sulfate phases in the system that could serve as a source of soluble Cr(VI) in the future as groundwater conditions at the site evolve.

**Response:** The OU 2 Pre-Design Investigation Report (PDIR) did not include some deeper soil inorganics data collected as part of the pilot-scale treatability studies. This data indicated that soils do not contain significant concentrations of chromium. This comment will be addressed further as part of the OU 2 Pilot-Scale Treatability Report and OU 2 EE/CA.

4. **Comment:** Further work to explore for DNAPL at the site is warranted. As acknowledged in the report, concentrations of chlorinated VOCs in groundwater are extremely high, approaching the solubility limit for TCE, and a large fraction of the solubility limit for 1,1,1-TCA, strongly suggesting the presence of free-phase solvents, at least at some time in the past. High concentrations of chlorinated VOCs in groundwater have been found at depth (to the bottom of the overburden) at two key locations: WC2-3D (TCE at 3,100 □g/L) and CP-99-08 (VOCs at > 100,000 □g/L). The latter is on a relatively steep bedrock-surface slope identified by the seismic refraction work, trending toward a subsurface topographic low mapped to the northwestern corner of building B-2. This area has been explored at depth for chlorinated VOCs only minimally, and further characterization is called for. For example, it is noted that boring WP-99-72, which is close to the center of the mapped bedrock low (Figure 6-9), showed non-detects for TCE at 6-10 ft bgs and 16-20 ft bgs, but a low-level hit of 28 □g/L at 30-34 ft bgs. This may well be the uppermost fringe of deep, dissolved TCE that emanates from DNAPL that followed the bedrock trough, and still resides at depth.

**Response:** While there is potential for the presence of DNAPL, evaluation of soil and groundwater samples has not confirmed its presence. In the deeper portions of the aquifer, it appears that groundwater movement is limited, and therefore any potential DNAPL near the bedrock surface is not likely to migrate. If the RI Report and groundwater model indicate otherwise, (i.e., potential for migration), additional characterization of deep soil and groundwater will be considered at a later date.

5. **Comment:** This document does not address previous detections of chlorinated VOCs in wells to the southwest of the main portion of the site. While these lower-level detections may not exceed the (rather high) criteria that delineate exceedances for the site, they may be significant indicators of transport processes at the site. In the past, this contamination was interpreted to be due to an off-site source and transport from the south and west. However, the conceptual model for the site has evolved considerably since that time (e.g., with the

**Comment # Comment/Response**

discovery of very high concentrations of chlorinated VOCs beneath building B-2), and the detections to the southwest should be revisited in this light. EPA understands that the Army has obtained additional information regarding an potential offsite source. It is important that this report indicate where this information will be discussed since there is information in this report to indicate that a least some groundwater flow from beneath Building B-2 likely flow towards the south and west.

**Response**: The scope of the OU 2 PDIR does not include the SAEP property south and west of Main Street; however, the OU 2 PDIR will be revised to present a brief discussion of potential contaminant migration from beneath Building B-2 toward the south and west. Groundwater analytical data from the area south and west of Main Street will be presented in the Remedial Investigation Report, scheduled for issue as a draft in the summer of 2000.

**SPECIFIC COMMENTS**

1. **Comment: Table of Contents:** Some of the Table of Contents titles do not correspond with the titles used in the text of the report. Please make the necessary corrections.

   **Response:** The requested revisions will be made.

2. **Comment: Section 1.3, page 1-3:** The last sentence in this section states that an EE/CA will be written based on the data presented in the Pre-Design Investigation Report. Will the EE/CA also consider the results of the In Situ Treatability Testing, which is not summarized in this Pre-Design Investigation Report? If so, please mention that here, if not, please explain.

   **Response**: The referenced text will be revised to indicate that the EE/CA will also be based on the results of the in-situ treatability tests, which are not summarized in the OU 2 PDIR.

3. **Comment: Section 3.3.1, page 3-2:** This section does not say whether or not the referenced permit is expected to be required for NCRA activities after March 18, 2000. Neither does it say that the permit will be renewed. Please clarify these issues.

   **Response:** A new permit will likely be required in the future to address treatment associated

**Comment # Comment/Response**

with the OU 2 EE/CA selected groundwater removal action.

4. **Comment**: **Section 3.3.2, page 3-3:** Regarding the first bullet, there is no table in Section 6.0 that compares soil data to CTDEP DEC and PMC for VOCs. Will this data comparison be presented in the RI? Please add this data or clarify in the report why this data is not presented.

   **Response:** There are no VOC soil DEC or PMC exceedances for OU 2 pre-design investigation samples. This statement will be added to the appropriate text section(s). Complete soil data is presented in Appendix N.

5. **Comment: Section 4.0, page 4-1:** It appears that the last sentence in the second paragraph should reference activity items 7 through 11, not 7 through 10. Please correct as necessary.

   **Response:** The requested revision will be made.

6. **Comment: Section 4.1.2, page 4-2:** Comparison of the analyte list in the third paragraph of the text with the data in Table 6-3 appears to indicate that the analyte list in the text is incomplete. The table also includes TCLP analytical results. Please correct as necessary so the text and table data lists correlate properly.

   **Response:** The referenced text and table will be revised to correlate properly.

7. **Comment: Section 4.1.2, page 4-2:** The fourth paragraph of the text refers to Tables 4-1 and 4-2 for summaries of Geoprobe soil and groundwater explorations. It appears that the reference should be to Tables 4-2 and 4-3. Please correct as necessary.

   **Response:** The requested revision will be made.

8. **Comment: Section 4.1.2, page 4-2:** The fifth paragraph of the text discusses two dust samples that were collected, however, the analyte list for these samples was not provided. Please add the analyte list to the text for these samples.

   **Response:** The analyte list will be included for the two dust samples.

**Comment # Comment/Response**

9. **Comment: Section 4.2, page 4-3:** The last sentence in the second paragraph discusses the CTDEP guidance value for carcinogenic risk, stating that the value is $1x10^{-6}$. Isn't the cumulative excess cancer risk value the pertinent one for comparison and isn't that value $1x10^{-5}$? Please clarify in the text and edit as necessary.

   **Response:** The typographical error will be corrected to indicate $1x10^{-5}$.

10. **Comment: Section 4.3.1.1, page 4-4:** The first sentence in this section refers to 21 sample locations and contains a parenthetical list of the sample locations. The list should include SP-99-01 through SP-99-20 (rather than SP-99-02), excluding four locations where soil samples were not collected. Please make the necessary corrections.

    **Response:** The requested revision will be made.

11. **Comment: Section 4.3.1.1, page 4-4:** The second and third sentences in the second paragraph in this section refer to the analyte list. This list is not consistent with Tables 4-2 and 6-3. Please edit the text and tables to make the analyte list consistent among them.

    **Response:** The referenced text and table will be revised to correlate properly.

12 **Comment: Section 4.3.1.2, page 4-5:** The partial paragraph at the top of the page discusses the drag technique for collecting groundwater samples. The text needs to describe this technique better to clarify how water from a lower interval was not carried up to the next interval. After the sample was collected from the lower interval, was the screen covered and the well casing purged dry before the screen was dragged up to the next interval? Please edit the text to clarify the procedure which may alleviate the concern about sample contamination.

    **Response:** The text will be revised to indicate that purging of subsequent sample intervals was conducted until the parameters of turbidity, conductivity, temperature and pH stabilized, which turned out to be roughly 3 to 8 gallons per sampling interval. The volume of water within the 1.25-inch diameter screen and rods was roughly 0.06 gallons per foot, or 0.6 gallons per 10-feet. The average deep Geoprobe samples collected were on the order of 60

feet bgs, which correlates to roughly 50 feet of water, or 3 gallons, within the rods. Assuming a minimum purge of 3 gallons, at least 1x the entire volume of water in the rods was purged prior to sampling. In many cases, the formation did not recharge quickly enough to keep up with the pumping rate, and therefore the screened sample interval was purged dry. Following sufficient recharge for sample volume, a sample was collected.

13. **Comment: Section 4.3.1.3, page 4-6:** Table 4-5 does not include PZ-99-01A through PZ-99-05A. It is not clear from the text whether or not they should have been included. Please review and correct as necessary.

**Response:** The reference in the text at the bottom of page 4-5 and top of page 4-6 will be changed from "PZ-99-01A through PZ-99-05A" to "PZ-PILOT-01 through PZ-PILOT-07".

14. **Comment: Section 4.4, page 4-9:** The second sentence in this section lists the activities conducted for the OU-2 NCRA. However, the subsections of this section discuss several additional activities not listed in this sentence. Please review the text and correct as necessary.

**Response**: The second sentence indicates that the OU 2 NCRA activities "included"; however, the sentence will be revised to include all activities conducted under the OU 2 NCRA scope.

15. **Comment: Section 4.4.8, page 4-17:** The sentence at the top of this page discusses the submittal schedule for the pilot-scale treatability study report. This report will apparently not be submitted until well after the draft EE/CA has been submitted (spring 2000; see page 1-1, last sentence in first paragraph). Are the results of the pilot-scale treatability study not relevant to the EE/CA? Please explain and confirm that these schedules from the Pre-Design Investigation Report are correct.

**Response:** Please see the response to General Comment No. 2, above.

16. **Comment: Section 4.5.1, page 4-18:** There are apparent errors in the formulas presented on the center of this page. For $X_i$, i (not I) should vary from 1 to 48, not 49. For $Y_j$, the numerator term should be $X_{(i+j)}$, not $X_i + j$.

**Comment # Comment/Response**

**Response:** The requested revisions will be made.

17. **Comment: Section 4.5.1, page 4-17, para. 3:** The text states, "The net effect of these fluctuations on groundwater flow can be determined by using the mean hydraulic gradient..." While this is certainly important for assessing the mean flow through the site, the fluctuations themselves might be significant in driving transport in this system via dispersion. The usual dispersion model (i.e., dispersion proportional to the groundwater velocity) is not applicable in a tidally fluctuating system, because the cumulative dispersive effect of the tidal velocity fluctuations could, in principle, far exceed dispersion driven by the mean motion of the groundwater. Given that the mean groundwater velocity across the site is very small, tidally driven dispersion could be predominant. This process may prove to be significant in developing a conceptual model for transport of contaminants at the site. The possibility of dispersion from the source beneath Building 2 toward the south should be further discussed. If this information will be included in another report, this should be stated in the text.

**Response:** Please see page 4-17, Section 4.5, first paragraph. This comment has been forwarded to URS Greiner Woodward-Clyde to be addressed in the RI Report.

18. **Comment: Section 4.5.3.2, page 4-22:** In the fourth sentence of the first paragraph, "...TAL VOCs, ..." should apparently be "...TCL VOCs, ....". Please correct as necessary.

**Response:** The requested revision will be made.

19. **Comment: Section 4.5.4, page 4-23:** In the summary of conditions for which the Bouwer-Rice slug test analysis is valid, it is stated that the flow is steady. Presumably, this is in reference to the ambient flow (i.e., unperturbed by the slug test), as the slug test itself is inherently transient. Please clarify the text to distinguish between the ambient flow and the local flow associated with the slug test.

**Response:** Please see page 4-17, Section 4.5, first paragraph. This comment has been forwarded to URS Greiner Woodward-Clyde to be addressed in the RI Report.

20. **Comment: Section 5.1, page 5-1:** For identification numbers beginning with WP, the text description uses the letters GP. Please change GP to WP to be consistent with the rest of the document.

**Comment # Comment/Response**

**Response:** The requested revision will be made.

21. **Comment: Section 5.3.2.1, page 5-4:** Regarding the analyte list presented in this section, Table 6-3 appears to indicate that TCLP analyses rather than SPLP analyses were performed. Please confirm and correct as necessary.

**Response:** Table 6-3 and the referenced text will be corrected as necessary

22. **Comment: Section 6.2, page 6-3:** The Site Hydrogeology section should include a summary of what is known at present about the role of tidal fluctuations at the site. How far from the estuary are measurable fluctuations in water levels recorded? What are the amplitudes? This may prove to be critical information for understanding the predominant transport processes at the site, particularly dispersion. The standard model of dispersivity proportional to the mean velocity fails to capture the effect of periodic fluctuations, which may drive much greater dispersion than does the mean flow, particularly given the very low mean velocity at this site.

**Response**: Please see the response to Specific Comment No. 17

23. **Comment: Section 6.2.3, page 6-5**: The text states, "Groundwater flow is interpreted to be generally from west to east/northeast toward the Housatonic River..." and also notes that "... from the central portion of Building B-2 toward the northwest, ... groundwater flow ... [is] ... more northerly..." However, it should be noted that Figure 6-10 indicates a local groundwater divide passing through the site. This is particularly noteworthy because of historic detections of chlorinated VOCs in explorations in the West parking lot, which have been ascribed in the past to a likely off-site source to the south and/or west. While EPA is aware that the Army is in receipt of information indicated that in fact an offsite source exists, that fact that information also indicates the potential for some contribution of VOC migration towards the West parking lot should not be ignored.

**Response:** Please see the response to General Comment No. 5. The referenced text will be revised to discuss the possibility of groundwater flow to the west.

**Comment # Comment/Response**

24. **Comment: Section 6.2.4, page 6-6**: This section again fails to mention the possibility of flow from the contaminated area back toward the west, at least at times. Also, a discussion of tidal influences at the site should be included in this section.

**Response:** Please see the response to General Comment No. 5. The referenced text will be revised to discuss the possibility of groundwater flow to the west.

25. **Comment: Section 6.3, page 6-6:** The summary notes that exceedances of cleanup standards were identified by the wipe sampling, but does not indicate the subsequent or planned action(s) in response to this finding. What has been done, or will be done, to address these exceedances?

**Response:** The exceedances are being addressed through evaluation of removal action alternatives in the OU 2 EE/CA.

26. **Comment: Section 6.4.2, page 6-8:** In the second full paragraph on this page, the discussion of the lack of hexavalent chromium between the two plumes suggests this may be due to anaerobic conditions. Is there evidence of trivalent chromium in this area, as suggested in this discussion? Please edit the text to clarify the hypothesis presented.

**Response:** During the pilot scale treatability test, after intoduction of KMnO4 into the aquifer in this area, increasing concentrations of hexavalent chromium were observed, indicating that trivalent chromium was being oxidized to hexavalent chromium, and released to the groundwater.

27. **Comment: Section 6.4.2, page 6-8:** The limited spread of Cr (VI) in the system is ascribed to the hydrology (i.e., very small net groundwater velocity). However, another significant limiting factor may be the chemistry of the system. The Cr(VI) may be reduced before it is transported very far from its source, as it oxidizes other compounds present (e.g., organic carbon, chlorinated VOCs, etc.), and precipitates to relatively insoluble solid phases. This aspect of the Cr transport should be discussed.

**Response:** This aspect of potential Cr transport will be discussed in the revised text.

28. **Comment: Section 6.4.3.3, page 6-12, para. 1:** The text states that the extent of TCE exceedance shown in Figure 6-28 is "conservative," but acknowledges that the extent could

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be "... larger than depicted." The term "conservative" is somewhat ambiguous in this context. The area as drawn is "conservative" in the sense that it does not include areas that are not fully characterized. However, from the point of view of remedial design or regulatory oversight, it would be "conservative" to *over*estimate the extent of the exceedance. The description of the mapped area as "conservative" should be deleted or further clarified.

**Response:** The use of the term "conservative" will be deleted from the text.

29. **Comment: Section 6.4.3.4, page 6-13:** The last sentence in the second paragraph discusses the suspected former locations of degreasing operations that used 1,1,1-TCA in Building B-2. Is this sentence suggesting that degreasing took place near CP-99-08 and near WP-99-48, so that both might be potential source areas based on past operations in these areas? Please clarify the meaning of this sentence.

**Response:** The referenced degreasing operations took place in this general area of Building B-2. The text will be revised to clarify this issue.

30. **Comment: Section 6.4.5, page 6-15:** The last bullet on this page discusses the screening level risk evaluation, stating that it met the CTDEP criteria of $1x10^{-5}$. The meaning of this statement is not clear; please edit this text to state whether or not the CTDEP criterion of $1x10^{-5}$ was exceeded.

**Response:** The text will be revised to state "… the cumulative excess cancer risk does not exceed the CTDEP criteria….."

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31. **Comment: Section 7.4.2, page 7-5:** The second bullet on this page states that "The estimated extent is conservative...." However, if the area of the plume could be larger than depicted, as stated in the text, then "conservative" appears to be an inappropriate description of the estimated extent of contamination. Please edit the text as appropriate.

**Response:** The use of the term "conservative" will be deleted from the text.

32. **Comment: Section 7.4.1, page 7-4:** This summary should also note that the concentrations of 1,1,1-TCA; 1,1-DCE; PCE; and vinyl chloride were all estimated to be 100,000 ìg/L (see

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Table 6-3) at the point where the greatest TCE concentration was found (WP-99-33).

**Response:** A statement will be added to the text, indicating that the concentrations of 1,1,1-TCA, 1,1-DCE, PCE, and vinyl chloride were less than 100,000 ug/L (see Table 6-5) at the point where the greatest concentration of TCE was detected (WP-99-33).

33. **Comment: Section 7.4.2, page 7-4:** The overall summary of VOC Hot-Spot No. 2 should also mention that concentrations of four additional chlorinated VOCs were detected within the Hot-Spot.

**Response:** The requested revision will be made.

34. **Comment: Section 7.4.3, page 7-5:** The overall summary of VOC Hot-Spot No. 3 should also mention that concentrations of four additional chlorinated VOCs were detected within the Hot-Spot.

**Response:** The requested revision will be made.

35. **Comment: Table 4-2:** The analytical list is not complete for the SP-98 samples because TCLP analyses were also done for cyanide and total chromium.
Also, the fifth column header has a typographical error: Total cCr should be Total Cr.For the SP-PILOT explorations, ferrous iron was also an analyte.

**Response:** The requested revisions will be made.

36. **Comment: Table 4-3:** In the fifth column header, delete the comma between Hex and Cr. Only hexavalent chromium was an analyte, not chromium. In the sixth column header, add alkalinity which was also an analyte.

**Response:** The requested revisions will be made.

37. **Comment: Table 4-5:** PZ-99-01A to PZ-99-05A are not included in this table. Was that omission intentional, because groundwater samples were collected during piezometer installation, or is that an oversight that needs to be corrected. Please make the necessary corrections and include an explanation for the action taken.

**Comment # Comment/Response**

**Response:** Please see the response to Specific Comment No. 17.

38. **Comment: Table 6-3**: It is noted that, for soils from SP-99-11, and SP-99-12, Cr(VI) is greater than the *total* Cr by factors of about 2. Is this simply laboratory uncertainty? Please discuss.

**Response:** Table 6-3 appears to be in error, and will be thoroughly checked for additional errors. The actual difference in concnetrations in total chromium vs. hexavalent chromium are minimal.

39. **Comment: Table 6-5:** The TCE analytical results for WP9945030 and WP9945040 are shown as 4,000 and 6,000 ìg/L, respectively. However, Figure 6-29 shows these sample results as 264,000 ìg/L and 246,000 ìg/L, respectively. Also, the table shows concentrations of zero for the other four chlorinated VOCs, but Figure 6-29 suggests the values may be much greater, showing them as <100,000 ìg/L. Please correct these discrepancies.

**Response:** The requested revisions will be made.

**40.** **Comment: Table 6-5:** Beginning with page 43 of 58 through page 48 of 58, the column containing the top row descriptors and the SWPC criterion for each parameter is missing. Please correct these pages as appropriate.

**Response:** The requested revisions will be made.

41. **Comment: Table 6-7:** This table should include the CTDEP VC criterion for each parameter. Please make the necessary edits.

**Response:** The requested revisions will be made.

**42.** **Comment: Figure 6-10**: This figure shows interpreted groundwater level contours for July 20-23, based on an averaging scheme. The figure actually shows the West parking lot to be *downgradient* from Building B-2. This should be discussed with respect to implications for chlorinated VOC hits found in previous explorations in the West parking lot.

**Response:** Please see the response to General Comment No. 5.

**Comment # Comment/Response**

43. **Comment: Figures 6-26 and 6-27:** These figures do not include the other chlorinated VOCs detected at Hot-Spot No. 1, as was done in Figures 6-29 to 6-32 for Hot-Spots Nos. 2 and 3. It may be appropriate to include these concentrations, especially since the concentration of each of four additional chlorinated VOCs was estimated at 100,000 ìg/L at the point of the greatest TCE concentration (see Table 6-3).

**Response:** The requested revisions will be made.

44. **Comment: Figure 6-27:** The eastern-most exploration should be WP-99-50, not WP-99-05. Please correct this typographical error.

**Response:** The requested revisions will be made.

45. **Comment: Figure 6-29:** The title of this figure is misleading because the figure presents concentrations of several VOCs, not just TCE, although the contours are drawn only for TCE. If this title is not what was intended, please make the necessary correction.

**Response:** The titles of figures 6-29 through 6-32 will be revised to read "INTERPRETIVE VERTICAL DISTRIBUTION OF VOCs IN GROUNDWATER……".

46. **Comment: Figure 6-29 to 6-32:** These figures do not depict the groundwater surface elevation (although there is a legend symbol for it). If the groundwater surface elevation information is available for these figures, please add it, if not, delete the legend symbol.

**Response:** The requested revisions will be made.