FINAL

CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION DECISION DOCUMENT STRATFORD ARMY ENGINE PLANT Stratford, Connecticut

January 2001

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1.0 PURPOSE

This decision document describes the selected action to construct an erosion control cover system on the Causeway at the Stratford Army Engine Plant (SAEP). The selected remedy has been chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The U.S. Army Materiel Command has selected this remedy with support from the United States Environmental Protection Agency (USEPA) and the Connecticut Department of Environmental Protection (CTDEP).

The USEPA has given the SAEP facility the CERCLA Information System Identification Number CTD 001181502. Additionally, the Department of Defense has assigned the Causeway at SAEP the Defense Site Environmental Tracking System Number SAEP 018.

SAEP is located in Stratford, Connecticut, on the Stratford Point peninsula in the southeast corner of Fairfield County (Figure 1-1). The site is bounded on the east by the Housatonic River, on the south and north by paved parking and open areas, and on the west by Main Street and the Sikorsky Memorial Airport.

The SAEP property is zoned as light commercial, and the facility has been used for development, manufacture, and assembly of aircraft or engines from 1929 to 1997. Responsibility for the jurisdiction, control, and accountability of SAEP was transferred from the U.S. Army Aviation and Troop Command to the U.S. Army Tank-automotive and Armaments Command (TACOM) in September 1995. In October 1995, SAEP was placed on the Base Closure and Realignment (BRAC) list, known as BRAC 95.

Pursuant to the Defense Base Closure and Realignment Act of 1990, the BRAC Environmental Restoration Program mandates that environmental contamination on BRAC properties be investigated and remediated, as necessary, prior to disposal and reuse. In August 1998, SAEP was transitioned from an active production facility to caretaker status, and the focus of activities has been completion of an environmental assessment and cleanup of the site with the goal of future redevelopment.

SAEP consists of approximately 124 acres, of which approximately 76 acres are improved land that consist of 49 buildings, paved roadway and grounds, and five paved parking lots. Riparian rights (consisting of intertidal flats of the Housatonic River) are associated with the remainder of the SAEP property. 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. An estimated two acres of property comprise a Causeway constructed in the 1930s to provide access to the river channel.

The Causeway consists of fill material that was originally deposited on the tidal flats of the Housatonic River. The fill contains soil, cobbles, and construction debris (e.g., concrete, brick, and asphalt). Smaller amounts of other material (e.g., wood and rebar) were also observed during field investigation activities. Additional materials, of unknown origin, were deposited along the northern edge of the Causeway during the 1950s and 1960s. It was also reported that paint solvents and wastes were burned on the Causeway as part of firefighter training operations.

Soil analytical data collected during the 1999 pre-design investigation activities for the Causeway were compared to the CTDEP Remediation Standard Regulation (RSR) Direct Exposure Criteria (DEC) and Pollutant Mobility Criteria (PMC). The contaminants detected in soil that exceed the CTDEP RSR DEC and PMC include chlorinated and fuel-related volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and inorganics.

Preliminary results of groundwater data collected in November 1999 from the four monitoring wells installed in the Causeway indicate the presence of low concentrations of chlorinated VOCs and inorganic analytes. However, the concentrations of contaminants in groundwater are below the CTDEP RSR Surface Water Protection Criteria and Volatilization Criteria. Groundwater associated with the Causeway will be addressed in the Remedial Investigation (RI) Report and Feasibility Study for the SAEP facility.

The Causeway and adjacent area is proposed to be a recreational area. The objective of the Causeway non-time-critical removal action (NCRA) is to prevent exposure to contaminated soils in accordance with the CTDEP RSR DEC (residential exposure scenario) and PMC (GB area).

Based on the evaluation of alternatives presented in the Engineering Evaluation/Cost Analysis (EE/CA) prepared for the Causeway, the selected remedy for the Causeway NCRA is construction of an erosion control cover system, which also includes removing contaminated soil hot spot areas, establishing environmental land use restrictions, and conducting operation and maintenance (O&M) activities. This remedy will be protective of human health and the environment and will achieve the removal action objectives identified in the EE/CA: (1) construction of the erosion control cover system will prevent receptors from direct exposure to contaminated soil at concentrations in excess of the CTDEP RSR DEC (residential exposure scenario), and (2) removal of soil hot spot areas will prevent leaching of contaminants from soil at concentrations in excess of the CTDEP RSR PMC (GB area) or 10-times the Groundwater Protection Criteria.

2.0 SITE CONDITIONS AND RISK

This section provides a summary of the site conditions and risk associated with the Causeway at SAEP. Detailed information regarding the Causeway is presented in the EE/CA for the Causeway and Dike (Foster Wheeler Environmental Corporation/Harding Lawson Associates [Foster Wheeler/HLA], 2000a), the Pre-Design Investigation Report for the Causeway and Dike NCRA (Foster Wheeler/HLA, 2000b), and the RI Report for SAEP (URS Grenier Woodward Clyde Federal Services, 2000).

2.1 SITE DESCRIPTION AND BACKGROUND

SAEP is located in Stratford, Connecticut, on the Stratford Point peninsula in the southeast corner of Fairfield County (see Figure 1-1). The site 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. The site is bounded on the east by the Housatonic River, on the south and north by paved parking and open areas, and on the west by Main Street, the Sikorsky Memorial Airport, and several small businesses.

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 mean sea level (MSL). SAEP is within the 100-year floodplain. Based on the Flood Insurance Rate Map for the Town of Stratford, CT (Federal Emergency Management Agency; June 16, 1992), the 100-year flood elevation in the vicinity of the Causeway is 13 feet MSL.

SAEP consists of approximately 124 acres, of which approximately 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 development of SAEP. The 48 acres of riparian rights property consist of intertidal flats of the Housatonic River. An estimated two acres of property comprise a causeway constructed in the 1930s to provide access to the river channel.

The Causeway was initially constructed and used as a means of launching seaplanes in the 1930s. Additional materials, of unknown origin, were deposited along the northern edge of the Causeway during the 1950s and 1960s. Building 59 was constructed to house the nose cones of missiles (without warheads), including the explosive charges used to open the nose cones. There is currently no unexploded ordnance present at the SAEP facility. The source of the fill used to construct the Causeway is unknown, but the fill contains soil, cobbles, and construction debris (e.g., concrete, brick, and asphalt). Smaller amounts of other material (e.g., wood and rebar) were also observed during field investigation activities.

The SAEP property is zoned as light commercial, and the 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 1995: The plant was transferred from the U.S. Air Force to the U.S. Army in 1976. At that time the plant was renamed 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 and develop and manufacture 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 AlliedSignal in 1994. AlliedSignal continued to develop, manufacture, and test turbine engines at the SAEP for both military and commercial aircraft and land vehicles until 1997.

1995: Responsibility for the jurisdiction, control, and accountability of SAEP was transferred from the U.S. Army Aviation and Troop command to the U.S. Army TACOM in September 1995. In October 1995, SAEP was placed on the BRAC list, known as BRAC 95. Pursuant to the Defense Base Closure and Realignment Act of 1990, the BRAC Environmental Restoration Program mandates that environmental contamination on BRAC properties be investigated and remediated, as necessary, prior to disposal and reuse.

1998: In August 1998, SAEP was transitioned from an active production facility to caretaker status. Since the cessation of AlliedSignal operations, the focus of activities at SAEP has been completion of an environmental assessment and cleanup of the site with the goal of future development.

Future land use at the site has been the subject of intensive study by the SAEP Local Redevelopment Authority (LRA). As reported in the "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, approximately 100,000 square feet of museum space and approximately 16 acres of parkland along the Housatonic River waterfront are proposed (RKG Associates, Inc., 1997). The approximately 16 acres of proposed parkland (i.e., recreational area) would include a landscaped park with pathways for pedestrians and bicyclists, public water access from a new dock located at the end of the former seaplane boat ramp at the end of the Causeway, and an off-street parking area.

2.2 GEOLOGY AND HYDROGEOLOGY

The shallow geology at SAEP is characterized by four distinct units: fill material, estuarine silt, reworked glacial outwash, and glacial outwash. Bedrock beneath SAEP has been identified as a black schist with greenstone. Results of the seismic refraction survey, coupled with soil boring information, indicate bedrock depths range from about 49 feet to 184 feet below ground surface beneath SAEP, which translates to elevations of approximately -50 to -175 feet MSL.

The Causeway consists of fill material that was originally deposited on the tidal flats of the Housatonic River during construction of the Causeway in the 1930s. The fill material consists of soil (i.e., coarse to fine sand), cobbles, and construction debris (e.g., metal, wood, rebar, asphalt, brick, and concrete). The depth of fill is approximately 10 to 12 feet throughout the Causeway, with lesser amounts in the low area just north of Building B-59. The thickness of the fill is greatest in the central portion of the Causeway, which coincides with the area of highest topographic relief. Below the Causeway fill material is very fine sand and silt overlying coarser sands. In general, the bedrock elevation in the vicinity of the Causeway is estimated to be approximately -95 to -120 feet MSL.

Groundwater flow at the SAEP is influenced by three surface water features: the Housatonic River, Frash Pond, and the drainage channel in the southern portion of SAEP. The primary influence is that of the Housatonic River. Groundwater flow in the northern half of SAEP is in the direction of the Housatonic River at low tide.

2.3 NATURE AND EXTENT OF CONTAMINATION

Soil samples collected during the 1999 pre-design investigation activities for the Causeway and Dike were analyzed for VOCs, SVOCs, PCBs, inorganics, and asbestos. Soil samples collected above the water table were also analyzed for inorganics by the Synthetic Precipitate Leaching Procedure (SPLP). Additionally, soil samples were collected on the Causeway by the CTDEP and AlliedSignal for radionuclide analysis.

The soil analytical data collected during the 1999 pre-design investigation activities for the Causeway and Dike were compared to the CTDEP RSR DEC and PMC. The Causeway is proposed for future use as a recreational area, and the groundwater associated with the SAEP is classified as a GB area. Therefore, the CTDEP RSR DEC for residential exposure and the GB PMC were used in the data evaluation. Soil analytical data for asbestos were compared to the residential standard established for another Total Environmental Restoration Contract (TERC) project (i.e., Raymark in Stratford, CT) of 1 percent total asbestos by the polarizing light microscope (PLM) method. The following paragraphs summarize the contamination assessment for the Causeway.

The greatest extent of soil with contaminant concentrations exceeding the CTDEP RSR DEC and PMC is largely confined to the northern one-third and southern one-third of the Causeway. The soil in the central one-third of the Causeway also has contaminant concentrations exceeding the CTDEP RSR DEC and PMC; however, the contamination is somewhat more limited.

The Causeway is approximately 2.2 acres in size, with an average depth of approximately 10 to 12 feet. Based on these dimensions, the total volume of Causeway fill material is approximately 43,000 cubic yards (cy).

The contaminants detected that exceed the CTDEP RSR DEC and PMC include chlorinated and fuel-related VOCs, SVOCs, PCBs, and inorganics. The concentrations of the contaminants detected and the CTDEP RSR DEC and PMC are presented on Figures 2-1 and 2-2.

At the suggestion of the CTDEP, additional soil sampling and analysis was conducted in areas of the Causeway where the initial soil data indicated that there were exceedances of the CTDEP RSR GB PMC. Soil samples were collected in May 2000, analyzed by the SPLP, and the data compared to 10-times the Groundwater Protection Criteria in accordance with the CTDEP RSR Section 22a-133k-2(c)(2)(D). Based on this data comparison, three discrete areas of the Causeway exceed the criteria of 10-times the Groundwater Protection Criteria. These areas are sample locations: CB-99-15 (0 to 2 feet below ground surface [bgs]), TP-DEP-12 (0 to 2 feet bgs), and TP-99-10 (1 to 3 feet bgs). The analytical data is presented in an addendum to the Final Pre-Design Investigation Report for the Causeway and Dike (Foster Wheeler/HLA, 2000a).

Previous investigations of the Causeway identified three isolated areas of elevated radiological readings. The sampling results indicated the presence of thorium-234, thorium-228, and radium-226. This low-level radiological-contaminated material was excavated in March 2000. The excavated material was containerized in thirty 55-gallon drums and transported to an appropriate off-site licensed treatment/disposal facility.

Results of the samples analyzed for asbestos content by the PLM method indicated that asbestos was not detected in 23 of the 27 samples collected. Four samples have a trace (less than 1 percent) (by PLM) visual estimate of asbestos content, which is less than the

residential standard of 1 percent total asbestos established for another TERC project (i.e., Raymark in Stratford, CT).

Preliminary results of groundwater data collected in November 1999 from the four monitoring wells installed in the Causeway indicate the presence of low concentrations of chlorinated VOCs and inorganic analytes. However, the concentrations of contaminants in groundwater are below the CTDEP RSR Surface Water Protection Criteria and the Volatilization Criteria. Groundwater associated with the Causeway will be addressed in the RI Report and Feasibility Study for the SAEP facility.

2.4 OTHER ACTIONS TO DATE

No previous CERCLA removal actions have been conducted at the Causeway. Low-level radiological-contaminated material was identified at three isolated locations in the Causeway fill material. This low-level radiological-contaminated material was excavated in March 2000. The excavated material was containerized in thirty 55-gallon drums and transported to an appropriate off-site licensed treatment/disposal facility.

2.5 PRELIMINARY RISK EVALUATION

A risk assessment is being conducted for surface and subsurface soils in the Causeway and Dike area as part of the RI for the SAEP facility. The baseline risk assessment assesses the potential risks associated with current and future exposure to contaminants at the site in the absence of any remedial action. The RI for the SAEP facility has not yet been completed. Therefore, the CTDEP RSR criteria will be used in the selection and implementation of removal actions at SAEP. The CTDEP has established RSR criteria for various media, including target concentrations for indoor air and criteria for soil, groundwater, and surface water. Detected contaminant concentrations have been compared to the RSR criteria, and the Causeway NCRA will address areas where contaminant concentrations in surface and subsurface soils exceed these criteria.

2.6 ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this decision document, may present an imminent and substantial endangerment to public health, welfare, or the environment.

3.0 REMOVAL ACTION ALTERNATIVES

This section provides a summary of the alternatives presented in the EE/CA prepared for the Causeway, and provides an overview of the removal action alternative selected for the Causeway NCRA. A more detailed description of the removal action alternatives evaluated for the Causeway is presented in the EE/CA (Foster Wheeler/HLA, 2000b).

3.1 ENGINEERING EVALUATION/COST ANALYSIS

An EE/CA was prepared for the Causeway NCRA, which addresses surface and subsurface soil (Foster Wheeler/HLA, 2000b). Groundwater associated with the Causeway will be addressed in the RI and Feasibility Study for the SAEP facility. The EE/CA was prepared in accordance with the USEPA guidance for preparing EE/CAs (USEPA, 1993) and complies with CERCLA and the NCP (USEPA, 1990).

The objective of the Causeway NCRA is to prevent exposure to contaminated soils in accordance with the CTDEP RSR DEC (residential exposure scenario) and prevent leaching of contaminants in soils where there are exceedances of the PMC (GB area). Due to the heterogeneous nature of the Causeway fill material and the large percentage of construction debris, treatment technologies, either in-situ or ex-situ, are not feasible for addressing the subsurface contamination present in the Causeway. Therefore, the general response actions considered in the EE/CA for this NCRA are containment and removal/disposal. The following removal action alternatives were evaluated in the EE/CA:

Alternative 1	Capping with Synthetic Geomembrane
Alternative 2	Capping with Composite Cover System and Vertical Barrier
Alternative 3	Excavation and Off-site Disposal
Alternative 4	Capping with Erosion Control Cover System

The evaluation of alternatives was conducted using the effectiveness, implementability, and cost criteria set forth in the NCP (USEPA, 1990) and USEPA guidance (USEPA, 1993). The evaluation and comparative analysis of alternatives is presented in the EE/CA (Foster Wheeler/HLA, 2000b). Based on the evaluation of alternatives, Alternative 4 – Capping with Erosion Control Cover System was selected as the proposed removal action alternative.

3.2 PROPOSED REMOVAL ACTION ALTERNATIVE

The following subsections provide a summary of the proposed removal action alternative for the Causeway NCRA, as presented in the EE/CA. A more detailed description and evaluation of this alternative are presented in the EE/CA (Foster Wheeler/HLA, 2000b).

3.2.1 Description of the Alternative

Alternative 4 - Capping with Erosion Control Cover System has been selected as the removal action alternative for the Causeway NCRA. The scope of this alternative includes the following components:

- Removal of contaminated soil hot spot areas;
- Demolition of Building 59 and other structures (concrete ramp and pad);
- Capping the Causeway with an erosion control cover system;
- Establishing environmental land use restrictions; and
- Conducting O&M activities.

Removal of contaminated soil hot spot areas. This removal action includes excavation of three contaminated soil hot spot areas where soil SPLP data exceeds the CTDEP RSR criteria of 10-times the Groundwater Protection Criteria. Approximately 250 cy of contaminated soil will be excavated from these hot spot areas and transported to an appropriate off-site licensed treatment/disposal facility. Soil confirmation sampling will be conducted in the excavated areas to verify that all contaminated soil at concentrations in excess of the CTDEP RSR criteria of 10-times the Groundwater Protection Criteria has been removed.

Demolition of Building 59 and other structures. Following removal of the contaminated soil hot spot areas, the Causeway will be re-graded by cutting and filling existing material to establish base grades. In addition, Building 59 and the concrete ramp and pad will be demolished prior to cover system construction. The concrete demolition debris will be disposed off-site or used as fill material during re-grading of the Causeway, prior to construction of the erosion control cover system.

Capping the Causeway with an erosion control cover system. The cover system, as presented in the EE/CA, consists of geotextile fabric placed on top of the re-graded Causeway surface, which will serve as an indicator layer between the Causeway fill material and the erosion control cover system. The erosion control cover system consists of riprap/stone armor over the entire Causeway surface; however, a smaller size material will be used for the top, center portion of the Causeway, which will provide a surface that will be more compatible with the proposed future use of the Causeway (e.g., public water access). In the future, if a walkway along the Causeway is desirable, gravel could be added to the top, center portion of the Causeway to fill the voids between the small size stone riprap, which will provide a better surface for public access.

The riprap/stone armor is provided to ensure protection of the Causeway from storm surge or wave action. The final elevation of the Causeway will not be above the 100-year flood elevation of 13 feet MSL; however, the riprap/stone armor over the Causeway will provide protection from storm surge or wave action during a 100-year storm event. It has been assumed that the 4-foot thick layer of riprap/stone armor on the side slopes of the

Causeway will require a maximum stone size of approximately 600 pounds. A smaller size riprap will be used for the top, center portion of the Causeway, and will consist of a layer 2-feet in thickness placed over a 2-foot thick layer of common borrow. A cross section of the erosion control cover system is provided on Figure 3-1.

Design issues associated with this removal action include settlement, slope and global stability, and erosion of the cover system due to tidal and storm surges. Pre-design activities will include geotechnical investigation and evaluation of settlement and stability. Additionally, further evaluation of the effects of the tidal river environment on the Causeway cover system will be conducted (e.g., size and thickness of the riprap/stone armor layer of the cover system to minimize potential future erosion). Following evaluation of these design details, a removal action design will be prepared with the intent to minimize, to the extent practical, the amount of encroachment into the intertidal flats of the Housatonic River and waterward of the high tide.

The design will also be prepared with consideration of alternative construction materials in lieu of the large riprap. These materials will be considered in an attempt to provide a surface layer that will be more compatible with the proposed future use of the Causeway as a recreational area.

Establishing environmental land use restrictions. In accordance with the CTDEP RSR, an environmental land use restriction will be required for the Causeway. The environmental land use restriction will establish restrictions on the future use of the Causeway to (1) prevent exposure to the contaminated Causeway fill material, and (2) maintain the integrity of the cover system that would be installed as part of this removal action.

Conducting O&M activities. An appropriate O&M program will be implemented to ensure that the cover system remains effective in the long term. O&M activities associated with this remedy will include monitoring and maintenance of the cover system to ensure the long-term integrity of the cover system. Because contaminated material will remain on-site, five-year site reviews will also be conducted. The U.S. Army TACOM is responsible for the jurisdiction, control, and accountability of the SAEP facility, as well as the O&M activities associated with this removal action.

3.2.2 Applicable or Relevant and Appropriate Requirements

The NCP requires that removal actions pursuant to CERCLA Section 106 attain Applicable or Relevant and Appropriate Requirements (ARARs) under federal or state environmental laws or facility citing laws to the extent practicable considering the urgency of the situation and the scope of the removal action.

ARARs are federal and state human health and environmental requirements and guidelines used to (1) evaluate the appropriate extent of site cleanup; (2) define and formulate removal action alternatives; and (3) govern implementation and operation of the selected action.

Only those promulgated state requirements identified by the state in a timely manner that are more stringent than federal requirements may be ARARs.

Under CERCLA Section 121(e), permits are not required for response actions conducted entirely on site. This permit exemption applies to administrative permit requirements (e.g., documentation, recordkeeping, and enforcement). However, compliance with the substantive requirements of applicable regulations must be achieved.

Because of their site-specific nature, identification of ARARs requires evaluation of federal, state, and local environmental and health regulations regarding chemicals of concern, site characteristics, and proposed remedial alternatives. Requirements that pertain to the remedial response at a CERCLA site can be categorized in three distinct areas: chemical-specific ARARs, location-specific ARARs, and action-specific ARARs.

Chemical-specific ARARs are numerical values or procedures that, when applied to a specific site, establish numerical limits for individual chemicals or groups of chemicals. These ARARs govern the extent of site remediation by providing either actual cleanup levels or the basis for calculating such levels. There are no promulgated federal standards for soil. However, the CTDEP RSR includes standards for soil remediation. Therefore, the CTDEP RSR, will govern the cleanup for this Causeway NCRA. The chemical-specific ARARs are presented in Table 3-1.

Location-specific ARARs set restrictions on the concentrations of hazardous substances or the performance of activities solely because they are in special locations. These ARARs set restrictions relative to special locations such as wetlands, floodplains, sensitive ecosystems, and historical or archeological sites, and provide a basis for assessing existing site conditions. The location-specific ARARs are presented in Table 3-2.

Action-specific ARARs, unlike chemical- or location-specific ARARs, are usually technology- or activity-based limitations that direct how removal actions are conducted. The applicability of this set of requirements is directly related to the particular activities selected for the site. The action-specific ARARs are presented in Table 3-3.

3.2.3 Contribution to Remedial Performance

This Causeway NCRA will prevent receptor exposure to contaminated soil at concentrations in excess of the CTDEP RSR DEC (residential exposure scenario) and PMC (GB area). This Causeway NCRA is expected to be the final remedy for the Causeway surface and subsurface soil. Groundwater associated with the Causeway will be addressed in the RI Report and Feasibility Study for the SAEP facility. It is anticipated that this Causeway NCRA will be consistent with any future remedy that may be necessary for groundwater associated with the Causeway.

This Causeway NCRA provides protection of human health and the environment primarily by (1) removal of contaminated soil hot spot areas where there is a concern

regarding the leaching and mobility of contaminants in the vadose zone; (2) engineering controls (i.e., cover system) to eliminate receptors from direct exposure to the contaminated Causeway fill material; and (3) institutional controls (i.e., environmental land use restrictions in accordance with CTDRP RSR) to establish restrictions on the future use of the Causeway and maintain the integrity of the cover system.

3.2.4 Project Schedule

Pre-design activities (e.g., geotechnical investigation and evaluation of settlement and stability) were initiated in September 2000. Evaluation of the data collected during the pre-design activities, as well as the removal action design, are anticipated to be completed between the fall of 2000 and early spring of 2001. Implementation of this Causeway NCRA is anticipated to commence in early spring/summer of 2001, and is estimated to be completed in approximately seven months, at which time the response objectives will be achieved.

3.2.5 Estimated Costs

The estimated cost for this Causeway NCRA is $3,976,220. This estimated 30-year net worth represents capital and O&M costs, which include monitoring and maintenance of the cover system and five-year site reviews. A summary of the cost estimate and the assumptions that formed the basis of the estimate are presented in the EE/CA (Foster Wheeler/HLA, 2000b). Funding for this Causeway NCRA will be provided through the U.S. Army Materiel Command.

3.2.6 Consequences of Delay or No Action

If this Causeway NCRA is delayed or not implemented, contaminants in the Causeway surface and subsurface soil will continue to be accessible to human and ecological receptors.

3.2.7 Outstanding Policy Issues and Enforcement

There are no outstanding policy or enforcement issues associated with this Causeway NCRA. The U.S. Army TACOM is responsible for the jurisdiction, control, and accountability of the SAEP facility, as well as the O&M activities associated with this removal action. Funding for this Causeway NCRA will be provided through the U.S. Army Materiel Command.

4.0 PUBLIC AND COMMUNITY INVOLVEMENT

The U.S. Army TACOM has kept the community and other interested parties apprised of SAEP activities through informational meetings, fact sheets, news letters, public meetings, and site tours, as well as Restoration Advisory Board meetings.

In accordance with Sections 300.415 and 300.820 of the NCP, a 30-day public comment period was held for the EE/CA prepared for the Causeway NCRA. The U.S. Army held the public comment period from September 25, 2000 through October 24, 2000. A public informational meeting was also conducted on September 28, 2000. The U.S. Army's responses to comments received during the public comment period are presented in the Responsiveness Summary provided as Appendix A of this decision document.

5.0 DECLARATION

This decision document represents the selected remedy for the Causeway NCRA at the SAEP, in Stratford, Connecticut, developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. The U.S. Army Materiel Command has selected this NCRA with support from the USEPA and the CTDEP. This decision document is based on the Administrative Record for the site.

The selected remedy for this Causeway NCRA is construction of an erosion control cover system. This remedy also includes removal of contaminated soil hot spot areas, establishing environmental land use restrictions, and conducting O&M activities. This remedy will achieve the removal action objectives identified in the EE/CA: (1) construction of the erosion control cover system will prevent receptors from direct exposure to contaminated soil at concentrations in excess of the CTDEP RSR DEC (residential exposure scenario) and (2) removal of soil hot spot areas will prevent leaching of contaminants in soils at concentrations in excess of the CTDEP RSR PMC (GB area) or 10-times the Groundwater Protection Criteria.

The selected remedy is protective of human health and the environment, attains federal and state requirements that are applicable or relevant and appropriate to this removal action, and is cost effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable for this site. Due to the heterogeneous nature of the Causeway fill material and large percentage of construction debris, in-situ or ex-situ treatment technologies were determined not to be feasible for addressing subsurface contamination present in the Causeway. Therefore, because treatment of the principal threats of the site was not found to be practicable, this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy.

Because this remedy will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years after commencement of this removal action to ensure that the remedy continues to provide adequate protection of human health and the environment.

6.0 APPROVAL AND SIGNATURE

Conditions at the Causeway meet the criteria for a removal action as identified in Section 300.415(b)(2) of the NCP. Therefore, the removal action presented in this decision document is recommended for the Causeway at SAEP. This decision is based on the Administrative record for the Site.

The selected remedy for this Causeway NCRA is construction of an erosion control cover system, which also includes removing contaminated soil hot spots areas, establishing environmental land use restrictions, and conducting O& M activities. The estimated cost for this Causeway NCRA $3,976,220.

CHRISTOPHER J YOUNG
COL, GS
Deputy Chief of Staff
for Installations

27 Feb 2001
DATE

Stratford Army Engine Plant
And
United States Army Tank-automotive and Armaments Command

Review and Concurrence

Document Preparation: John R. Burleson, BRAC Environmental Coordinator, SAEP

I have reviewed the final document and concur with the findings and need for response action.

John R. Burleson
BRAC Environmental Coordinator
Stratford Army Engine Plant
USATACOM

1/22/2001
Date

MSC Review:

I have reviewed the Decision Document for a Non-time Critical Removal Action for the Causeway and concur with the findings and need for response action.

Violet Kristoff
TACOM Attorney-Advisor

1-24-01
Date

I have reviewed the Decision Document for a Non-time Critical Removal Action for the Causeway and concur with the findings and need for response action.

Robert A. Kaspari
TACOM BRAC Program Manager

1/25/01
Date

ARAR	Applicable or Relevant and Appropriate Requirement
AVCO	Avco Corporation
BRAC	Base Closure and Realignment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CTDEP	Connecticut Department of Environmental Protection
cy	cubic yard
DEC	Direct Exposure Criteria
EE/CA	Engineering Evaluation/Cost Analysis
Foster Wheeler	Foster Wheeler Environmental Corporation
HLA	Harding Lawson Associates
LRA	Local Redevelopment Authority
MSL	mean sea level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NCRA	Non-Time-Critical Removal Action
O&M	operation and maintenance
PCB	polychlorinated biphenyl
PLM	polarizing light microscope
PMC	Pollutant Mobility Criteria
RI	Remedial Investigation
RSR	Remediation Standard Regulation
SAEP	Stratford Army Engine Plant
SPLP	Synthetic Precipitate Leaching Procedure
SVOC	semivolatile organic compound
TACOM	Tank-automotive and Armaments Command (U.S. Army)
TERC	Total Environmental Restoration Contract
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

Foster Wheeler Environmental Corporation/Harding Lawson Associates (Foster Wheeler/HLA), 2000a. "Final Pre-Design Investigation Report for the Causeway and Dike". Prepared for the U.S. Army Corps of Engineers, April 2000.

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URS Grenier Woodward Clyde Federal Services, 2000. "Draft Remedial Investigation Report". Prepared for the U.S. Army Corps of Engineers, March 2000.

U.S. Environmental Protection Agency (USEPA), 1990. "National Oil and Hazardous Substances Pollution Contingency Plan". 40 CFR Part 300, March 1990.

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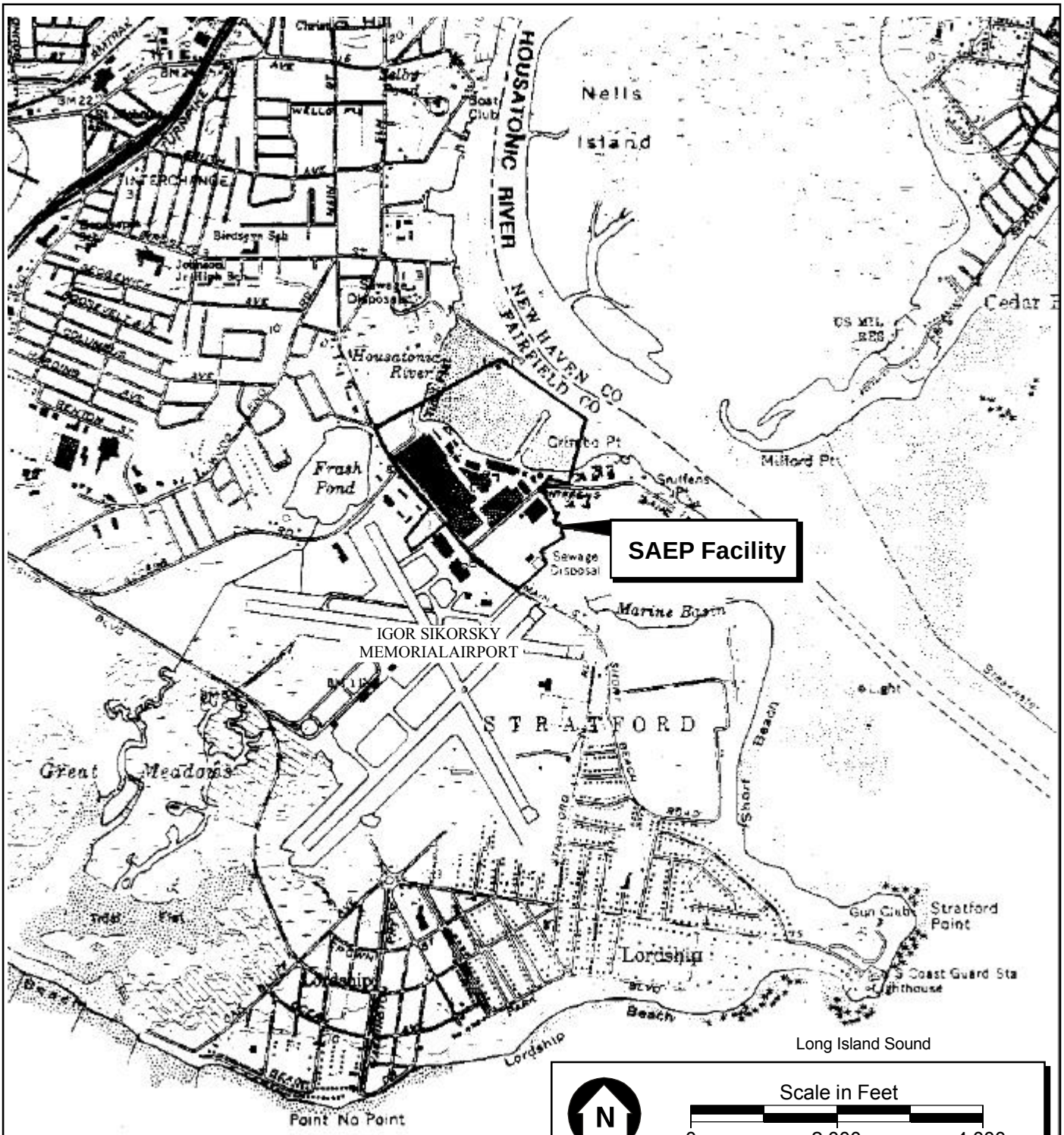

Harding ESE
A MACTEC COMPANY

SITE LOCATION MAP

STRATFORDARMYENGINEPLANT
STRATFORD,CONNECTICUT

DECISIONDOCUMENT

47254

FIGURE 1-1

W9909003(a) 2

NOTES:
1. MAP IS IN CONNECTICUT STATE PLANE COORDINATES.
2. BASE MAP SOURCE: ALLIEDSIGNAL, INC.
3. ALL ELEVATION CONTOURS ARE INTERPRETIVE AND APPROXIMATE. CONTOUR INTERVAL IS 1 FOOT.

N

0 40 80 160 FEET

SCALE: 1"=80'

CB-99-14		1'-3'/1'-3' DUP
Benzo(a)Anthracene	1	1.5/2.2
Benzo(a)Pyrene	1	2.3/3.3
Benzo(b)Fluoranthene	1	2.4/3.2
Indeno(1,2,3-CD)Pyrene	1	2.2/2.6

CB-99-15		1'-3'
Benzo(a)Anthracene	1	50
Benzo(a)Pyrene	1	43
Benzo(b)Fluoranthene	1	35
Benzo(k)Fluoranthene	8.4	32J
Indeno(1,2,3-CD)Pyrene	1	30

TP-99-10		3'-5'
Aroclor-1260	1	1.8
Arsenic	10	10.7
Benzo(a)Anthracene	1	9.4
Benzo(a)Pyrene	1	8
Benzo(b)Fluoranthene	1	7.2
Indeno(1,2,3-CD)Pyrene	1	4.8

TP-DEP-11		0-1'
Aroclor-1260	1	1.6
Arsenic	10	11.7
Beryllium	2	13.1
Cadmium	34	94.7
Hexachlorobenzene	1	1.4
Lead	500	1510J
Thallium	5.4	6.6
Vanadium	470	2640

CB-99-16		1'-3'
Arsenic	10	15.7
Lead	500	721J

CB-99-11		0'-2'
Beryllium	2	2.6

TP-DEP-12		1'-3'
Beryllium	2	3.9
Vanadium	470	970
Vinyl Chloride	0.32	1.9J

CB-99-08		1'-3'/1'-3' DUP	3'-5'
Arsenic	10	34.5/19.8	--
Beryllium	2	2.3/2.3	2.1
Cadmium	34	43.9/--	--
Lead	500	1380J/1250	--
Thallium	5.4	8.3/5.4	5.4

CB-99-07		0'-2'/0'-2' DUP
Arsenic	10	10.7/10.9

CB-99-02		0'-2'
Aroclor-1260	1	2.1

TP-99-23		1'-3'
Aroclor-1260	1	2.2

CB-99-05		0'-2'
Beryllium	2	3.2

TP-99-22		1'-3'
Aroclor-1016	1	1.7J
Aroclor-1260	1	1.2J

MWCD-99-02A
MWCD-99-02B
CONCRETE RAMP (BADLY DETERIORATED)
CONCRETE PAD & CHAIN LINK FENCE
TP-DEP-17
SIGN
CB-99-17
CB-99-15
CB-99-14
SF-1
CB-99-13
TP-DEP-15
CB-99-16
CB-99-12
CB-99-11
FENCE
TP-99-10
SF-3
SF-2
SIGN
TP-DEP-12
TP-99-26
CB-99-08
SF-5
TP-DEP-11
SF-4
10
CAUSEWAY
CB-99-07
TP-99-06
FILL AREA
SF-6
SIGN
SF-7
9
8
7
TP-99-24
CB-99-05
SF-9
6
SF-8
TIDAL FLATS
CB-99-03
CB-99-04
CB-99-02
SF-10
MWCD-99-01A
MWCD-99-01B
CB-99-09
TP-99-23
7
TP-99-22
TP-99-25
END OF DIKE RIPRAP
END OF DIKE RIPRAP
B-59
BLACKTOP PATHWAY
8
9
CB-99-01
10
DB-99-07
11
DB-99-08
DB-99-06
DIKE RIPRAP
BLACKTOP PATHWAY
B-40
DB-99-05
DB-99-04
DB-99-03
DB-99-02
HA-99-03
HA-99-02
B-16
B-34
B-33
B-19

LEGEND

SF-1	EXISTING WOODWARD-CLYDE ASBESTOS SURFACE SOIL SAMPLING LOCATION (APPROXIMATE)
MWCD-99-01A	EXISTING HLA CAUSEWAY/DIKE MONITORING WELLS
TP-99-22	EXISTING HLA TEST PIT LOCATIONS
CB-99-01	EXISTING HLA CAUSEWAY BORING
DB-99-01	EXISTING HLA DIKE BORING
HA-99-01	EXISTING HAND AUGERS
B-53	BUILDING DESIGNATIONS
———	CHAINLINK FENCE
— — —	SAEP PROPERTY BOUNDARY

DUP	DUPLICATE SAMPLE
--	LESS THAN REPORTING EXCEEDANCES
J	VALUE IS ESTIMATED
BGS	BELOW GROUND SURFACE

LOCATION IDENTIFIER →	CB-99-07		0'-2'/0'-2' DUP ← SAMPLING INTERVAL (BGS)
COMPOUND →	Arsenic	10 ← REMEDIATION STANDARD REGULATION (RSR) CRITERION	10.7/10.9 ← CONCENTRATION (mg/kg)

ALL CONCENTRATIONS REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

FIGURE 2-1
EXCEEDANCES OF DIRECT EXPOSURE CRITERIA FOR SOIL
CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION DECISION DOCUMENT
STRATFORD ARMY ENGINE PLANT

Harding Lawson Associates

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NOTES:
1. MAP IS IN CONNECTICUT STATE PLANE COORDINATES.
2. BASE MAP SOURCE: ALLIEDSIGNAL, INC.
3. ALL ELEVATION CONTOURS ARE INTERPRETIVE AND APPROXIMATE. CONTOUR INTERVAL IS 1 FOOT.

N

0 40 80 160 FEET

SCALE: 1"=80'

CB-99-15		1'-3'	7'-9'
Acenapthene	84	--	190
Anthracene	400	--	520J
Benzo(a)Anthracene	1	50	1200J
Benzo(a)Pyrene	1	43	880J
Benzo(b)Fluoranthene	1	35	940J
Benzo(k)Fluoranthene	1	32J	880J
Carbazole	1	6.9	310
Chrysene	1	46	1,200
Dibenzofuran	5.6	6.9	130
Fluoranthene	56	120	2700
Fluorene	56	--	250J
Indeno(1,2,3-CD)Pyrene	1	30	350
Naphthalene	56	--	97J
Phenanthrene	40	100	2400
Pyrene	40	93	1800J

CB-99-14		1'-3'/1'-3' DUP
Benzo(a)Anthracene	1	1.5/2.2
Benzo(a)Pyrene	1	2.3/3.3
Benzo(b)Fluoranthene	1	2.4/3.2
Benzo(k)Fluoranthene	1	1.4/2.9
Chrysene	1	1.6/2.4
Indeno(1,2,3-CD)Pyrene	1	2.2/2.6

CB-99-12		8'-10'
Benzo(a)Anthracene	1	22J
Benzo(a)Pyrene	1	19J
Benzo(b)Fluoranthene	1	17J
Benzo(k)Fluoranthene	1	18J
Chrysene	1	20
Dibenz(a,b)Anthracene	1	8.1
Fluoranthene	56	58
Phenanthrene	40	60
Pyrene	40	46

CB-99-13		7'-9'/7'-9' DUP
Tetrachloroethene	1	37/28

TP-99-10		3'-5'
Benzo(a)Anthracene	1	9.4
Benzo(a)Pyrene	1	8
Benzo(b)Fluoranthene	1	7.2
Benzo(k)Fluoranthene	1	7.2
Carbazole	1	1.6
Chrysene	1	9.2
Indeno(1,2,3-CD)Pyrene	1	9.2
Tetrachloroethene	1	2.1J
Trichloroethene	1	2.3J

CB-99-11		0'-2'
Benzo(k)Fluoranthene	1	1.1J
Trichloroethene	1	2J

TP-DEP-12		1'-3'
Trichloroethene	1	4J
Vanadium	0.5	1.07
Vinyl Chloride	0.4	1.9J

CB-99-08		1'-3'/1'-3' DUP
Trichloroethene	1	--/8.4J

TP-DEP-11		0'-1'
Hexachlorobenzene	1	1.4
Tetrachloroethene	1	2.9
Trichloroethene	1	8.8
Vanadium	0.5	0.807

CB-99-04		0'-2'	5'-7'
Tetrachloroethene	1	--	2.7J
Trichloroethene	1	3.4J	1.2J
Vinyl Chloride	0.4	--	24
cis-1,2-Dichloroethene	14	--	120

CB-99-03		2'-4'/2'-4' DUP	4'-6'
2-Methylnapthalene	9.8	--	45
Methylene Chloride	1	1J/3.3J	--
Vanadium	0.5	--	5.92

TP-99-06		6'-8'
Trichloroethene	1	1.2J
Aroclor-1260	1	11

CB-99-02		5'-7'
Methylene Chloride	1	--
Tetrachloroethene	1	81
Trichloroethene	1	4.3J
cis-1,2-Dichloroethene	14	100

CB-99-09		10'-12'
Benzo(a)Anthracene	1	1.2J
Benzo(a)Pyrene	1	1J
Benzo(b)Fluoranthene	1	1J
Crysene	1	1.3

CB-99-01		0'-2'	9'-11'
Methylene Chloride	1	1.4	1.9
Trichloroethene	1	--	3J

MWCD-99-02A
MWCD-99-02B
CONCRETE RAMP (BADLY DETERIORATED)
CONCRETE PAD & CHAIN LINK FENCE
TP-DEP-17
SIGN
CB-99-17
CB-99-15
CB-99-14
SF-1
TP-DEP-15
CB-99-16
CB-99-13
CB-99-12
CB-99-11
FENCE
SF-2
SF-3
TP-99-10
SIGN
TP-DEP-12
TP-99-26
SF-5
TP-DEP-11
CB-99-08
SF-4
10
CAUSEWAY
CB-99-07
TP-99-06
FILL AREA
SF-6
SIGN
SF-7
9
8
TP-99-24
7
CB-99-05
SF-8
6
SF-9
CB-99-03
CB-99-04
CB-99-02
SF-10
MWCD-99-01A
MWCD-99-01B
CB-99-09
TP-99-23
TP-99-22
TP-99-25
END OF DIKE RIPRAP
END OF DIKE RIPRAP
TIDAL FLATS
B-59
BLACKTOP PATHWAY
8
9
CB-99-01
10
11
DB-99-07
DB-99-08
DB-99-06
DIKE RIPRAP
BLACKTOP PATHWAY
B-40
B-16
B-34
B-33
DB-99-05
DB-99-04
DB-99-03
DB-99-02
HA-99-03
HA-99-02
B-19

LEGEND

- SF-1 — EXISTING WOODWARD-CLYDE ASBESTOS SURFACE SOIL SAMPLING LOCATION (APPROXIMATE)
- MWCD-99-01A — EXISTING HLA CAUSEWAY/DIKE MONITORING WELLS
- TP-99-22 — EXISTING HLA TEST PIT LOCATIONS
- CB-99-01 — EXISTING HLA CAUSEWAY BORING
- DB-99-01 — EXISTING HLA DIKE BORING
- HA-99-01 — EXISTING HAND AUGERS
- B-53 — BUILDING DESIGNATIONS
- CHAINLINK FENCE
- SAEP PROPERTY BOUNDARY

DUP — DUPLICATE SAMPLE
-- — LESS THAN REPORTING EXCEEDANCES
J — VALUE IS ESTIMATED
BGS — BELOW GROUND SURFACE

LOCATION IDENTIFIER → CB-99-15		0'-2'/0'-2' DUP ← SAMPLING INTERVAL (BGS)
COMPOUND → Acenapthene	84 ← REMEDIATION STANDARD REGULATION (RSR) CRITERION	10.7/10.9 ← CONCENTRATION (mg/kg)

ALL CONCENTRATIONS REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

FIGURE 2-2
EXCEEDANCES OF GB POLLUTANT MOBILITY CRITERIA
CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION DECISION DOCUMENT
STRATFORD ARMY ENGINE PLANT

Harding Lawson Associates

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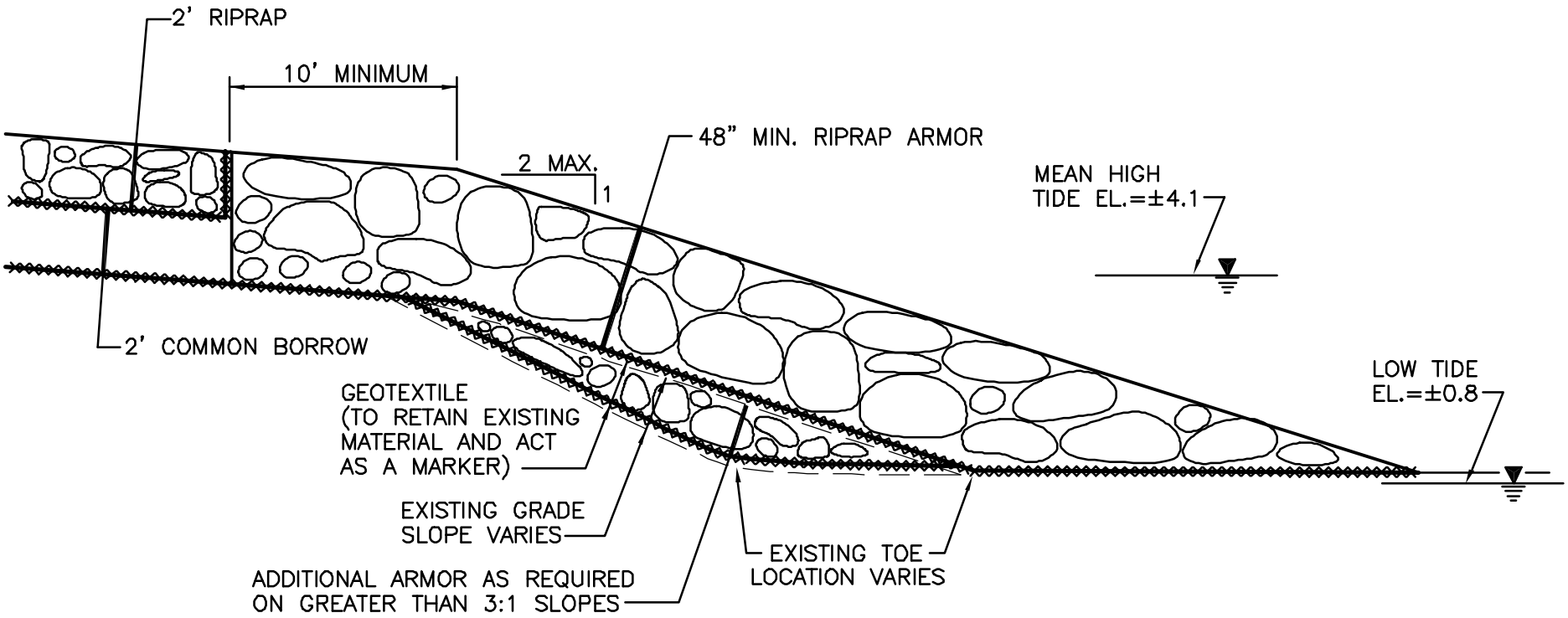

EROSION CONTROL COVER SYSTEM

N.T.S.

FIGURE 3-1
CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION
DECISION DOCUMENT
STRATFORD ARMY ENGINE PLANT
Harding Lawson Associates

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TABLE 3-1
CHEMICAL-SPECIFIC ARARS CRITERIA, ADVISORIES, AND GUIDANCE

CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION
DECISION DOCUMENT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARAR
SOIL/SEDIMENT				
State	Connecticut Department of Environmental Protection (CTDEP) Remediation Standard Regulations (CGS § 22a-133k; RCSA §§ 22a-133k-1 through 22a-133k-3)	Applicable	Remediation standards have been promulgated for several common organic and inorganic contaminants. These levels regulate the concentration of contaminants in soil and (RCSA §§ 22a-133k-2 and 22a-133k-3, and Appendices A and B).	Areas of shallow soil where contaminant concentrations exceed the Pollutant Mobility Criteria will be excavated, and the contaminated soil will be transported to an off-site treatment/disposal facility.
			RCSA § 22a-133k-1(a)(28) allows the use of a cover system or structure to render underlying contaminated soil inaccessible.	The erosion control cover system consists of riprap/stone armor (i.e., large rocks weighing approximately 600 pounds) that will provide a permanent structure to render the contaminated soil inaccessible
	CTDEP Environmental Land Use Restrictions (CGS §§ 22a-133n through 22a-133r; RCSA § 22a-133q)	Applicable	In conjunction with rendering contaminated soil inaccessible, an environmental land use restriction must be implemented in accordance with RCSA § 22a-133q-1.	An environmental land use restriction will be implemented to establish restrictions on the future use of the Causeway to prevent receptor exposure to contaminated Causeway fill material and to maintain the integrity of the cover system.

Notes:
ARAR = Applicable or Relevant and Appropriate Requirement
CGS = Connecticut General Statutes
CTDEP = Connecticut Department of Environmental Protection
RCSA = Regulations of Connecticut State Agencies

There are no promulgated federal standards for soil. Therefore, no chemical-specific ARARs have been identified for the Causeway Non-Time-Critical Removal Action.

TABLE 3-2
LOCATION-SPECIFIC ARARS, CRITERIA, ADVISORIES, AND GUIDANCE

CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION
DECISION DOCUMENT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARAR
WETLAND/FLOODPLAINS				
Federal	Protection of Wetlands - Executive Order 11990 (40 CFR 6, Appendix A)	Applicable	Under this order, federal agencies are required to minimize the destruction, loss, or degradation of wetlands and preserve and enhance natural and beneficial values of wetlands.	These requirements will be met during the development of alternatives. If no practicable alternative exists, potential harm will be minimized and action taken to restore the natural and beneficial values of the wetland. In addition, remedial activities will be designed to minimize impacts to the wetlands.
	Flood Plains Management – Executive Order 11988 (40 CFR 6, Appendix A)	Applicable	Under this order, federal agencies are required to avoid long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid support of floodplain development wherever there is a practicable alternative.	These requirements will be met during the development of alternatives. If no practicable alternative exists, potential adverse impacts will be minimized and action taken to restore the floodplain. In addition, remedial activities will be designed to minimize adverse impacts on the floodplains.
	Clean Water Act (CWA) Section 404(b)(i) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR 230; 33 CFR Parts 320-330)	Applicable	Section 404 of the CWA regulates the discharge of dredged or fill material into U.S. waters, including wetlands. The purpose of Section 404 is to ensure that proposed discharges are evaluated with respect to impact on the aquatic ecosystem.	Placement of fill material required to construct a cover system on the Causeway will be conducted to minimize impacts to the Housatonic River, tidal flats, and ecological receptors.
	Rivers and Harbors Act of 1899 (33 USC 403)	Relevant and Appropriate	Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), for the construction of any structure in or over any "navigable water of the U.S.", the excavation from or deposition of material in such waters, or any obstruction or alteration in such waters.	Permits are not required for on-site actions conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). However, the action taken will comply with the substantive requirements of this act.
	Coastal Zone Management Act (16 USC 1451, et seq.)	Applicable	The Coastal Zone Management Act requires activities affecting the coastal zone, including lands therein and thereunder and adjacent shorelands, be conducted in accordance with approved state management programs.	Remedial activities will be conducted to minimize impacts on natural coastal resources including the potential impact of coastal flooding and erosion, and damage to and destruction of life and property.

TABLE 3-2
LOCATION-SPECIFIC ARARS, CRITERIA, ADVISORIES, AND GUIDANCE

CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION
DECISION DOCUMENT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARAR
State	Inland Wetlands and Watercourses Act (CGS §§ 22a-36 through 22a-45a; RCSA §§ 22a-39-1 through 22a-39-15)	Applicable	This act requires that actions be taken to protect, preserve, and maintain inland wetlands and watercourses, including protecting the quality of the wetlands and watercourses for their conservation, economic, aesthetic, recreational, and other public and private uses and values.	Remedial activities will be conducted to minimize disturbance of wetlands and watercourses, prevent loss of beneficial aquatic organisms, wildlife, and vegetation, and prevent destruction of natural habitats.
	Tidal Wetlands Act (CGS §§ 22a-28 through 22a-35; RCSA §§ 22a-30-1 through 22a-30-17)	Applicable	Activities within or affecting tidal wetlands are regulated.	Remedial activities will be conducted to minimize impacts to tidal wetlands and intertidal flats of the Housatonic River.
	Flood Management (CGS §§ 25-68b through 25-68h; RCSA §§ 25-68h-1 through 25-68h-3)	Applicable	This requirement regulates activities in floodplains to minimize flood risk and prevent flood hazards.	Remedial activities will be conducted to minimize impacts on natural coastal resources including the potential impact of coastal flooding and erosion, and damage to and destruction of life and property.
	Regulation of Dredging and Erection of Structures and Placement of Fill in Tidal, Coastal, or Navigable Waters (CGS §§ 22a-359 through 22a-363(f))	Applicable	This requirement regulates dredging, the erection of structures, and placement of fill in tidal, coastal, or navigable waters waterward of the high tide line.	Placement of fill material required to construct a cover system on the Causeway will be conducted to minimize impacts to the Housatonic River, tidal flats, and ecological receptors.
	Coastal Management Act (CGS §§ 22a-90 through 22a-112)	Applicable	This act requires that actions be taken to insure that the development, preservation, or use of land and water resources of the coastal area is conducted without significantly disrupting either the natural environment or sound economic growth.	Remedial activities will be conducted to minimize adverse impacts on natural coastal resources, including the potential impact of coastal flooding and erosion, and damage to and destruction of life and property.
OTHER NATURAL RESOURCES				
Federal	Fish and Wildlife Coordination Act (16 USC 661; 40 CFR 6.302)	Relevant and Appropriate	This act requires that any federal agency proposing to modify a body of water must consult with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and other related state agencies.	Notification is not required for on-site actions conducted under CERCLA. However, actions will be taken to minimize impacts to wetlands.
	National Historic Preservation Act (16 USC 470, et seq.)	Applicable	This act requires that actions be taken to preserve historic properties, recover and preserve artifacts, and minimize harm to National Historic Landmarks.	Remedial activities will comply with these requirements.

TABLE 3-2
LOCATION-SPECIFIC ARARS, CRITERIA, ADVISORIES, AND GUIDANCE

CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION
DECISION DOCUMENT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARAR

Notes: ARAR = Applicable or Relevant and Appropriate Requirement
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
CGS = Connecticut General Statutes
CWA = Clean Water Act
RCSA = Regulations of Connecticut State Agencies
USACE = United States Army Corps of Engineers
USC = United States Code

TABLE 3-3
ACTION-SPECIFIC ARARS, CRITERIA, ADVISORIES, AND GUIDANCE

CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION
DECISION DOCUMENT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARAR
AIR				
Federal	CAA National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR Part 61, Subpart M)	Relevant and Appropriate	This requirement provides emission standards for specific pollutants for which no ambient air quality standard exists. NESHAPs have been promulgated for specific source types emitting certain pollutants, including asbestos. Subpart M establishes standards for inactive waste disposal sites and disposal of asbestos-containing material from demolition and renovation operations.	Although these standards do not directly apply to the asbestos-containing material in subsurface soil on the Causeway, these standards will be considered during design and implementation of remedial activities.
State	Connecticut Department of Environmental Protection (CTDEP) Abatement of Air Pollution (CGS Title 22a, Chapter 446c; RCSA §§ 22a-174-1, et seq.)	Applicable	These regulations require permits to construct and to operate specified types of emission sources and contain emission standards that must be met prior to issuance of a permit. Pollutant abatement controls may be required. Specific standards pertain to fugitive dust (RCSA § 22a-174-18(b)) and control of odors (RCSA § 22a-174-23)	Emission standards for fugitive dust will be met with dust control measures during excavation and transportation of contaminated Causeway fill material to comply with substantive requirements.
	Noise Pollution Control Act (CGS § 22a-69; RCSA §§ 22a-69-1 through 69-7.4)	Applicable	These regulations establish allowable noise levels.	Remedial activities will be conducted to comply with these regulations.

TABLE 3-3
ACTION-SPECIFIC ARARS, CRITERIA, ADVISORIES, AND GUIDANCE

CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION
DECISION DOCUMENT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARAR
SURFACE WATER				
Federal	Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) (40 CFR Parts 122, 125, 131, and 136)	Applicable	This rule requires permits for the discharge of pollutants from any point source into U.S. waters.	Excavation dewatering fluids will be routed through the on-site Oil Abatement Treatment Plant (OATP) prior to discharge to surface water. Effluent will meet the OATP discharge limitations, monitoring requirements, and best management practices.
State	Water Pollution Control Act (CGS §§ 22a-416 through 22a-438; RCSA §§ 22a-430-1 through 22a-430-7)	Applicable	This act requires permits for any discharge of water, substance, or material into the waters of the state.	Excavation dewatering fluids will be routed through the on-site OATP prior to discharge to surface water. This activity will be conducted in accordance with the requirements of this act (e.g., monitoring requirements and discharge limitations).
SOIL/WASTE MATERIAL				
Federal	RCRA Identification and Listing of Hazardous Waste; Toxicity Characteristic (40 CFR 261.24)	Applicable	This requirement defines those wastes that are subject to regulation as hazardous waste under 40 CFR Parts 124 and 264.	Analytical results will be evaluated against the criteria and definitions of hazardous waste. The criteria and definition of hazardous waste will be referred to and utilized in development of alternatives and during remedial actions.
	RCRA Standards Applicable to Generators of Hazardous Waste (40 CFR Part 262)	Applicable	These standards govern storage, labeling, accumulation times, and disposal of hazardous waste.	Any hazardous waste generated during remedial activities will be managed in accordance with these standards.

TABLE 3-3
ACTION-SPECIFIC ARARS, CRITERIA, ADVISORIES, AND GUIDANCE

CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION
DECISION DOCUMENT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARAR
	RCRA Container Storage Requirements (40 CFR Part 264, Subpart I)	Applicable	These requirements apply to owners and operators of facilities that use container storage to store hazardous waste.	If containers are used to store materials that are hazardous wastes, the containers will be managed according to these rules.
	RCRA Subtitle C, Subpart G – Closure and Post-Closure (40 CFR 264.110 – 264.120)	Relevant and Appropriate	This regulation details general requirements for closure and post-closure of hazardous waste facilities, including installation of a groundwater monitoring program.	Design and construction of the Causeway cover system will be conducted to minimize the need for further maintenance of the cover system. A monitoring and maintenance program will be implemented to ensure that the cover system remains protective of human health and the environment.
State	CTDEP Hazardous Waste Management (CGS §§ 22a-454 and 22a-449(c); RCSA §§ 22a-449(c)-100 through 110 and 22a-449(c)-11)	Relevant and Appropriate	This regulation specifies requirements for the design, operation, and closure of hazardous waste disposal facilities. This regulation incorporates by reference the RCRA requirements for hazardous waste facilities.	Management of any hazardous wastes generated during remedial activities will meet the minimum standards of this regulation.
	Guidelines for Soil Erosion and Sediment Control; The Connecticut Council on Soil and Water Conservation	To Be Considered	These guidelines provide technical and administrative guidance for the development, adoption, and implementation of erosion and sediment control program.	These guidelines will be incorporated into the remedial design for the Causeway. Erosion and sediment control measures will be implemented during excavation and cover system construction activities.

TABLE 3-3
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CAUSEWAY NON-TIME-CRITICAL REMOVAL ACTION
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STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARAR

Notes:

ARAR	=	Applicable or Relevant and Appropriate Requirement
CAA	=	Clean Air Act
CFR	=	Code of Federal Regulations
CGS	=	Connecticut General Statutes
CTDEP	=	Connecticut Department of Environmental Protection
CWA	=	Clean Water Act
NESHAP	=	National Emission Standards for Hazardous Air Pollutants
NPDES	=	National Pollutant Discharge Elimination System
OATP	=	Oil Abatement Treatment Plant
RCRA	=	Resource Conservation and Recovery Act
RCSA	=	Regulations of Connecticut State Agencies
TSDF	=	treatment, storage, and disposal facility

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

This Responsiveness Summary has been prepared to meet the requirements of Section 113(k)(2) of the Comprehensive Environmental Response, Compensation, and Liability Act and Section 300.415(m) of the National Oil and Hazardous Substances Pollution Contingency Plan, which provide for involving communities affected by response decisions at Superfund sites. The purpose of this Responsiveness Summary is to document the U.S. Army's responses to questions and comments expressed during the public comment period for the Engineering Evaluation/Cost Analysis (EE/CA) for the Causeway and Dike at the Stratford Army Engine Plant (SAEP).

The EE/CA was presented at the Restoration Advisory Board meeting in August 2000.

From September 25, 2000 through October 24, 2000, the U.S. Army Tank-automotive and Armaments Command (TACOM) conducted a 30-day public comment period to accept public comments on the proposed removal action alternative presented in the EE/CA. On September 28, 2000, the U.S. Army TACOM conducted an open house and poster board session at SAEP to provide information to the public about the EE/CA, which was attended by approximately 32 people.

Written comments received during the public comment period and the U.S. Army's responses are presented in the attached Response to Comments.

RESPONSE TO COMMENTS ON THE FINAL CAUSEWAY & DIKE ENGINEERING EVALUATION/COST ANALYSIS (DATED SEPTEMBER 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 ESE

January 2001

RESPONSE TO COMMENTS ON THE
FINAL CAUSEWAY & DIKE ENGINEERING EVALUATION/COST ANALYSIS
(DATED SEPTEMBER 2000)
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

Comment # Comment/Response

Local Reuse Authority Comments (dated October 24, 2000) on the Final EE/CA Report Causeway & Dike, SAEP, Stratford, CT

In addition to the human health and the environmental issues, which are addressed in the EE/CA, the LRA is still very interested in its ability to use the Causeway and Dike for the purposes described in the 1997 Redevelopment Plan and the EDC Application. The product of the EE/CA, therefore, is critical to the LRA's plans for its intended use, which is open green space for passive recreation.

SPECIFIC COMMENTS

1. **Comment:** Page. ES-1, Para. 1, states that "the Draft RI Report is scheduled to be submitted in the summer of 2000". What is the status of the report and when will it be available to the LRA for review?

   Response: As of January 2001, the Draft RI Report is in regulatory agency review. Once the RI has been finalized, it will become part of the Administrative Record and will be available to the LRA for review.

2. **Comment:** Pg. ES-1, Para. 3. The SAEP is in an MA (light industrial) zone.

   Response: Comment noted.

3. **Comment:** Pg. ES-2, Para. 4. Same comment as number 1 regarding the RI report.

   Response: See response to Comment 1.

4. **Comment:** Pg. ES-3, Para. 1. The second sentence states, "exceedances were detected in three isolated hand auger explorations on the south face and edge of the Dike". It goes on to say, that because these locations are not within the dike they will be addressed by the Feasibility Study. When will the Feasibility Study be available for review by the LRA? Lack of characterization of these areas could cause problems with open space design.

   Response: Preparation of the Feasibility Study will commence once the RI Report is finalized and the decision documents for the Causeway and Dike and OU 2 non-time-critical removal actions have been completed. As of January 2001, a specific schedule for the Feasibility Study has not been developed.

Comment # Comment/Response

5. **Comment:** Pg. 2-1, Section 2.1.2, Para. 1. The SAEP is in an MA (light industrial) zone.

Response: Comment noted.

6. **Comment:** Pg. 2-4, Sect. 2.1.4.1. Introductory paragraph lists peat as a character of the shallow geology of the SAEP, but the following paragraphs do not describe its relevance to the geology.

Response: Peat has been encountered mainly in the southern portion of SAEP, near the former lagoons. This area has no relevance to the geology associated with the Causeway and Dike.

7. **Comment:** Pg. 2-4, Sect. 2.1.4. The RAB was informed of a differential settling problem on the causeway, but the concern was neither identified nor described in this section.

Response: The purpose of Subsection 2.1.4 is to summarize the geology and hydrogeology at the site, not the potential for differential settlement as a result of future construction activities. Potential differential settlement of the Causeway is being addressed in the geotechnical evaluation, which is a component of the 30-percent design for the Causeway removal action alternative.

8. **Comment:** Pg. 2-11, Sect. 2.4. The paragraph states "CTDEP has established RSR criteria for various media, including target concentrations for indoor air..." When asked for the criteria by the RAB, it is not available. Does such a criteria exist; if so, and what is it?

Response: The RSR criteria for indoor air are addressed in the OU 2 EE/CA and the RSR indoor air target concentrations have been provided at several RAB meetings. In summary, the target concentrations for the primary contaminants of concern, presented in parts per billion by volume (ppbv) are as follows:

tetrachloroethene	1.61 ppbv
trichloroethene	0.92 ppbv
1,1-dichloroethene	0.02 ppbv
1,1,1-trichloroethane	266 ppbv
vinyl chloride	0.019 ppbv

Comment # Comment/Response

9. **Comment:** Pg. 3-1, Sect. 3.0, Para. 2. On what basis was the causeway and dike area considered a non-critical removal action?

   Response: As presented in the EE/CA, it is a non-time-critical removal action, rather than a "non-critical" removal action as stated in the comment. Non-time-critical removal actions are conducted to expedite environmental cleanup. The USEPA has categorized removal actions in three ways: emergency, time-critical, and non-time-critical. Non-time-critical removal actions respond to releases requiring action that can start later than six months after determination that a response is necessary.

10. **Comment:** Pg. 3-2, Sect. 3.2. Implementation of the Causeway and Dike NCRA was, "anticipated to begin in late summer or fall of 2000". What is the new anticipated start date, and what is the schedule to reach that point?

    Response: Pre-design activities were conducted between September and November 2000. Design activities were initiated in December 2000 and are anticipated to be completed by the spring of 2001. The removal action is anticipated to commence shortly thereafter, with completion in 2001.

11. **Comment:** Pg. 4-18, Para. 3, states that the "erosion control cover system would consist of riprap armor over the entire Causeway surface; however, with a smaller size material used on the top center portion..." The proposed causeway cover suggested here does not appear to be compatible with page 2-3, "Future Land Use", which states, "The approximately 16 acres of proposed park land (i.e., recreational area) would include a landscaped park with pathways for pedestrians and bicyclists..." The Town's intended land use for the causeway, which has remained unchanged since submission of the 1987 Redevelopment Plan, has been to use it as green open space.

    Response: The goal of the proposed non-time-critical removal action is to limit direct exposure of future users of the Causeway to contaminants on the Causeway and prevent erosion of the Causeway materials. If additional construction is needed to meet the Town's future reuse objectives, the Town and its developer would need to complete that construction after transfer of the property from the Army to the Town. Army BRAC funds are intended to address environmental risks, not to make improvements to the property.

12. **Comment:** Pg. 4-18, Para 6, discussed "a notice of intent to record an environmental land use restrictions". What are these land use restrictions, and when will they be defined?

Comment # Comment/Response

Response: Land use restrictions will be established in the site-wide Record of Decision to be prepared in 2002. These may include, among other restrictions, restrictions on excavation that could expose contaminants or allow erosion of Causeway soils.

13. **Comment:** Pg. 4-22, Assumption 2. How will disturbance of the tidal flats be minimized if a portable dam is not placed around the causeway during construction?

Response: Temporary erosion control measures (e.g., silt fence, turbidity curtain, silt boom) will be used to minimize disturbance to the surrounding area. Additionally, excavation and backfill activities will be conducted in a manner to minimize disturbance to areas beyond the existing footprint of the Causeway to the extent practicable.

14. **Comment:** Pg. 4-22, Assumption 6. Geotechnical investigation and evaluation for settlement, slope, and global stability is planned during predesign of the causeway remediation plan. When will this information be available to the LRA for review?

Response: The geotechnical evaluation was presented at the January 2001 Restoration Advisory Board (RAB) meeting.

15. **Comment:** Pg. 6-1, Para. 4. This paragraph states that all material, equipment, and services are readily available to complete Alternative 1, and it would take approximately seven (7) months to complete. Is the same true for Alternative 4? When will consistency with the RI and Feasibility Study be determined for Alternative 4?

Response: Alternative 4 is anticipated to be completed within seven months. Alternative 4 is expected to be consistent with the long-term remedy for the site.

GENERAL COMMENTS

a. **Comment:** The Town wants the causeway to provide access to deeper water at its end. Can sheet pilings be installed at the end off the causeway as part of its remediation?

Response: The Army does not anticipate any improvements to extend the Causeway to provide access to the deeper water in the river channel. Additionally, the CTDEP Office of Long Island Sound Programs (OLISP) has clearly stated on several occasions that installation of a vertical barrier (e.g., sheet pile seawall) on the Causeway is the least acceptable alternative.

Comment # **Comment/Response**

b. **Comment:** The Causeway was always envisioned as open green space, which would provide opportunities for passive recreations. The current design would limit the site's usefulness and cause difficulty, particularly, for the Town's handicapped residents to use the causeway.

Response: The goal of the proposed non-time-critical removal action is to limit direct exposure of future users of the Causeway to contaminants on the Causeway and prevent erosion of the Causeway materials. If additional construction is needed to meet the Town's future reuse objectives, the Town and its developer would need to complete that construction after transfer of the property from the Army to the Town. Army BRAC funds are intended to address environmental risks, not to make improvements to the property.

As of January 2001, the Causeway removal action design is being prepared with consideration of construction materials other than the large riprap that was presented in the Final EE/CA. If these alternative materials are selected, these materials should provide a surface layer that may be more compatible with the proposed future use of the Causeway.

Comment # Comment/Response

Town of Stratford Comments (dated October 24, 2000) on the Final EE/CA Report Causeway & Dike, SAEP, Stratford, CT

GENERAL COMMENTS

Given the delay in receipt of the final document, which was not available until several days after it was requested, as well as the extremely limited public comment period, I am unable to furnish substantive comments on the more technical aspects of the analysis. I will confine my remarks instead to my general impressions of the plan set forth in the analysis, especially as it relates to the intended future use of the site. I should note that more detailed questions and comments regarding the EE/CA are addressed-in a separate letter, a copy of which I have attached hereto.

The proposed remedial plan calls for the removal and subsequent appropriate disposal of contaminated soil from three "hot spot" areas where soil sampling data indicates exceedances of the CTDEP remedial standards. The report then recommends the installation of a geotextile fabric and erosion control cover system over the entire causeway to prevent further migration of contaminant materials. The plan makes some relatively minor concessions to the intended reuse of the causeway/dike area by proposing to use smaller aggregate material along the top center portion of the causeway to provide a more suitable walking surface.

I understand the primary objectives of this non-critical removal action (NCRA) are to prevent present and future exposures to contaminated soils as well as to minimize the potential for leaching of remaining soil contaminants into the groundwater.

Efforts should be made to maximize treatment techniques so as to reduce to the greatest extent practicable the potential for exposure to soil contaminants. At the same time, I submit that the Army has an obligation to select an approach that is compatible with the future intended use of this site, as identified by the host community. The Town's reuse objectives regarding this area have remained unchanged since virtually the inception of this planning process and have been well documented. The causeway is expected to be part of a public recreational area, which would include a linear park, a bicycle and walking path, a dock and fishing pier in addition to other amenities consistent with its unique waterfront location.

In this regard, I believe that elements of Alternative 2, specifically the installation of a sheet pile seawall, should be incorporated into your final remedial plan. A sheet pile seawall would provide an added level of protection from tidal and wave action and serve as a hydraulic barrier to the constituent wastes that remain buried and encapsulated within the structure. A sheet pile seawall, constructed in conjunction with an appropriately designed erosion control cover system, would further reduce the possibility of migration of soluble contaminants outside the limits of the cap

than simply an erosion control cover system alone. Moreover, installation of a sheet pile seawall would provide an even greater degree of consistency with the Town's reuse objectives than other alternatives under consideration since it would preserve access to this structure for the docking or mooring of vessels.

Further, bulkheading or installation of a sheet pile seawall is, as the authors readily acknowledge, a commonly used construction technique. I understand that the Office of Long Island Sound Programs (OLISP) of the CTDEP has expressed concern with regard to this approach, suggesting that this alternative will alter localized wave energy patterns and adversely impact the surrounding intertidal flats. It should be noted, firstly, that the intertidal flats in question are significantly degraded due to decades of industrial production and resultant pollution. Further, while I understand their concern about protection of this resource, such concerns must be balanced against the greater degree of protection afforded by this structure. I might add that not only would a sheet pile seawall provide an added measure of protection against exposure to or migration of contaminant materials, but also it would enhance rather than diminish the utility of this structure.

Finally, I would like to comment on the proposed treatment of the top of the structure as it relates to the intended future use of this site to provide and to enhance public access. I concur with the assessment offered by the CTDEP in its response dated March 31, 2000, in which the author states that the proposed cover "...is not likely to be very inviting to the public nor is it likely to provide a safe walking surface." I submit that not much has changed to alter that perspective in the seven months leading to the publication of this final document. I note that the reviewer recommended " ....that the Army work with the Town of Stratford to identify a reasonable, inviting treatment for the top of the causeway..." that would still provide an adequate barrier against exposure to residual contaminants. I regret that such consultations between the Army and the host community never occurred, and the resulting plan, which now calls for the placement of smaller rather than larger rocks, represents no marked improvement in addressing these concerns. I find it difficult to believe that the approach outlined in Alternative 4 represents the most progressive thinking and the best that we can do under these circumstances.

In the end, I submit that the public would be best served by an approach that combines certain elements of the alternatives presented in the EE/CA report, and further re-examines the treatment of the top of the causeway in terms of using appropriate cover material that is complimentary to the community's reuse objectives. In this regard, I assert that installation of a sheet pile seawall, following excavation of certain hot spot areas and in conjunction with an erosion control system, would clearly provide the highest level of protection to human health and the environment at a reasonable cost.

Comment # Comment/Response

Response: There was no delay in providing the document for review. The Final EE/CA was provided at the beginning of the public comment period. The 30-day public comment period is a standard duration, as well as a requirement of CERCLA and the NCP. The EE/CA and the schedule for submittal and public comment were discussed at the August 2000 RAB meeting, which was attended by representatives of the LRA.

The primary purpose of the Causeway non-time-critical removal action is to provide an erosion control measure to prevent exposure to contaminated soil. Efforts will be made to make the cover system compatible with the proposed reuse plan for the Causeway; however, the primary intent of the removal action is not to construct a public recreation area on the Causeway.

Installation of a sheet pile seawall would result in encroachment into the intertidal flats and coastal waters. The CTDEP OLISP has clearly stated on several occasions that installation of a vertical barrier (e.g., sheet pile seawall), as well as encroachment into the intertidal flats and coastal waters is the least acceptable alternative.

As of January 2001, the Causeway removal action design is being prepared with consideration of construction materials other than the large riprap that was presented in the Final EE/CA. These materials, if selected, would provide a surface layer that may be more compatible with the proposed future use of the Causeway. The 30-percent design will be available in mid-February 2001 and will be discussed with the Town Planner.

Comment # Comment/Response

PROTECT YOUR ENVIRONMENT OF STRATFORD Comments (dated May 5, 2000) on the Draft EE/CA Report
Causeway & Dike, SAEP, Stratford, CT

GENERAL COMMENTS

Protect Your Environment of Stratford, Inc. criterion for selection of the remediation and clean-up of the Causeway and Dike at the old Stratford Army Engine Plant is contingent upon the effect of the remediation on the contiguous tidal flats. Since the required tidal flat impact information is not clear to us at this time we will defer our comments on the engineering and cost of four-alternative evaluation plans until a later time, with the following exceptions:

- the potential for alternatives 1 and 2 for leaching soil contaminants to groundwater (p.4-4 section 4,1.2) needs clarification
- consideration should be given to a 100 year flood on the causeway-dike cap and action of tidal water against sides especially as time goes on
- the long-term effect of rain water on concrete vs soil top of the causeway taking into account human use seems relevant to the selection process.

Response: As stated in Section 2.3 of the EE/CA, "Preliminary results of groundwater data collected in November 1999 from the four monitoring wells installed in the Causeway indicate the presence of low concentrations of chlorinated VOCs and inorganic analytes. However, the concentrations of contaminants in groundwater are below the CTDEP RSR Surface Water Protection Criteria and the Volatilization Criteria."

The cover systems provided by Alternatives 1 and 2 would provide protection from direct exposure to the contaminated Causeway fill material and minimize the leaching of contaminants due to precipitation infiltrating through the contaminated fill material. However, the Causeway is located in a tidal environment, and there is no impermeable layer beneath the Causeway to anchor the flexible membrane liner into. Therefore, although it does not appear that contaminants from the Causeway fill material are leaching to groundwater, there is a potential that soluble contaminants may be transported outside the limits of the cap in the future.

The cover system over the Causeway is being designed in accordance with U.S. Army Corps of Engineers requirements and guidance to ensure protection from storm surge or wave action.

The long-term effects of weather and erosion on the cover system are being evaluated as part of the design for the Causeway removal action alternative.

Comment # Comment/Response

CTDEP OLISP Comments (dated November 6, 2000) on the Final EE/CA Report Causeway & Dike, SAEP, Stratford, CT

GENERAL COMMENTS

Thank you for the opportunity to review and comment on the documents noted above. We have reviewed them to identify issues that must be addressed during any subsequent review for consistency with the enforceable policies of Connecticut's federally approved coastal management program as set forth in the Connecticut Coastal Management Act [CCMA, Connecticut General Statutes (CGS) section 22a-90 through 22a-112]. We note that we commented on two prior drafts of the Engineering Evaluation/Cost Analysis (EE/CA) document: first, in a memo to Ken Feathers of this Department dated March 22, 2000 which was forwarded to you in a letter from Mr. Feathers date March 31, 2000; and second, in a letter to you dated September 7, 2000. In addition, you and I have had several discussions regarding this project.

First, the issue of formal coastal consistency must be clarified since the public notice published by the Army indicates that you are requesting coastal consistency concurrence. However, as we have discussed, you have stated that this is not your intent at this time. The Army and this Office both recognize that the level of information currently available is insufficient to support a consistency determination. It is our understanding that such information will only become available as the project design progresses. Accordingly, we are taking this opportunity to reiterate the significant issues that must be addressed during the design phase of the project to ensure that ultimate implementation is consistent to the maximum extent practicable [(1)] with the enforceable policies of Connecticut's federally approved coastal management program.

> [(1)] When used in reference to federal coastal consistency, 'consistent to the maximum extent practicable' "describes the requirement for Federal activities including development projects directly affecting the coastal zone ...to be fully consistent with such programs unless compliance is prohibited based upon the requirements of existing law applicable to the Federal agency's operations. If a Federal agency asserts that compliance with the management program is prohibited, it must clearly describe to the State agency the statutory provisions, legislative history, or other legal authority which limits the Federal agency's discretion to comply with the provisions of the management program" 15 Code of Federal Regulations 930.32.

Comment # Comment/Response

Our concerns are as follows.

Any alteration of the causeway must avoid both significant changes from current conditions as well as encroachment into the intertidal flat. If avoidance of either of these items is not possible, any changes and/or encroachment must be minimized to the maximum extent practicable and they must be clearly and adequately justified. Based on the understandably limited information available to date, there is no clear justification provided for either altering the angle and general makeup of the side slopes or enlarging the footprint of the causeway.

It is our understanding that the remedial solutions under consideration essentially consist of an "under barrier" and an "over cap" and that these components may, to some extent, be interchanged from one alternative to the other. The apparent ability to "mix and match" under barrier and over cap may prove especially useful in designing a project that is consistent to the maximum extent practicable with Connecticut's federally approved coastal management program. The selection of the appropriate under barrier to prevent contact with the contamination is not within OLISP's area of expertise and we defer to others to determine which under barrier is most appropriate. We are, however, concerned about the type of material used for the outermost layer(s) of the over cap, its placement on the causeway, the final overall configurations of these outermost project components and their potential to adversely impact sensitive coastal resources, such as the adjoining intertidal flat.

As noted above, in order to satisfy the enforceable policies of our coastal management program, the selected alternative must be designed to avoid any encroachment into the intertidal flat. In the EE/CA, the construction methodology of Alternative 1 is described in both the narrative and the corresponding figure as maintaining the location of the existing toe of slope through the excavation of the side slope and toe materials and their consolidation on top of the causeway prior to construction of the under barrier and cap. This is an appropriate approach to avoid encroachment into the intertidal flats which is consistent with the CCMA.

The preferred alternative (#4) involves placing a cap over the existing causeway and, as presented in the EE/CA, would result in sign Significant encroachment into the intertidal flat In light of the inclusion in the EE/CA of an alternative that maintains the existing footprint of the causeway, the preferred alternative is not acceptable from a coastal management perspective and Alternative 1 should be the selected alternative as it represents the least environmentally impacting alternative when the make-up and nature of the side slopes and the footprint of the causeway are considered.

If Alternative 4 remains the Army's preferred alternative, modifications must be made to eliminate, if possible, any encroachment beyond the existing location of the high tide line, mean

high water, and mean low water. To this end, we strongly encourage the Army to investigate the potential to modify the construction methodology of this alternative by relocating existing side-slope material to the extent necessary to maintain the current causeway footprint as is outlined in the description of Alternative 1. If elimination of all encroachments is not possible, substantial and adequate justification must be given as to why any encroachment is consistent with the applicable coastal management policies.

To summarize, the ultimate project must be designed such that it: 1) will not result in degradation of sensitive coastal resources, including the intertidal flats present at this site; 2) is consistent with the enforceable policies and standards regarding the construction of shoreline flood and erosion control structures; and 3) minimizes horizontal encroachment into coastal waters (i.e., encroachment beyond the high tide line, mean high water and/or mean low water). Please be aware that the formal federal consistency review will require additional detailed information including: 1) drawings that depict the existing and proposed footprint of the causeway; 2) existing and proposed locations of the high tide line, mean high water and mean low water on all plans and cross sections; 3) calculations of the total volume of fill, if any, to be placed waterward of the high tide line, mean high water and mean low water; and 4) adequate justification for such fill.

We appreciate this opportunity to review and comment on the progress made to date on this project. We appreciate your continued close coordination with this Office and anticipate that it will continue during the refinement of the final design for this project. We strongly encourage you to either reconsider Alternative 1 as the preferred alternative or modify the methodology of construction of Alternative 4 as described above and develop a final design that does not include any encroachment into intertidal flats and/or coastal waters. Should you have any questions regarding this letter, or any other coastal management matter, or if I can be of further assistance, please do not hesitate to call me at 860.424.3034, send a fax to my attention at 860.424.4054 or an e-mail to margaret.welch@po.state.ct.us.

Response: The 30-percent design for the Causeway is being prepared to maintain the existing Causeway footprint and to minimize encroachment into the intertidal flats and coastal waters to the extent practicable. The 30-percent design will be available in mid-February 2001 for review by the regulatory agencies.