EXPLANATION OF SIGNIFICANT DIFFERENCES
TO THE
RECORDS OF DECISION
FOR
OPERABLE UNIT 7
FORMER SEWAGE TREATMENT PLANT
AND
OPERABLE UNIT 1
WEST GATE LANDFILL

AND TO THE
ENGINEERING EVALUATION/COST ANALYSIS
FOR
OPERABLE UNIT 22
AREA OF CONCERN 55C

NAVAL AIR STATION SOUTH WEYMOUTH
WEYMOUTH, MASSACHUSETTS

August 2010

STATEMENT OF PURPOSE AND AUTHORIZING SIGNATURES

This decision document explains the basis for the determination to issue the attached Explanation of Significant Differences (ESD) for the former Sewage Treatment Plant (STP), West Gate Landfill (WGL), and Area of Concern (AOC) 55C at the former Naval Air Station (NAS) South Weymouth, Massachusetts.

For the reasons documented herein, by my signature below, I approve the issuance of an ESD for Operable Unit 7 - the STP, Operable Unit 1- the WGL, and Operable Unit 22 – AOC 55C at the NAS South Weymouth Superfund Site and the changes stated therein. Concur and recommended for immediate implementation:

By: ______________________ Date: 8/30/10

David A. Barney
BRAC Environmental Coordinator
Naval Air Station South Weymouth
U.S. Navy

Concur and recommended for immediate implementation:

By: ____________________ Date: 9-2-10

James T. Owens III
Director, Office of Site Remediation and Restoration
U.S. Environmental Protection Agency, Region I

EXPLANATION OF SIGNIFICANT DIFFERENCES
OPERABLE UNIT 7 – FORMER SEWAGE TREATMENT PLANT
OPERABLE UNIT 1 – WEST GATE LANDFILL
OPERABLE UNIT 22 – AREA OF CONCERN 55C
NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

1.0 INTRODUCTION TO THE SITE AND STATEMENT OF PURPOSE

1.1 Site Name and Location

Naval Air Station South Weymouth
1134 Main Street
Weymouth, Massachusetts 02190
MA2170022022
Operable Unit 7 – Former Sewage Treatment Plant
Operable Unit 1 – West Gate Landfill
Operable Unit 22 – Area of Concern 55C

1.2 Identification of Lead and Support Agencies

The U.S. Navy is the lead agency for all environmental investigations and cleanup programs at NAS South Weymouth (the Base). The lead regulatory agency is the U.S. Environmental Protection Agency Region 1 (EPA). The Massachusetts Department of Environmental Protection (MassDEP) provides additional regulatory agency support.

1.3 Legal Authority

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), if EPA determines that the remedial action at a Site differs significantly from the Record of Decision (ROD) for that Site, then an explanation of the significant differences between the remedial action being taken and the remedial action set forth in the ROD, including the reasons such changes are being made, shall be published. Section 300.435(c) of the National Contingency Plan (NCP) and EPA guidance (OSWER Directive 9355.3-02) indicate that an ESD rather than a ROD Amendment is appropriate where the changes do not fundamentally alter the overall remedy with respect to scope, performance, or cost. Because the adjustments to the remedial actions for the STP and WGL sites do not fundamentally alter the overall remedy for the STP and WGL RODs, this ESD is being properly issued. Although a ROD has not yet been issued for AOC 55C, adjustments to the remedial actions described in the Engineering Evaluation/Cost Analysis (EE/CA) are also covered in this ESD.

In accordance with Section 300.825(a)(2) of the NCP, this ESD will become part of the Administrative Record for the STP, WGL, and AOC 55C sites, and is also available for public review at the NAS South Weymouth Caretaker Site Office (Building 11, Shea Memorial Drive) and the local Information Repositories identified in Section 1.5 below.

1.4 Overview of the ESD

The April 2008 ROD for the STP specified excavation of soil and sediment and transportation of the excavated materials for off-site disposal or recycling by asphalt batching. The selected remedy addressed the identified potential risks to human and ecological receptors. The remedial action is underway and soil and sediment have been excavated consistent with the ROD. The excavated materials are currently stockpiled at the site. Analytical testing of the excavated soils and sediments indicated low concentrations of petroleum contaminants. The low petroleum content of the excavated soils and sediments makes the materials not suitable for asphalt batching, leaving transportation off-site as the disposal option for the excavated soils per the ROD.

The Navy is currently designing the remedy for another nearby site on the Base, the West Gate Landfill (WGL), in accordance with the September 2007 ROD. The WGL remedy includes construction of a soil cover over the landfill, long term monitoring (LTM), and institutional controls. The soil cover will meet Commonwealth of Massachusetts solid waste regulations and federal Toxic Substances Control Action (TSCA) regulations. The design goal for the soil cover system is to eliminate direct contact with the landfill materials. The proposed cover system will comply with the following general performance standards (thickness in parentheses):

- Re-graded waste, debris, and soil layer (0 - 10 feet thick)
- Subgrade cover soil layer (6 inches minimum)
- Gas venting/geomembrane bedding layer (6 inches minimum)
- Textured high density polyethylene (HDPE) geomembrane low permeability layer (40 mils)
- Drainage layer of manufactured geocomposite drainage net and filter layer
- Protective and vegetative support soil layer (24 inches)
- Vegetative cover with grasses to resist topsoil erosion.

Navy has proposed that the excavated soil from the STP site and from AOC 55C be used as common fill in this subgrade layer. A non-time critical removal action (NTCRA) has been performed at AOC 55C in accordance with the EE/CA. The excavated soil from the two sites would be placed as common fill at the WGL on top of the consolidated waste materials and beneath more than 24 inches of additional cover components, including a low permeability geomembrane liner. The STP and AOC 55C sites are located in close proximity to the WGL site (Figure 1). Use of the STP and AOC 55C excavated soils and sediment would eliminate approximately 300 truck trips for the off-site disposal of the STP and AOC 55C soil and sediment, as well as a similar number of truck trips to import the common fill for the WGL subgrade layer from off-site borrow areas.

The adjustments to the STP and WGL RODs and the AOC 55C EE/CA presented in this ESD do not fundamentally alter the overall remedial actions for the sites with respect to scope or performance, would significantly reduce cost by eliminating disposal off site of the excavated soil and sediment, and would increase compliance with “Green” remediation goals. In addition, the adjustments to the remedies for the three sites will provide a level of protection of human health and the environment at least equivalent to the approved remedies and will also satisfy the Applicable or Relevant and Appropriate Requirements (ARARs) established for the approved remedies for each of the three sites.

1.5 Availability of Documents

In accordance with Section 300.825(a)(2) of the NCP, this ESD will become part of the Administrative Record for the STP, WGL and AOC 55C sites. This ESD will also be available for public review at the following locations:

Department of the Navy
Caretaker Site Office
C/O David Barney
1134 Main Street, Bldg. 11
South Weymouth, MA 02190

Tufts Library
46 Broad Street
Weymouth MA 02188

Abington Public Library
600 Gliniewicz Way
Abington, MA 02351

Hingham Public Library
66 Leavitt Street
Hingham, MA 02043

Rockland Memorial Library
336 Union Street
Rockland, MA 02370

2.0 SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

2.1 Site Description and History

NAS South Weymouth is located approximately 15 miles southeast of Boston, Massachusetts in Norfolk and Plymouth counties. Portions of the Base are located in the Towns of Weymouth, Abington, and Rockland (Figure 1). NAS South Weymouth was operationally closed on September 30, 1996 and administratively closed on September 30, 1997 under the Base Realignment and Closure Act of 1990.

2.1.1 <u>Former Sewage Treatment Plant</u>

The STP site, located in the northern portion of the Base (Figure 1), is comprised of two main areas encompassing approximately 3.3 acres: the former Tile Bed Area (0.9 acres) and the adjacent former sewage treatment plant area (2.3 acres). A small segment of the adjacent, downgradient/downstream wetland area (0.1 acres) extending from the drainage ditch is also part of the site. The site is unpaved and relatively flat with a gentle slope to the west, toward an adjacent drainage channel and wetland area. The ground surface is covered by grasses, shrubs, and mixed upland forest with an artificial intermittent stream located in the southern portion of the site. A forested wetland, which contains several small intermittent stream channels, bounds the site to the west. Forested areas bound the site to the north and paved roads bound the site to the east and south.

The STP was used as the wastewater treatment facility for the Base from 1953 to 1978. In 1978, the Navy decommissioned the STP and the Base wastewater was discharged to the municipal sanitary sewer system. From the 1980s until 2005, the covered sludge drying bed area was used by the Navy for storage of road salt and sand. The Navy removed the associated structures to 2 feet below final grade in 1992. Structures that remain visible on the site include the metal roof, frame, and concrete walls of the former sludge drying bed area, an inactive transformer (PCB-free), riser pipes of the former Tile Bed Area (former septic leach field), and the various groundwater monitoring wells installed as part of the Navy's investigations of the site.

2.1.2 <u>West Gate Landfill</u>

The WGL is an approximately 6.3 acre wooded area located in the western section of the Base that was formerly used for disposal of solid wastes generated by Navy's activities on the Base. The site is bounded to the north by an access road and abandoned railroad tracks, to the south and west by a wooded area, and to the east by a perennial stream (French Stream) (Figure 1).

Topographically, the WGL is relatively flat with a gentle slope to the west and to the south towards adjacent wetlands. The WGL was an active landfill from the 1940s until 1972; prior to that time, it was a swamp. Due to insufficient information regarding the nature of materials that were disposed at the WGL, it was assumed that all types of waste from the Base went to the landfill during the period of use. Materials noted during the Navy's investigations included metal, asphalt, bricks, concrete, plastics, wires, bottles, cans, rubber tubes and hoses, and other debris. The approximate fill thickness is 10 feet.

2.1.3 <u>AOC 55C</u>

AOC 55C is less than 1 acre of undeveloped land in a forested wetland area located in the northwest portion of the Base (Figure 1). The Site consists of a small pond and adjacent wetland and is surrounded by other wetlands and upland forest. Access to the Site is provided by an unpaved road at the southeastern perimeter. An area within the Site contains a seasonal surface water body that has been identified as a "certifiable" vernal pool; however this vernal pool has not been classified as a "certified vernal pool" by the Massachusetts Natural Heritage and Endangered Species Program (NHESP). Metallic debris was found scattered around the perimeter of the pond, over the soil surface, and in subsurface soils throughout the boundaries of AOC 55C. No information regarding historical uses of the AOC 55C area has been reported. However, the Site appears disturbed with debris visible on the surface.

2.2 Enforcement History

In May 1994, NAS South Weymouth was listed on EPA's National Priorities List (NPL). Environmental studies and activities at the Base have been conducted by the Navy in accordance with CERCLA and the NCP.

Based on the designation of the NAS South Weymouth property as an NPL site, a Federal Facility Agreement (FFA) was executed by the Navy and EPA. The FFA became effective in April 2000 and established the Navy as the lead agency for the investigation and cleanup of the NAS South Weymouth property, with EPA providing oversight. The MassDEP is not a party to the FFA but, in accordance with CERCLA and the NCP, MassDEP has participated in ongoing discussions and strategy sessions, and also has provided oversight and guidance through their review of the Navy's Installation Restoration Program documents.

In accordance with the FFA, a Site Management Plan (SMP) with task schedules and deliverables is updated annually each summer and is published each fall. The SMP serves as a management tool for planning, reviewing, and setting priorities for environmental investigative and remedial response activities to be conducted at NAS South Weymouth. The SMP is available for public review at the NAS South Weymouth information repositories listed in Section 1.5 of this ESD.

2.3 Site Contamination

2.3.1 <u>Former Sewage Treatment Plant</u>

The human health risk assessment included in the RI report indicated potential risks for future residents and recreational children from exposures to contaminants of concern (COCs) in surface soil and sediment. These potential risks were based on the presence of dieldrin, arsenic, 4,4'-DDT, benzo(a)pyrene, benz(a)anthracene, and benzo(b)fluoranthene in surface soil, and arsenic and dieldrin in sediment, at concentrations above the regulatory risk-based thresholds.

The ecological risk assessment included in the RI report concluded that terrestrial and wetland vertebrates may potentially be at risk from exposure to COCs in surface soil and sediment. 4,4'-DDT in terrestrial soil was identified as posing potential risk to birds (American Robin) and mammals (Short-tailed Shrew). 4,4'-DDT, 4,4'-DDD, 4,4'-DDE, arsenic, and methyl mercury in sediment were identified as posing potential risk to birds (American Robin and Carolina Wren) and mammals (Short-tailed Shrew and Star-nosed Mole).

The human health risk assessment also indicated potential risks if groundwater beneath the Site were to be used as drinking water for on-site residents in the future, and unacceptable risks from residential and recreational child exposures to polychlorinated biphenyls (PCBs) in surface water. After further evaluation of the data, the Navy, with input from EPA, concluded that groundwater and surface water cleanup is not necessary at the Site.

Cleanup levels were established for soils and sediments to mitigate the identified risks to human and ecological receptors.

2.3.2 <u>West Gate Landfill</u>

The human health risk assessment in the RI report indicated potential risks that exceed regulatory risk thresholds under the current use scenario for on-site worker, trespassing child, and construction worker, and under the future use scenario for residents and recreational children from exposures to surface soil. These theoretical risk exceedances were based on the presence of PCBs, arsenic, dioxins, polycyclic aromatic hydrocarbons (PAHs), dieldrin, and lead in surface soil. The human health risk assessment also indicated potential risks that would exceed regulatory risk thresholds if, in the future, groundwater beneath the site were to be used as drinking water for on-site residents. This potential risk was based on the presence of arsenic, chromium, dibenz(a,h)anthracene, other PAHs, hexachlorobenzene, and 1,4-

dioxane in groundwater. Further, the ecological risk assessment identified a potential risk to certain ecological receptors from exposure to surface soil. No unacceptable risks were identified for ecological receptors (aquatic invertebrates, amphibians, and fish) from exposure to surface water or sediment from French Stream, adjacent to the Site. Unacceptable risk was found for terrestrial invertebrates, birds, and mammals from exposure to aluminum, cadmium, chromium, copper, lead, mercury, nickel, vanadium, zinc, total PAHs, dioxin, and total PCBs in surface soil only. No other human health or ecological risks were identified for the current and future use scenarios evaluated.

2.3.3 AOC 55C

Contaminants in site soils and sediments were found to contribute to unacceptable risks to human health and ecological receptors. PAHs, PCBs, and arsenic in soil and PAHs, arsenic, and dieldrin in sediment were identified as human health risk-based COCs and were the greatest contributors to the identified unacceptable cancer risks. Concentrations of contaminants present in the sediment, including total PAHs, PCBs, cadmium, copper, lead, and zinc contribute to sediment contamination at AOC 55C which may pose a risk of adverse effects to ecological receptors in the area. Terrestrial plants and invertebrates and wildlife may be impacted by elevated levels of metals present in surface soils.

2.4 Remedy Selected

2.4.1 2008 ROD for former Sewage Treatment Plant

The April 2008 ROD for the STP specified the following components:

- Complete a pre-design investigation (PDI) to further delineate the types and extent of COCs requiring remediation;
- Excavate soil and sediment containing COCs at concentrations exceeding the preliminary remediation goals;
- Load, transport and dispose of the excavated soil and sediment at an off-site, licensed, treatment, storage, disposal, or recycling facility;
- Implement a monitoring program to verify that post-remediation COC concentrations do not rebound in sediment; and
- Conduct pre- and post-remedial groundwater monitoring to verify that groundwater is not a medium of concern for the Site.

Following completion of the ROD in 2008, the Navy completed a PDI, as required in the ROD. The extent of soil contamination in four upland areas and sediment contamination in the drainage swale requiring excavation at the STP was further delineated during the PDI. The five areas identified as requiring remediation were excavated in 2009. In November 2009, excavation of the contamination specified in the ROD was completed, but work was halted due to the discovery of apparent petroleum contamination in an upland area of the STP. Further sampling of soil in this upland area is required. The Navy is currently preparing a supplemental PDI work plan. Once the supplemental delineation is performed, the Navy will complete the remediation and the post-remediation monitoring period will begin.

The analytical results of the soil and sediment stockpiles excavated to date indicate that the soils are classified as non-hazardous under RCRA.

2.4.2 2007 ROD for West Gate Landfill

The September 2007 ROD documented the selected remedy – soil cover (later revised to a geomembrane liner), long-term monitoring, and institutional controls. The selected remedy addresses all current and potential future risks, which include human and ecological risks from PCBs, metals, dioxins, PAHs, and pesticides, primarily in surface soil. The soil cover, implementation of institutional controls, and performance of long-term groundwater monitoring and site maintenance (collectively referred to as LTM) will eliminate human and ecological exposure to the surface of the landfill, minimize erosion and deposition of surface soil and landfill material into the adjacent wetlands, remove visible landfill material from the palustrine wetlands adjacent to the WGL, restore the wetlands impacted by the removal, meet state regulations regarding closing a landfill, and eliminate human exposure to groundwater containing contaminant concentrations in excess of federal or more stringent state drinking water standards, or posing an unacceptable risk to human health.

As stated in the ROD, the Navy and EPA agreed that a groundwater remedy was not necessary and the LTM of groundwater and surface water as a component of landfill closure will allow for continued assessment of these media. The existing groundwater data for the WGL indicates that active remediation is not necessary to address site groundwater. A pre-design investigation was performed and the remedial action activities commenced in December 2008. Construction of the landfill cover system will commence in summer 2010.

2.4.3 2009 EE/CA for AOC 55C

Navy is performing a NTCRA to remove the metal debris and soil and sediment to reduce site risks to acceptable levels. The removal action as described in the AOC 55C EE/CA consists of the excavation, transportation, and off-site disposal of contaminated soil/sediment and metal debris at the site. Removal of the affected soil and sediment to attain the remedial goals documented in the EE/CA would reduce the risks to ecological receptors to acceptable levels. The NTCRA commenced in May 2010.

3.0 BASIS FOR THE DOCUMENT

By this ESD, the Navy is changing the disposal component of the STP remedy and the AOC 55C EE/CA from off-site disposal to beneficial use at NAS South Weymouth in the construction of the subgrade fill layer of the WGL final cover system. The change described in this ESD is consistent with the remedial action objectives (RAOs) in Section VIII of the WGL ROD, specifically: “Meet state regulations and TSCA requirements regarding closing a landfill, for those alternatives that include landfill capping.” In addition, this change is consistent with the Selected Remedy, Section XII of the WGL ROD, specifically: “Constructing a soil cover on the site meeting Commonwealth of Massachusetts solid waste regulations and federal TSCA PCB regulations. The design goal for the soil cover is to eliminate direct contact with landfill materials.” There are no chemical constituent requirements specified in the state regulations for the subgrade layer.

4.0 DESCRIPTION OF SIGNIFICANT DIFFERENCES AND EXPECTED OUTCOMES

4.1 Background

The STP ROD was signed in April 2008 and the Navy excavated contaminated soil and sediment in 2009. Soil was excavated from four upland areas and placed in stockpiles segregated by area. Sediment excavated from the drainage swale was stockpiled separately. Approximately 3,700 cubic yards of material are segregated into six covered stockpiles. The Navy is planning additional sampling to further delineate the extent of petroleum contaminated soil in one of the upland areas. Excavation was successfully completed in two areas (Areas B-1 and B-2), where concentrations of dieldrin greater than the STP cleanup goal were identified in surface soil (0 – 1 ft). The excavated soils from these two areas are in Stockpile 2. The dieldrin concentration of 226 µg/kg in the sample from this stockpile (see Table 1) is well below the cleanup goal for dieldrin (876 µg/kg). Samples collected from the soil stockpiles for waste characterization indicate that the material is not amenable for asphalt batching. The stockpiled soils were determined to be acceptable for off-site disposal as a non-hazardous waste. The excavated materials remain stockpiled onsite.

The NTCRA at AOC 55C is nearing completion. Excavation has been completed and confirmation sampling has indicated that the cleanup levels have been achieved. The excavated areas have been backfilled and graded and the excavated soil and sediment are currently stockpiled nearby. Wetland restoration activities are underway; vegetation has been planted and the restored wetland area watered as needed.

The Navy is currently preparing the remedial design for the landfill cover system at the WGL. It is anticipated that approximately 5,200 cubic yards of common fill will be needed to construct the subgrade layer of the WGL cap. The subgrade layer of the cap will be situated on top of the consolidated waste materials of the WGL and beneath more than 24 inches of other cover components, including a low permeability geomembrane liner. Since soil and sediment excavated from the STP and AOC 55C sites is classified as non-hazardous and meets MassDEP performance and design standards for use within landfill subsurface cover systems, the Navy is hereby proposing to use the stockpiled soils from the two sites in the subsurface fill layer of the WGL cover system, thereby significantly reducing the amount of excavated material to be shipped and disposed offsite as well as the amount of common fill required to be purchased and imported to the WGL from an outside location.

4.2 Description of Changes

The remedial action at the STP has been implemented in accordance with the Remedial Action Work Plan (TtEC, July 2009). Soil and sediment excavated from each of the designated remediation areas have been segregated into stockpiles. Each stockpile has been characterized (sampled and tested) for off-site waste disposal. The total quantity of stockpiled soil and sediment (3,700 cubic yards) has been classified as non-hazardous. The estimated cost for waste management and off-site disposal of this material is approximately $184,000. Rather than shipping this material to an off-site landfill, the Navy proposes to beneficially reuse this material in the upcoming construction of the subgrade layer for the WGL cover system.

Similarly, the AOC 55C NTCRA has been implemented in accordance with the EE/CA and Action Memorandum. Stockpiled soil and sediment has been characterized (sampled and tested) for off-site waste disposal. The total quantity of soil and sediment (1,500 cubic yards) has been classified as non-hazardous. The estimated cost for waste management and off-site disposal of this material is approximately $100,400. Rather than shipping this material to an off-site landfill, the Navy proposes to beneficially reuse this material in the upcoming construction of the subgrade layer for the WGL cover system.

The WGL cover system is being designed to meet the Massachusetts solid waste regulations (310 CMR 1900) and federal TSCA regulations (40 CFR 761.61(a)(7)). The WGL design requires approximately 5,200 cubic yards of common fill for the subgrade layer at an estimated cost of $75,500 to import this quantity of fill material from an off-site commercial source. Use of the STP and AOC 55C soils would eliminate the need for imported fill and save an estimated $360,000 by eliminating the cost of off-site disposal and the cost of importing common fill. The net savings, after accounting for the costs for additional soil testing, preparation of this ESD and transportation of the soils from the STP and AOC 55C sites to the WGL, are approximately $338,000.

This change would also significantly reduce the amount of truck traffic on public roadways. Moving the stockpiled soils to the WGL rather than offsite to a permitted non-hazardous (RCRA Subtitle D) landfill would eliminate an estimated 312 standard 18-wheel truck trips, each traveling an estimated 100 miles, for a total savings of 31,200 truck miles. Eliminating the need to import common fill for the WGL subgrade layer would save the same estimated number of truck trips and miles. Saving approximately 62,400 truck miles would result in a reduction of the six common air pollutants, or criteria pollutants, emitted by vehicles and regulated under the federal Clean Air Act: ground-level ozone, particle pollution, lead, nitrogen oxides (NO_x), carbon monoxide (CO), and sulfur dioxide (SO_2). The reduced truck traffic would also reduce emissions of carbon dioxide (CO_2), a primarily contributor to greenhouses gases. This change would eliminate the following amounts of air pollutants [calculations based on the National Renewable Energy Laboratory U.S. Life-Cycle Inventory Database emissions rates for diesel powered trucks]: 16,000 lbs of CO_2; 25.5 lbs of CO, 1.1 lb of NO_x, 3.5 lbs of SO_2 and 1.84 lbs of particulate matter. The change would eliminate approximately 624 truck trips on local roadways, including Route 18, to access the Base. This change would limit all movement of the stockpiled materials to areas within the northwest portion of the Base on existing roadways, thus eliminating traffic impacts on the neighboring towns, especially Weymouth.

This change does not impact the remedial action objectives for the STP cleanup since the excavated soils and sediment will still be removed from the site and disposed at a landfill constructed in accordance with Massachusetts landfill cover system regulations. Nor does this change impact the AOC 55C removal action as described in the EE/CA and Action Memorandum. This change also does not impact the design for the WGL, since the STP and AOC 55C materials would meet the applicable landfill cover regulations. MassDEP landfill cover system regulations include the following subgrade layer standards, 310 CMR 19.112(4):

(a) Performance Standards. The subgrade layer shall provide adequate structural support for the final cover system and be capable of accommodating any anticipated subsidence or settling without impairing its ability to provide structural support;

(b) Design Standards. The subgrade shall:
1. be free of materials that may damage or abrade the low permeability layer or venting layer; and
2. be of sufficient thickness to cover all solid waste.

The WGL design specifies that prior to the placement of the subgrade soil layer the waste materials will be compacted to increase the shear strength of the waste layer. The subgrade layer will be placed over the compacted waste material and will be above the groundwater table. The subgrade soil layer materials must have a minimum hydraulic conductivity of 1×10^{-2} centimeters per second (cm/sec) and will be compacted to achieve 90 percent of the Standard Proctor density. A low permeability geomembrane liner will be placed above the subgrade layer. As noted in Navy's March 22, 2010 Memorandum for the Record, the change to a 40 mil high density polyethylene liner (HDPE) will provide a much lower permeability than that required by 310 CMR 19.112: 1×10^{-13} cm/sec for the HDPE liner versus 1×10^{-7} cm/sec required by the state landfill regulations.

The STP and AOC 55C soil stockpile waste characterization results have been compared to the Massachusetts Contingency Plan (MCP) Method 1 S-3/GW-1 standards to demonstrate that the adjustments to the remedies described in this section would provide a level of protection of human health and the environment at least equivalent to that provided by the approved remedies described in this ESD, and would also satisfy all of the ARARs established for the approved remedies. 310 CMR 40.0932 describes the S-3 category standards as concentrations based on restricted access and property with limited potential for exposure, either currently or in the foreseeable future. Criteria based on the leaching potential of the contaminated soil are established for protection of groundwater. The GW-1 category concentrations are based on the use of groundwater as drinking water, either currently or in the foreseeable future. Both of these categories are applicable to an evaluation of this change as the cover system will limit exposure, land use controls (LUCs) will be in place as required by the ROD, and the LUCs will prevent the use of groundwater beneath the site. The GW-1 category was used in the data comparison to assess potential impacts on groundwater immediately adjacent to the landfill should this groundwater ever be used for drinking water. In addition, composite samples from STP Stockpiles 3 and 5 and the AOC 55C stockpiles were collected for analysis by the EPA Method 1311, Toxicity Characteristic Leaching Procedure (TCLP). STP Stockpiles 3 and 5 were sampled for TCLP testing since they had the highest overall concentrations. The data for each of the six STP stockpiles and the AOC 55C stockpile compared to these S-3/GW-1 standards are shown in Tables 1 and 2, respectively. The TCLP results for the STP and AOC 55C soils are shown in Tables 3 and 4, respectively.

Based on the comparison to the S-3/GW-1 standards, for the STP soils there is one exceedance of the standards in Stockpile 1 (PCBs) , one exceedance in Stockpile 3 (phenanthrene) and one exceedance in Stockpile 5 (arsenic); for the AOC 55C soils there is one exceedance (lead). The TCLP results for STP Stockpile 5 indicate no exceedances of the regulatory limits for any parameter, including arsenic. The Stockpile 3 TCLP results also showed no exceedances. The TCLP results for the AOC 55C stockpile indicate no exceedance of the regulatory limits for any parameter, including lead. The arsenic and lead concentrations in the stockpiled soils are thus not expected to be a leaching concern. While there are no TCLP limits for PCBs or phenanthrene, both compounds are hydrophobic and adsorb to soils; thus they are not likely to migrate into groundwater. The PCB and phenanthrene concentrations (see Table 1) that exceed the S-3/GW-1 standards are less than the maximum concentrations of these two chemicals in WGL soils. In addition, the WGL cover system is designed to meet both the state landfill cover system and federal TSCA regulations. The data in Tables 1 through 4 indicate that since the STP and AOC 55C soils will be placed in the WGL subgrade layer above the water table and will be covered by the HDPE low permeability liner, none of the chemicals in the soils will likely impact groundwater immediately adjacent to the capped landfill or impact the protectiveness of the WGL remedy. The cap will not only meet the WGL RAOs but will also eliminate any exposure to the STP and AOC 55C soils.

The state landfill closure regulations require post-closure monitoring and maintenance of the cap. These post-closure monitoring requirements, the Massachusetts Solid Waste Management Environmental Monitoring Requirements, 310 CMR 19.132, are listed in the WGL ROD as an action-specific ARAR. The WGL ROD also requires LUCs which will prohibit any activities at WGL that would interfere with the integrity or function of the landfill cap. The low permeability cap will minimize infiltration of precipitation and the landfill cover will be contoured to promote surface water runoff. Groundwater monitoring will be performed as a component of the required post-closure monitoring program. The post-closure monitoring and maintenance program will be designed to check that the contaminants present not only in the WGL landfill, but also in the STP and AOC 55C soil subgrade layer will not adversely impact the protectiveness of the WGL remedy.

4.3 Changes in Expected Outcomes

As described in Section 4.2, the change from off-site disposal of the STP and AOC 55C excavated materials to use in the common fill subgrade layer of the WGL cover system will not adversely impact the performance of the selected remedy and will significantly reduce its cost.

As discussed in Section XIII of the STP ROD, the selected remedial action is consistent with CERCLA, and, to the extent practicable, the NCP. The change described in this ESD does not impact any of the statutory determinations discussed in the ROD, as the STP remedy remains protective of human health and the environment, complies with ARARs, achieves the RAOs, retains overall effectiveness and, with the elimination of offsite disposal, is now more cost effective.

As discussed in the AOC 55C EE/CA, the selected removal action alternative best satisfies the evaluation criteria based on effectiveness, implementability, and cost. The change described in this ESD does not impact the protectiveness and effectiveness of the NTCRA and, with the elimination of offsite disposal, is now more cost effective.

As discussed in Section XIII of the WGL ROD, the selected remedial action is consistent with CERCLA, and, to the extent practicable, the NCP. The change described in this ESD does not impact any of the statutory determinations discussed in the ROD, as the WGL remedy remains protective of human health and the environment, complies with ARARs, achieves the RAOs, and retains overall effectiveness. Following landfill closure consistent with the Massachusetts solid waste regulations and federal TSCA regulations, post-closure monitoring will provide data to assess the long-term protectiveness of the remedy.

This change is also consistent with federal guidance on the sustainability of environmental remediation. Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, requires that federal agencies must conduct their environmental activities in an environmentally, economically, and fiscally sound, efficient and sustainable manner. The DoD Green and Sustainable Remediation Memorandum (2009), stresses the need to reduce the energy demand of remedial systems and consider other available options to minimize environmental impacts. The Department of the Navy Environmental Strategy (April 2008) promotes integration of environmental stewardship with Department of Navy operations, acquisitions, and installation management. EPA Region 1 has issued a Clean and Green Policy for Contaminated Sites (February 18, 2010) with green remediation goals including:

minimize total energy use; and reduce, reuse and recycle materials and wastes. The change in disposal of the STP and AOC 55C excavated materials will significantly reduce energy consumption associated with truck trips for off-site disposal and importing common fill and allow for the beneficial reuse of the excavated materials in a manner which is protective of human health and the environment. In addition, as discussed in Section 4.2, the change will reduce emissions of regulated air pollutants.

5.0 SUPPORT AGENCY COMMENTS

EPA has reviewed and provided comments to this ESD. In signing the ESD, EPA concurs with the findings of this document. MassDEP also reviewed this ESD and provided comments to Navy. Navy has addressed the comments received from both EPA and MassDEP. MassDEP accepted Navy responses without further comment.

6.0 STATUTORY DETERMINATIONS

Considering the above-described administrative adjustments to the selected remedy set forth in the 2008 STP ROD and the 2009 AOC 55C EE/CA, the Navy believes that both remedies remain protective of human health and the environment. The change in the remedial action from off-site disposal to reuse as a subgrade fill layer at the WGL will allow the Navy and EPA to implement the selected remedy in a manner that is protective of human health and the environment, cost-effective and sustainable. The use of the STP and AOC 55C excavated materials as part of the WGL cover system maintains the protectiveness of the selected remedy in the 2007 ROD for the WGL. These changes satisfy CERCLA Section 121(b).

7.0 PUBLIC PARTICIPATION

Throughout the history of activities at the Base, the Navy has kept the community and other interested parties apprised of the activities at the STP, WGL and AOC 55C sites through informational meetings, fact sheets, press releases, public meetings, and contact with local officials. Also, the Navy regularly meets to discuss the status and progress of the Installation Restoration Program with the Restoration Advisory Board (RAB), which includes representatives from the local community. Representatives from the Navy, EPA, and MassDEP attend these public meetings.

The changes in the approach to the site remedy for STP, disposal of AOC 55C excavated soils and the WGL cover system were presented to the public during the Restoration Advisory Board (RAB) meeting held on May 13, 2010. An update was provided at the July 8, 2010 RAB meeting. A 15-day public comment period, from August 5, 2010 to August 20, 2010, was provided for review of this ESD. Navy responses to the comments received during the public comment period are presented in Attachment 1.

TABLES

TABLE 1
STP SOIL STOCKPILE RESULTS COMPARED TO MASSDEP S3/GW1 STANDARDS

Stockpile#	Sample_id	Parameter	Result	Units	DEP Std*	> Std
1	WC-EXSP-01	ARSENIC	2.6	MG/KG	20	N
1	WC-EXSP-01	BARIUM	19	MG/KG	5000	N
1	WC-EXSP-01	CHROMIUM	9.2	MG/KG	200	N
1	WC-EXSP-01	LEAD	18	MG/KG	300	N
1	WC-EXSP-01	MERCURY	0.031	MG/KG	30	N
1	WC-EXSP-01	TOTAL PETROLEUM HYDROCARBONS	66	MG/KG	5000	N
1	WC-EXSP-01	AROCLOR-1260	4560	UG/KG	3000**	Y
2	WC-B1B2D-01	ARSENIC	3.4	MG/KG	20	N
2	WC-B1B2D-01	BARIUM	20	MG/KG	5000	N
2	WC-B1B2D-01	CADMIUM	0.26	MG/KG	30	N
2	WC-B1B2D-01	CHROMIUM	6.5	MG/KG	200	N
2	WC-B1B2D-01	LEAD	14	MG/KG	300	N
2	WC-B1B2D-01	MERCURY	0.51	MG/KG	30	N
2	WC-B1B2D-01	SILVER	1.5	MG/KG	200	N
2	WC-B1B2D-01	TOTAL PETROLEUM HYDROCARBONS	70	MG/KG	5000	N
2	WC-B1B2D-01	BENZO(B)FLUORANTHENE	237	UG/KG	300000	N
2	WC-B1B2D-01	FLUORANTHENE	346	UG/KG	5000000	N
2	WC-B1B2D-01	INDENO(1,2,3-CD)PYRENE	202	UG/KG	300000	N
2	WC-B1B2D-01	PHENANTHRENE	204	UG/KG	10000	N
2	WC-B1B2D-01	PYRENE	238	UG/KG	5000000	N
2	WC-B1B2D-01	4,4'-DDD	152	UG/KG	30000	N
2	WC-B1B2D-01	4,4'-DDT	90	UG/KG	30000	N
2	WC-B1B2D-01	DIELDRIN	226	UG/KG	2000	N
3	WC-A1A2-01	ARSENIC	2.8	MG/KG	20	N
3	WC-A1A2-01	BARIUM	28	MG/KG	5000	N
3	WC-A1A2-01	CADMIUM	0.25	MG/KG	30	N
3	WC-A1A2-01	CHROMIUM	13	MG/KG	200	N
3	WC-A1A2-01	LEAD	40	MG/KG	300	N
3	WC-A1A2-01	MERCURY	0.058	MG/KG	30	N
3	WC-A1A2-01	TOTAL PETROLEUM HYDROCARBONS	486	MG/KG	5000	N
3	WC-A1A2-01	ACENAPHTHENE	1070	UG/KG	4000	N
3	WC-A1A2-01	ANTHRACENE	2740	UG/KG	5000000	N
3	WC-A1A2-01	BENZO(A)ANTHRACENE	8460	UG/KG	300000	N
3	WC-A1A2-01	BENZO(A)PYRENE	7510	UG/KG	30000	N
3	WC-A1A2-01	BENZO(B)FLUORANTHENE	9960	UG/KG	300000	N
3	WC-A1A2-01	BENZO(G,H,I)PERYLENE	3910	UG/KG	5000000	N
3	WC-A1A2-01	BENZO(K)FLUORANTHENE	3690	UG/KG	3000000	N
3	WC-A1A2-01	CARBAZOLE	1710	UG/KG		
3	WC-A1A2-01	CHRYSENE	8440	UG/KG	3000000	N
3	WC-A1A2-01	DIBENZO(A,H)ANTHRACENE	1640	UG/KG	30000	N
3	WC-A1A2-01	FLUORANTHENE	19500	UG/KG	5000000	N
3	WC-A1A2-01	FLUORENE	1090	UG/KG	5000000	N
3	WC-A1A2-01	INDENO(1,2,3-CD)PYRENE	5220	UG/KG	300000	N
3	WC-A1A2-01	PHENANTHRENE	10700	UG/KG	10000	Y
3	WC-A1A2-01	PYRENE	14500	UG/KG	5000000	N
3	WC-A1A2-01	4,4'-DDD	39	UG/KG	30000	N

TABLE 1
STP SOIL STOCKPILE RESULTS COMPARED TO MASSDEP S3/GW1 STANDARDS

Stockpile#	Sample_id	Parameter	Result	Units	DEP Std*	> Std
3	WC-A1A2-01	4,4'-DDE	23	UG/KG	30000	N
3	WC-A1A2-01	4,4'-DDT	68	UG/KG	30000	N
3	WC-A1A2-01	ALPHA-CHLORDANE	38	UG/KG	50000***	N
3	WC-A1A2-01	DIELDRIN	35	UG/KG	2000	N
3	WC-A1A2-01	GAMMA-CHLORDANE	37	UG/KG	50000***	N
3	WC-A1A2-02	ARSENIC	2.8	MG/KG	20	N
3	WC-A1A2-02	BARIUM	27	MG/KG	5000	N
3	WC-A1A2-02	CADMIUM	0.3	MG/KG	30	N
3	WC-A1A2-02	CHROMIUM	10	MG/KG	200	N
3	WC-A1A2-02	LEAD	36	MG/KG	300	N
3	WC-A1A2-02	MERCURY	0.045	MG/KG	30	N
3	WC-A1A2-02	TOTAL PETROLEUM HYDROCARBONS	251	MG/KG	5000	N
3	WC-A1A2-02	ACENAPHTHENE	955	UG/KG	4000	N
3	WC-A1A2-02	ANTHRACENE	2480	UG/KG	5000000	N
3	WC-A1A2-02	BENZO(A)ANTHRACENE	7780	UG/KG	300000	N
3	WC-A1A2-02	BENZO(A)PYRENE	7160	UG/KG	30000	N
3	WC-A1A2-02	BENZO(B)FLUORANTHENE	9670	UG/KG	300000	N
3	WC-A1A2-02	BENZO(G,H,I)PERYLENE	3540	UG/KG	5000000	N
3	WC-A1A2-02	BENZO(K)FLUORANTHENE	3360	UG/KG	3000000	N
3	WC-A1A2-02	CARBAZOLE	1620	UG/KG		
3	WC-A1A2-02	CHRYSENE	7900	UG/KG	3000000	N
3	WC-A1A2-02	DIBENZO(A,H)ANTHRACENE	1370	UG/KG	30000	N
3	WC-A1A2-02	FLUORANTHENE	18400	UG/KG	5000000	N
3	WC-A1A2-02	FLUORENE	936	UG/KG	5000000	N
3	WC-A1A2-02	INDENO(1,2,3-CD)PYRENE	4780	UG/KG	300000	N
3	WC-A1A2-02	PHENANTHRENE	9940	UG/KG	10000	N
3	WC-A1A2-02	PYRENE	13600	UG/KG	5000000	N
3	WC-A1A2-02	4,4'-DDD	84	UG/KG	30000	N
3	WC-A1A2-02	4,4'-DDE	27	UG/KG	30000	N
3	WC-A1A2-02	4,4'-DDT	80	UG/KG	30000	N
3	WC-A1A2-02	ALPHA-CHLORDANE	34	UG/KG	50000***	N
3	WC-A1A2-02	DIELDRIN	35	UG/KG	2000	N
3	WC-A1A2-02	GAMMA-CHLORDANE	31	UG/KG	50000***	N
4	WC-HS-01	ARSENIC	1.9	MG/KG	20	N
4	WC-HS-01	BARIUM	23	MG/KG	5000	N
4	WC-HS-01	CADMIUM	0.29	MG/KG	30	N
4	WC-HS-01	CHROMIUM	8.6	MG/KG	200	N
4	WC-HS-01	LEAD	32	MG/KG	300	N
4	WC-HS-01	MERCURY	0.028	MG/KG	30	N
4	WC-HS-01	TOTAL PETROLEUM HYDROCARBONS	373	MG/KG	5000	N
4	WC-HS-01	ACENAPHTHENE	814	UG/KG	4000	N
4	WC-HS-01	ANTHRACENE	2170	UG/KG	5000000	N
4	WC-HS-01	BENZO(A)ANTHRACENE	6010	UG/KG	300000	N
4	WC-HS-01	BENZO(A)PYRENE	5500	UG/KG	30000	N
4	WC-HS-01	BENZO(B)FLUORANTHENE	6870	UG/KG	300000	N
4	WC-HS-01	BENZO(G,H,I)PERYLENE	1040	UG/KG	5000000	N
4	WC-HS-01	BENZO(K)FLUORANTHENE	2790	UG/KG	3000000	N

TABLE 1
STP SOIL STOCKPILE RESULTS COMPARED TO MASSDEP S3/GW1 STANDARDS

Stockpile#	Sample_id	Parameter	Result	Units	DEP Std*	> Std
4	WC-HS-01	CARBAZOLE	1290	UG/KG		
4	WC-HS-01	CHRYSENE	5560	UG/KG	3000000	N
4	WC-HS-01	DIBENZO(A,H)ANTHRACENE	502	UG/KG	30000	N
4	WC-HS-01	DIBENZOFURAN	399	UG/KG		
4	WC-HS-01	FLUORANTHENE	13400	UG/KG	5000000	N
4	WC-HS-01	FLUORENE	867	UG/KG	5000000	N
4	WC-HS-01	INDENO(1,2,3-CD)PYRENE	1620	UG/KG	300000	N
4	WC-HS-01	PHENANTHRENE	7870	UG/KG	10000	N
4	WC-HS-01	PYRENE	10400	UG/KG	5000000	N
4	WC-HS-01	NAPHTHALENE	88	UG/KG	4000	N
4	WC-HS-01	AROCLOR-1260	279	UG/KG	3000**	N
4	WC-HS-01	4,4'-DDT	34 J	UG/KG	30000	N
4	WC-HS-01	ALPHA-CHLORDANE	41 J	UG/KG	50000***	N
4	WC-HS-01	GAMMA-CHLORDANE	37 J	UG/KG	50000***	N
5	WC-A1A2-03	ARSENIC	85	MG/KG	20	Y
5	WC-A1A2-03	BARIUM	20	MG/KG	5000	N
5	WC-A1A2-03	CADMIUM	0.22	MG/KG	30	N
5	WC-A1A2-03	CHROMIUM	7.4	MG/KG	200	N
5	WC-A1A2-03	LEAD	33	MG/KG	300	N
5	WC-A1A2-03	MERCURY	0.13	MG/KG	30	N
5	WC-A1A2-03	SILVER	0.15	MG/KG	200	N
5	WC-A1A2-03	TOTAL PETROLEUM HYDROCARBONS	113	MG/KG	5000	N
5	WC-A1A2-03	ACENAPHTHENE	243	UG/KG	4000	N
5	WC-A1A2-03	ANTHRACENE	642	UG/KG	5000000	N
5	WC-A1A2-03	BENZO(A)ANTHRACENE	1960	UG/KG	300000	N
5	WC-A1A2-03	BENZO(A)PYRENE	18800	UG/KG	30000	N
5	WC-A1A2-03	BENZO(B)FLUORANTHENE	2600	UG/KG	300000	N
5	WC-A1A2-03	BENZO(G,H,I)PERYLENE	622	UG/KG	5000000	N
5	WC-A1A2-03	BENZO(K)FLUORANTHENE	874	UG/KG	3000000	N
5	WC-A1A2-03	CARBAZOLE	405	UG/KG		
5	WC-A1A2-03	CHRYSENE	1980	UG/KG	3000000	N
5	WC-A1A2-03	DIBENZO(A,H)ANTHRACENE	310	UG/KG	30000	N
5	WC-A1A2-03	FLUORANTHENE	4700	UG/KG	5000000	N
5	WC-A1A2-03	FLUORENE	246	UG/KG	5000000	N
5	WC-A1A2-03	INDENO(1,2,3-CD)PYRENE	876	UG/KG	300000	N
5	WC-A1A2-03	PHENANTHRENE	2540	UG/KG	10000	N
5	WC-A1A2-03	PYRENE	3360	UG/KG	5000000	N
5	WC-A1A2-03	4,4'-DDD	2430	UG/KG	30000	N
5	WC-A1A2-03	4,4'-DDT	1870	UG/KG	30000	N
6	WC-HS-02	ARSENIC	3	MG/KG	20	N
6	WC-HS-02	BARIUM	20	MG/KG	5000	N
6	WC-HS-02	CADMIUM	0.14	MG/KG	30	N
6	WC-HS-02	CHROMIUM	7.8	MG/KG	200	N
6	WC-HS-02	LEAD	17	MG/KG	300	N
6	WC-HS-02	MERCURY	0.045	MG/KG	30	N
6	WC-HS-02	TOTAL PETROLEUM HYDROCARBONS	278	MG/KG	5000	N

TABLE 1
STP SOIL STOCKPILE RESULTS COMPARED TO MASSDEP S3/GW1 STANDARDS

Stockpile#	Sample_id	Parameter	Result	Units	DEP Std*	> Std
6	WC-HS-02	ACENAPHTHYLENE	487	UG/KG	1000	N
6	WC-HS-02	ANTHRACENE	1390	UG/KG	5000000	N
6	WC-HS-02	BENZO(A)ANTHRACENE	3470	UG/KG	300000	N
6	WC-HS-02	BENZO(A)PYRENE	2970	UG/KG	30000	N
6	WC-HS-02	BENZO(B)FLUORANTHENE	3860	UG/KG	300000	N
6	WC-HS-02	BENZO(G,H,I)PERYLENE	1700	UG/KG	5000000	N
6	WC-HS-02	BENZO(K)FLUORANTHENE	1270	UG/KG	3000000	N
6	WC-HS-02	CARBAZOLE	810	UG/KG		
6	WC-HS-02	CHRYSENE	3070	UG/KG	3000000	N
6	WC-HS-02	DIBENZO(A,H)ANTHRACENE	628	UG/KG	30000	N
6	WC-HS-02	FLUORANTHENE	8260	UG/KG	5000000	N
6	WC-HS-02	FLUORENE	557	UG/KG	5000000	N
6	WC-HS-02	INDENO(1,2,3-CD)PYRENE	2070	UG/KG	300000	N
6	WC-HS-02	PHENANTHRENE	5440	UG/KG	10000	N
6	WC-HS-02	PYRENE	6300	UG/KG	5000000	N
6	WC-HS-02	AROCLOR-1254	689	UG/KG	3000**	N
6	WC-HS-03	ARSENIC	2.1	MG/KG	20	N
6	WC-HS-03	BARIUM	21	MG/KG	5000	N
6	WC-HS-03	CADMIUM	0.11	MG/KG	30	N
6	WC-HS-03	CHROMIUM	5.5	MG/KG	200	N
6	WC-HS-03	LEAD	9.7	MG/KG	300	N
6	WC-HS-03	MERCURY	0.03	MG/KG	30	N
6	WC-HS-03	TOTAL PETROLEUM HYDROCARBONS	94	MG/KG	5000	N
6	WC-HS-03	ACENAPHTHENE	246	UG/KG	4000	N
6	WC-HS-03	ANTHRACENE	777	UG/KG	5000000	N
6	WC-HS-03	BENZO(A)ANTHRACENE	1520	UG/KG	300000	N
6	WC-HS-03	BENZO(A)PYRENE	1340	UG/KG	30000	N
6	WC-HS-03	BENZO(B)FLUORANTHENE	1780	UG/KG	300000	N
6	WC-HS-03	BENZO(G,H,I)PERYLENE	561	UG/KG	5000000	N
6	WC-HS-03	BENZO(K)FLUORANTHENE	586	UG/KG	3000000	N
6	WC-HS-03	CARBAZOLE	392	UG/KG		
6	WC-HS-03	CHRYSENE	1460	UG/KG	3000000	N
6	WC-HS-03	DIBENZO(A,H)ANTHRACENE	231	UG/KG	30000	N
6	WC-HS-03	DIBENZOFURAN	151	UG/KG		
6	WC-HS-03	FLUORANTHENE	4000	UG/KG	5000000	N
6	WC-HS-03	FLUORENE	300	UG/KG	5000000	N
6	WC-HS-03	INDENO(1,2,3-CD)PYRENE	768	UG/KG	300000	N
6	WC-HS-03	PHENANTHRENE	2490	UG/KG	10000	N
6	WC-HS-03	PYRENE	2890	UG/KG	5000000	N
6	WC-HS-03	4,4'-DDD	12	UG/KG	30000	N
6	WC-HS-03	4,4'-DDT	8 J	UG/KG	30000	N
6	WC-HS-04	ARSENIC	3.6	MG/KG	20	N
6	WC-HS-04	BARIUM	30	MG/KG	5000	N
6	WC-HS-04	CHROMIUM	6.8	MG/KG	200	N
6	WC-HS-04	LEAD	13	MG/KG	300	N
6	WC-HS-04	MERCURY	0.046	MG/KG	30	N
6	WC-HS-04	SILVER	0.17	MG/KG	200	N
6	WC-HS-04	TOTAL PETROLEUM HYDROCARBONS	165	MG/KG	5000	N

TABLE 1
STP SOIL STOCKPILE RESULTS COMPARED TO MASSDEP S3/GW1 STANDARDS

Stockpile#	Sample_id	Parameter	Result	Units	DEP Std*	> Std
6	WC-HS-04	ACENAPHTHENE	198	UG/KG	4000	N
6	WC-HS-04	ANTHRACENE	433	UG/KG	5000000	N
6	WC-HS-04	BENZO(A)ANTHRACENE	1220	UG/KG	300000	N
6	WC-HS-04	BENZO(A)PYRENE	1150	UG/KG	30000	N
6	WC-HS-04	BENZO(B)FLUORANTHENE	1530	UG/KG	300000	N
6	WC-HS-04	BENZO(G,H,I)PERYLENE	487	UG/KG	5000000	N
6	WC-HS-04	BENZO(K)FLUORANTHENE	591	UG/KG	3000000	N
6	WC-HS-04	CARBAZOLE	341	UG/KG		
6	WC-HS-04	CHRYSENE	1360	UG/KG	3000000	N
6	WC-HS-04	DIBENZO(A,H)ANTHRACENE	247	UG/KG	30000	N
6	WC-HS-04	FLUORANTHENE	3240	UG/KG	5000000	N
6	WC-HS-04	FLUORENE	222	UG/KG	5000000	N
6	WC-HS-04	INDENO(1,2,3-CD)PYRENE	679	UG/KG	300000	N
6	WC-HS-04	PHENANTHRENE	2050	UG/KG	10000	N
6	WC-HS-04	PYRENE	2370	UG/KG	5000000	N
6	WC-HS-04	4,4'-DDD	57 J	UG/KG	30000	N
6	WC-HS-04	4,4'-DDE	73 J	UG/KG	30000	N
6	WC-HS-04	4,4'-DDT	283	UG/KG	30000	N
6	WC-HS-04	DIELDRIN	110	UG/KG	2000	N
6	WC-HS-05	ARSENIC	2.6	MG/KG	20	N
6	WC-HS-05	BARIUM	22	MG/KG	5000	N
6	WC-HS-05	CADMIUM	0.17	MG/KG	30	N
6	WC-HS-05	CHROMIUM	8.9	MG/KG	200	N
6	WC-HS-05	LEAD	20	MG/KG	300	N
6	WC-HS-05	MERCURY	0.055	MG/KG	30	N
6	WC-HS-05	SILVER	0.1	MG/KG	200	N
6	WC-HS-05	TOTAL PETROLEUM HYDROCARBONS	143	MG/KG	5000	N
6	WC-HS-05	ACENAPHTHENE	443	UG/KG	4000	N
6	WC-HS-05	ANTHRACENE	1120	UG/KG	5000000	N
6	WC-HS-05	BENZO(A)ANTHRACENE	3420	UG/KG	300000	N
6	WC-HS-05	BENZO(A)PYRENE	2940	UG/KG	30000	N
6	WC-HS-05	BENZO(B)FLUORANTHENE	4130	UG/KG	300000	N
6	WC-HS-05	BENZO(G,H,I)PERYLENE	1620	UG/KG	5000000	N
6	WC-HS-05	BENZO(K)FLUORANTHENE	1120	UG/KG	3000000	N
6	WC-HS-05	CARBAZOLE	718	UG/KG		
6	WC-HS-05	CHRYSENE	3310	UG/KG	3000000	N
6	WC-HS-05	DIBENZO(A,H)ANTHRACENE	617	UG/KG	30000	N
6	WC-HS-05	FLUORANTHENE	7950	UG/KG	5000000	N
6	WC-HS-05	FLUORENE	445	UG/KG	5000000	N
6	WC-HS-05	INDENO(1,2,3-CD)PYRENE	2110	UG/KG	300000	N
6	WC-HS-05	PHENANTHRENE	4640	UG/KG	10000	N
6	WC-HS-05	PYRENE	5980	UG/KG	5000000	N
6	WC-HS-05	4,4'-DDE	68	UG/KG	30000	N
6	WC-HS-05	4,4'-DDT	201	UG/KG	30000	N
6	WC-HS-05	DIELDRIN	57 J	UG/KG	2000	N
*MassDEP S3/GW1 Standards, June 2010						
**Total PCB standard compared to the detected Aroclor result						
***Chlordane standard compared to total of detected alpha-chlordane and gamma-chlordane results						

TABLE 2
AOC 55C SAMPLE RESULTS COMPARED TO MASSDEP S3/GW1 STANDARDS

Round #	Sample_id	Parameter	Result	Units	DEP Std*	> Std
1	WNAS-WE14-55C-CS-001	AROCLOR-1254	267	UG/KG		
1	WNAS-WE14-55C-CS-001	AROCLOR-1260	299	UG/KG		
1	WNAS-WE14-55C-CS-001	TOTAL AROCLOR	566	UG/KG	3000**	N
1	WNAS-WE14-55C-CS-002	ARSENIC	3.1	MG/KG	20	N
1	WNAS-WE14-55C-CS-002	CADMIUM	2.3	MG/KG	30	N
1	WNAS-WE14-55C-CS-002	CHROMIUM	12.4	MG/KG	200	N
1	WNAS-WE14-55C-CS-002	LEAD	98	MG/KG	300	N
1	WNAS-WE14-55C-CS-002	MERCURY	0.55	MG/KG	30	N
1	WNAS-WE14-55C-CS-002	ACETONE	90.9 B	UG/KG	6000	N
1	WNAS-WE14-55C-CS-002	BENZENE	0.66	UG/KG	2000	N
1	WNAS-WE14-55C-CS-002	AROCLOR-1254	260	UG/KG		
1	WNAS-WE14-55C-CS-002	AROCLOR-1260	136	UG/KG		
1	WNAS-WE14-55C-CS-002	TOTAL AROCLOR	396	UG/KG	3000**	N
1	WNAS-WE14-55C-CS-003	ARSENIC	2.6	MG/KG	20	N
1	WNAS-WE14-55C-CS-003	CADMIUM	5.2	MG/KG	30	N
1	WNAS-WE14-55C-CS-003	CHROMIUM	12.4	MG/KG	200	N
1	WNAS-WE14-55C-CS-003	LEAD	136	MG/KG	300	N
1	WNAS-WE14-55C-CS-003	MERCURY	0.68	MG/KG	30	N
1	WNAS-WE14-55C-CS-003	BENZO(A)ANTHRACENE	377	UG/KG	300000	N
1	WNAS-WE14-55C-CS-003	BENZO(A)PYRENE	405	UG/KG	30000	N
1	WNAS-WE14-55C-CS-003	BENZO(B)FLUORANTHENE	367	UG/KG	300000	N
1	WNAS-WE14-55C-CS-003	CHRYSENE	349	UG/KG	3000000	N
1	WNAS-WE14-55C-CS-003	FLUORANTHENE	720	UG/KG	5000000	N
1	WNAS-WE14-55C-CS-003	PHENANTHRENE	364	UG/KG	10000	N
1	WNAS-WE14-55C-CS-003	PYRENE	591	UG/KG	5000000	N
1	WNAS-WE14-55C-CS-003	2-BUTANONE	8	UG/KG	4000	N
1	WNAS-WE14-55C-CS-003	ACETONE	164 B	UG/KG	6000	N
1	WNAS-WE14-55C-CS-003	BENZENE	1.4	UG/KG	2000	N
1	WNAS-WE14-55C-CS-003	AROCLOR-1254	340	UG/KG		
1	WNAS-WE14-55C-CS-003	AROCLOR-1260	402	UG/KG		
1	WNAS-WE14-55C-CS-003	TOTAL AROCLOR	742	UG/KG	3000**	N
1	WNAS-WE14-55C-CS-004	ARSENIC	2.5	MG/KG	20	N
1	WNAS-WE14-55C-CS-004	CADMIUM	3.6	MG/KG	30	N
1	WNAS-WE14-55C-CS-004	CHROMIUM	12.6	MG/KG	200	N
1	WNAS-WE14-55C-CS-004	LEAD	117	MG/KG	300	N
1	WNAS-WE14-55C-CS-004	MERCURY	1.9	MG/KG	30	N
1	WNAS-WE14-55C-CS-004	BENZO(A)PYRENE	323	UG/KG	30000	N
1	WNAS-WE14-55C-CS-004	FLUORANTHENE	383	UG/KG	5000000	N
1	WNAS-WE14-55C-CS-004	PYRENE	326	UG/KG	5000000	N
1	WNAS-WE14-55C-CS-004	ACETONE	116 B	UG/KG	6000	N
1	WNAS-WE14-55C-CS-004	BENZENE	0.73	UG/KG	2000	N
1	WNAS-WE14-55C-CS-004	AROCLOR-1254	200	UG/KG		
1	WNAS-WE14-55C-CS-004	AROCLOR-1260	193	UG/KG		
1	WNAS-WE14-55C-CS-004	TOTAL AROCLOR	393	UG/KG	3000**	N
1	WNAS-WE14-55C-CS-005	ARSENIC	4.6	MG/KG	20	N
1	WNAS-WE14-55C-CS-005	CADMIUM	9.9	MG/KG	30	N
1	WNAS-WE14-55C-CS-005	CHROMIUM	28.9	MG/KG	200	N
1	WNAS-WE14-55C-CS-005	LEAD	383	MG/KG	300	Y

TABLE 2
AOC 55C SAMPLE RESULTS COMPARED TO MASSDEP S3/GW1 STANDARDS

Round #	Sample_id	Parameter	Result	Units	DEP Std*	> Std
1	WNAS-WE14-55C-CS-005	MERCURY	1	MG/KG	30	N
1	WNAS-WE14-55C-CS-005	ANTHRACENE	315	UG/KG	5000000	N
1	WNAS-WE14-55C-CS-005	BENZO(A)ANTHRACENE	1190	UG/KG	300000	N
1	WNAS-WE14-55C-CS-005	BENZO(A)PYRENE	1020	UG/KG	30000	N
1	WNAS-WE14-55C-CS-005	BENZO(B)FLUORANTHENE	1120	UG/KG	300000	N
1	WNAS-WE14-55C-CS-005	BENZO(G,H,I)PERYLENE	797	UG/KG	5000000	N
1	WNAS-WE14-55C-CS-005	BENZO(K)FLUORANTHENE	809	UG/KG	3000000	N
1	WNAS-WE14-55C-CS-005	CHRYSENE	1090	UG/KG	3000000	N
1	WNAS-WE14-55C-CS-005	FLUORANTHENE	2190	UG/KG	5000000	N
1	WNAS-WE14-55C-CS-005	INDENO(1,2,3-CD)PYRENE	732	UG/KG	300000	N
1	WNAS-WE14-55C-CS-005	PHENANTHRENE	1190	UG/KG	10000	N
1	WNAS-WE14-55C-CS-005	PYRENE	1760	UG/KG	5000000	N
1	WNAS-WE14-55C-CS-005	2-BUTANONE	11.1	UG/KG	4000	N
1	WNAS-WE14-55C-CS-005	ACETONE	229 B	UG/KG	6000	N
1	WNAS-WE14-55C-CS-005	BENZENE	3.1	UG/KG	2000	N
1	WNAS-WE14-55C-CS-005	AROCLOR-1254	1380	UG/KG		
1	WNAS-WE14-55C-CS-005	AROCLOR-1260	1010	UG/KG		
1	WNAS-WE14-55C-CS-005	TOTAL AROCLOR	2390	UG/KG	3000**	N
2	WNAS-WE14-55C-CS-006	AROCLOR-1254	996	UG/KG		
2	WNAS-WE14-55C-CS-006	AROCLOR-1260	434	UG/KG		
2	WNAS-WE14-55C-CS-006	TOTAL AROCLOR	1430	UG/KG	3000**	N
2	WNAS-WE14-55C-CS-007	AROCLOR-1254	462	UG/KG		
2	WNAS-WE14-55C-CS-007	AROCLOR-1260	238	UG/KG		
2	WNAS-WE14-55C-CS-007	TOTAL AROCLOR	700	UG/KG	3000**	N
2	WNAS-WE14-55C-CS-008	AROCLOR-1254	353	UG/KG		
2	WNAS-WE14-55C-CS-008	AROCLOR-1260	217	UG/KG		
2	WNAS-WE14-55C-CS-008	TOTAL AROCLOR	570	UG/KG	3000**	N
*MassDEP S3/GW1 Standards, June 2010						
**Total PCB standard compared to the sum of the detected Aroclor 1254 and Aroclor 1260 results						

TABLE 3
SUMMARY OF STP TCLP DATA

Sample *	Parameter	Method	Result	Units	RL	TCLP Limit
M92303-1	2,4-D	SW846 8151	ND	mg/l	0.01	10
M92303-1	2,4,5-TP (Silvex)	SW846 8151	ND	mg/l	0.01	1
M92303-1	gamma-BHC (Lindane)	SW846 8081	ND	mg/l	0.0005	0.4
M92303-1	Chlordane	SW846 8081	ND	mg/l	0.005	0.03
M92303-1	Endrin	SW846 8081	ND	mg/l	0.0005	0.02
M92303-1	Heptachlor	SW846 8081	ND	mg/l	0.0005	0.008
M92303-1	Heptachlor epoxide	SW846 8081	ND	mg/l	0.0005	0.008
M92303-1	Methoxychlor	SW846 8081	ND	mg/l	0.0005	10
M92303-1	Toxaphene	SW846 8081	ND	mg/l	0.025	0.5
M92303-1	Solids, Percent	SM21 2540 B MOD.	97.6	%		
M92303-1	Arsenic	SW846 6010B	<0.025	mg/l	0.025	5
M92303-1	Barium	SW846 6010B	<0.50	mg/l	0.5	100
M92303-1	Cadmium	SW846 6010B	0.0046	mg/l	0.004	1
M92303-1	Chromium	SW846 6010B	<0.010	mg/l	0.01	5
M92303-1	Lead	SW846 6010B	0.067	mg/l	0.01	5
M92303-1	Mercury	SW846 7470A	<0.00020	mg/l	0.0002	0.2
M92303-1	Selenium	SW846 6010B	<0.025	mg/l	0.025	1
M92303-1	Silver	SW846 6010B	<0.0050	mg/l	0.005	5
M92303-1	2-Methylphenol	SW846 8270C	ND	mg/l	0.1	200
M92303-1	3&4-Methylphenol	SW846 8270C	ND	mg/l	0.1	200
M92303-1	Pentachlorophenol	SW846 8270C	ND	mg/l	0.1	100
M92303-1	2,4,5-Trichlorophenol	SW846 8270C	ND	mg/l	0.1	400
M92303-1	2,4,6-Trichlorophenol	SW846 8270C	ND	mg/l	0.1	2
M92303-1	1,4-Dichlorobenzene	SW846 8270C	ND	mg/l	0.05	7.5
M92303-1	2,4-Dinitrotoluene	SW846 8270C	ND	mg/l	0.1	0.13
M92303-1	Hexachlorobenzene	SW846 8270C	ND	mg/l	0.05	0.13
M92303-1	Hexachlorobutadiene	SW846 8270C	ND	mg/l	0.05	0.5
M92303-1	Hexachloroethane	SW846 8270C	ND	mg/l	0.05	3
M92303-1	Nitrobenzene	SW846 8270C	ND	mg/l	0.05	2
M92303-1	Pyridine	SW846 8270C	ND	mg/l	0.1	5
M92303-1	Benzene	SW846 8260B	ND	mg/l	0.05	0.5
M92303-1	2-Butanone (MEK)	SW846 8260B	ND	mg/l	0.5	200
M92303-1	Carbon tetrachloride	SW846 8260B	ND	mg/l	0.1	0.5
M92303-1	Chlorobenzene	SW846 8260B	ND	mg/l	0.1	100
M92303-1	Chloroform	SW846 8260B	ND	mg/l	0.1	6
M92303-1	1,4-Dichlorobenzene	SW846 8260B	ND	mg/l	0.1	7.5
M92303-1	1,2-Dichloroethane	SW846 8260B	ND	mg/l	0.1	0.5
M92303-1	1,1-Dichloroethene	SW846 8260B	ND	mg/l	0.1	0.7
M92303-1	Tetrachloroethene	SW846 8260B	ND	mg/l	0.1	0.7
M92303-1	Trichloroethene	SW846 8260B	ND	mg/l	0.1	0.5
M92303-1	Vinyl chloride	SW846 8260B	ND	mg/l	0.1	0.2

TABLE 3
SUMMARY OF STP TCLP DATA

Sample *	Parameter	Method	Result	Units	RL	TCLP Limit
M92303-2	2,4-D	SW846 8151	ND	mg/l	0.01	10
M92303-2	2,4,5-TP (Silvex)	SW846 8151	ND	mg/l	0.01	1
M92303-2	gamma-BHC (Lindane)	SW846 8081	ND	mg/l	0.0005	0.4
M92303-2	Chlordane	SW846 8081	ND	mg/l	0.005	0.03
M92303-2	Endrin	SW846 8081	ND	mg/l	0.0005	0.02
M92303-2	Heptachlor	SW846 8081	ND	mg/l	0.0005	0.008
M92303-2	Heptachlor epoxide	SW846 8081	ND	mg/l	0.0005	0.008
M92303-2	Methoxychlor	SW846 8081	ND	mg/l	0.0005	10
M92303-2	Toxaphene	SW846 8081	ND	mg/l	0.025	0.5
M92303-2	Solids, Percent	SM21 2540 B MOD.	94.7	%		
M92303-2	Arsenic	SW846 6010B	<0.025	mg/l	0.025	5
M92303-2	Barium	SW846 6010B	<0.50	mg/l	0.5	100
M92303-2	Cadmium	SW846 6010B	<0.0040	mg/l	0.004	1
M92303-2	Chromium	SW846 6010B	<0.010	mg/l	0.01	5
M92303-2	Lead	SW846 6010B	0.034	mg/l	0.01	5
M92303-2	Mercury	SW846 7470A	<0.00020	mg/l	0.0002	0.2
M92303-2	Selenium	SW846 6010B	<0.025	mg/l	0.025	1
M92303-2	Silver	SW846 6010B	<0.0050	mg/l	0.005	5
M92303-2	2-Methylphenol	SW846 8270C	ND	mg/l	0.1	200
M92303-2	3&4-Methylphenol	SW846 8270C	ND	mg/l	0.1	200
M92303-2	Pentachlorophenol	SW846 8270C	ND	mg/l	0.1	100
M92303-2	2,4,5-Trichlorophenol	SW846 8270C	ND	mg/l	0.1	400
M92303-2	2,4,6-Trichlorophenol	SW846 8270C	ND	mg/l	0.1	2
M92303-2	1,4-Dichlorobenzene	SW846 8270C	ND	mg/l	0.05	7.5
M92303-2	2,4-Dinitrotoluene	SW846 8270C	ND	mg/l	0.1	0.13
M92303-2	Hexachlorobenzene	SW846 8270C	ND	mg/l	0.05	0.13
M92303-2	Hexachlorobutadiene	SW846 8270C	ND	mg/l	0.05	0.5
M92303-2	Hexachloroethane	SW846 8270C	ND	mg/l	0.05	3
M92303-2	Nitrobenzene	SW846 8270C	ND	mg/l	0.05	2
M92303-2	Pyridine	SW846 8270C	ND	mg/l	0.1	5
M92303-2	Benzene	SW846 8260B	ND	mg/l	0.05	0.5
M92303-2	2-Butanone (MEK)	SW846 8260B	ND	mg/l	0.5	200
M92303-2	Carbon tetrachloride	SW846 8260B	ND	mg/l	0.1	0.5
M92303-2	Chlorobenzene	SW846 8260B	ND	mg/l	0.1	100
M92303-2	Chloroform	SW846 8260B	ND	mg/l	0.1	6
M92303-2	1,4-Dichlorobenzene	SW846 8260B	ND	mg/l	0.1	7.5
M92303-2	1,2-Dichloroethane	SW846 8260B	ND	mg/l	0.1	0.5
M92303-2	1,1-Dichloroethene	SW846 8260B	ND	mg/l	0.1	0.7
M92303-2	Tetrachloroethene	SW846 8260B	ND	mg/l	0.1	0.7
M92303-2	Trichloroethene	SW846 8260B	ND	mg/l	0.1	0.5
M92303-2	Vinyl chloride	SW846 8260B	ND	mg/l	0.1	0.2

* Sample M92303-1 from Stockpile 3; sample M92303-2 from Stockpile 5.

Source: Shaw Environmental and Infrastructure

Found 0 results exceeding regulatory limits.

RL - reporting limit.

TABLE 4
SUMMARY OF AOC 55C TCLP DATA

Sample	Parameter	Method	Result	Units	RL	TCLP Limit
M89218-1	Corrosivity as pH	SW846 CHAP7	6.1			
M89218-1	Ignitability (Flashpoint)	SW846 1020	>230	Deg. F		
M89218-1	Sulfide Reactivity	SW846 CHAP7	<64	mg/kg	64	
M89218-1	Cyanide Reactivity	SW846 CHAP7	<1.9	mg/kg	1.9	
M89218-1	Solids, Percent	SM21 2540 B MOD.	77.8	%		
M89218-1A	2,4-D	SW846 8151	ND	mg/l	0.01	10
M89218-1A	2,4,5-TP (Silvex)	SW846 8151	ND	mg/l	0.01	1
M89218-1A	gamma-BHC (Lindane)	SW846 8081	ND	mg/l	0.0005	0.4
M89218-1A	Chlordane	SW846 8081	ND	mg/l	0.005	0.03
M89218-1A	Endrin	SW846 8081	ND	mg/l	0.0005	0.02
M89218-1A	Heptachlor	SW846 8081	ND	mg/l	0.0005	0.008
M89218-1A	Heptachlor epoxide	SW846 8081	ND	mg/l	0.0005	0.008
M89218-1A	Methoxychlor	SW846 8081	ND	mg/l	0.0005	10
M89218-1A	Toxaphene	SW846 8081	ND	mg/l	0.025	0.5
M89218-1A	Arsenic	SW846 6010B	<0.025	mg/l	0.025	5
M89218-1A	Barium	SW846 6010B	0.59	mg/l	0.5	100
M89218-1A	Cadmium	SW846 6010B	0.059	mg/l	0.004	1
M89218-1A	Chromium	SW846 6010B	<0.010	mg/l	0.01	5
M89218-1A	Lead	SW846 6010B	0.22	mg/l	0.01	5
M89218-1A	Mercury	SW846 7470A	<0.00020	mg/l	0.0002	0.2
M89218-1A	Selenium	SW846 6010B	<0.025	mg/l	0.025	1
M89218-1A	Silver	SW846 6010B	<0.0050	mg/l	0.005	5
M89218-1A	2-Methylphenol	SW846 8270C	ND	mg/l	0.1	200
M89218-1A	3&4-Methylphenol	SW846 8270C	ND	mg/l	0.1	200
M89218-1A	Pentachlorophenol	SW846 8270C	ND	mg/l	0.1	100
M89218-1A	2,4,5-Trichlorophenol	SW846 8270C	ND	mg/l	0.1	400
M89218-1A	2,4,6-Trichlorophenol	SW846 8270C	ND	mg/l	0.1	2
M89218-1A	1,4-Dichlorobenzene	SW846 8270C	ND	mg/l	0.05	7.5
M89218-1A	2,4-Dinitrotoluene	SW846 8270C	ND	mg/l	0.1	0.13
M89218-1A	Hexachlorobenzene	SW846 8270C	ND	mg/l	0.05	0.13
M89218-1A	Hexachlorobutadiene	SW846 8270C	ND	mg/l	0.05	0.5
M89218-1A	Hexachloroethane	SW846 8270C	ND	mg/l	0.05	3
M89218-1A	Nitrobenzene	SW846 8270C	ND	mg/l	0.05	2
M89218-1A	Pyridine	SW846 8270C	ND	mg/l	0.1	5
M89218-1A	Benzene	SW846 8260B	ND	mg/l	0.05	0.5
M89218-1A	2-Butanone (MEK)	SW846 8260B	ND	mg/l	0.5	200
M89218-1A	Carbon tetrachloride	SW846 8260B	ND	mg/l	0.1	0.5
M89218-1A	Chlorobenzene	SW846 8260B	ND	mg/l	0.1	100
M89218-1A	Chloroform	SW846 8260B	ND	mg/l	0.1	6
M89218-1A	1,4-Dichlorobenzene	SW846 8260B	ND	mg/l	0.1	7.5
M89218-1A	1,2-Dichloroethane	SW846 8260B	ND	mg/l	0.1	0.5
M89218-1A	1,1-Dichloroethene	SW846 8260B	ND	mg/l	0.1	0.7
M89218-1A	Tetrachloroethene	SW846 8260B	ND	mg/l	0.1	0.7
M89218-1A	Trichloroethene	SW846 8260B	ND	mg/l	0.1	0.5
M89218-1A	Vinyl chloride	SW846 8260B	ND	mg/l	0.1	0.2

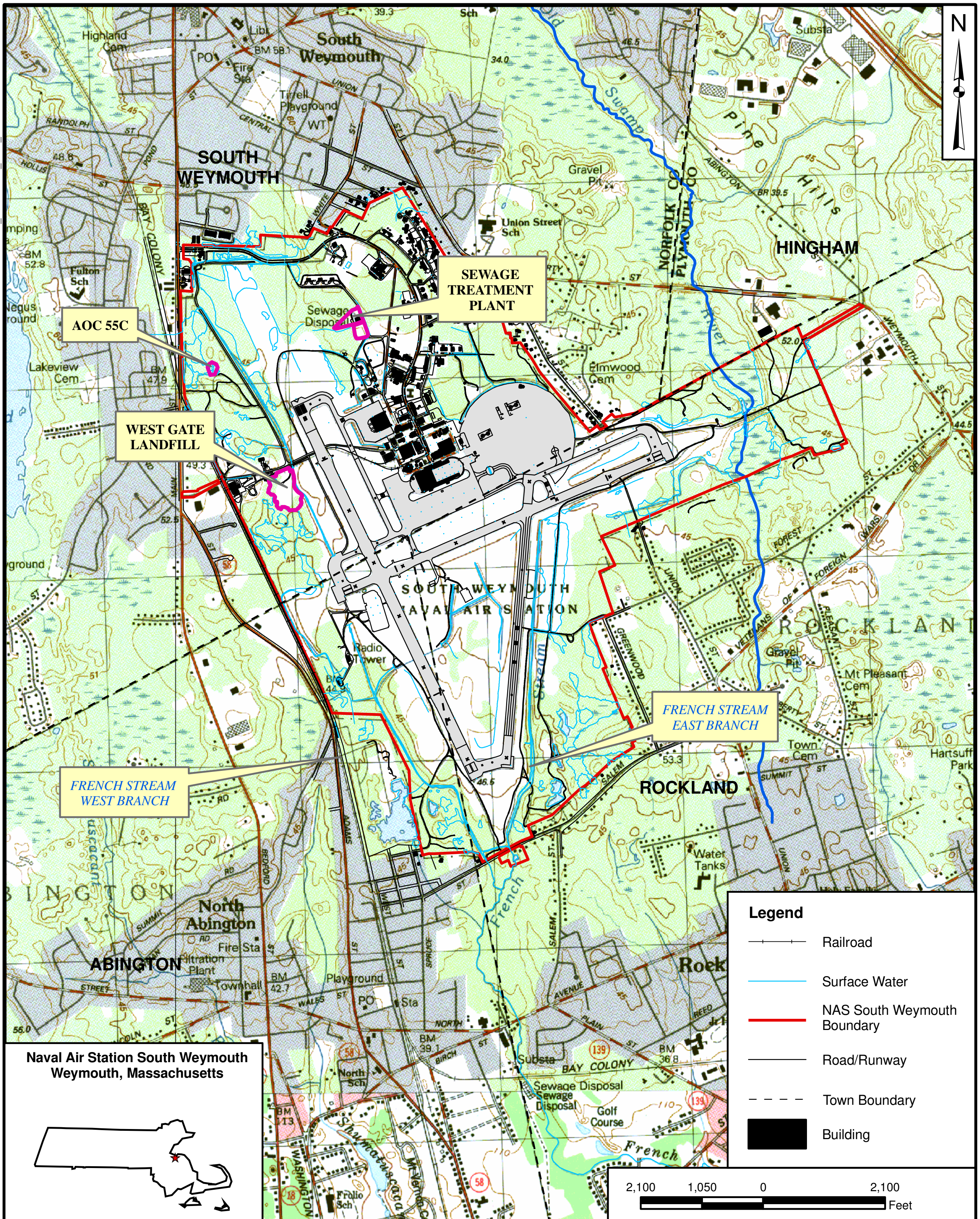
Source: Shaw Environmental and Infrastructure

Found 0 results exceeding regulatory limits.

RL - reporting limit

FIGURES

P:\GIS\WEYMOUTH\MAPDOCS\MXD BASE_LOCATION_MAP_LANDFILL.MXD 07/19/10 TW



TETRA TECH

SITE LOCUS MAP
EXPLANATION OF SIGNIFICANT DIFFERENCES
NAS SOUTH WEYMOUTH
WEYMOUTH, MASSACHUSETTS

SCALE	AS NOTED
FILE	BASE_LOCATION_MAP_LANDFILL.MXD
REV	0
DATE	07/19/10
FIGURE NUMBER	FIGURE NO. 1

ATTACHMENT 1

ATTACHMENT 1

RESPONSES TO COMMENTS RECEIVED ON THE DRAFT ESD

As noted in Section 7 of the ESD, in addition to discussions at the Restoration Advisory Board meetings on May 13, 2010 and July 8, 2010, the public was provided an opportunity to comment on the ESD. The 15-day public comment period was from August 5, 2010 to August 20, 2010.

Comments were received on August 20, 2010 from Mary Parsons on behalf of ARAWH (Advocates for Rockland, Abington, Weymouth and Hingham). The comments are presented below along with Navy's responses.

ARAWH Comment 1: For the present, we looked through the August 2010 "Explanation of Significant Differences" (ESD) document for the West Gate Landfill (on which comments are due Friday, 8/20), and briefly examined the August 2010 Draft Post Closure Monitoring Plan. As described to us, the stockpile sample results reported in the ESD show similar contaminants to those already contained in the West Gate Landfill area, and the levels of contamination are not terribly high. The number of waste characterization samples is maybe a bit on the low side. If one uses a "rule of thumb" of one sample per 100 cubic yards of soil, one would take 37 samples for the Sewage Treatment Plant (STP) soils and 15 samples for the AOC 55C soils; the number of different sample designations in Tables 1 and 2 total 10 and 5 (8 for PCBs) for these two areas, respectively. With a greater number of samples, you would expect to see more variability, and likely more values in excess of the S3/GW1 standards used for comparison. However, given that the soils will be isolated by the cap, and that long-term monitoring will take place, there does not necessarily need to be additional soil characterization.

Navy Response: The samples were initially collected to characterize the excavated soils for off-site disposal. The number of samples required for this effort was defined by the specific off-site disposal facility and was consistent with their permit to accept this type of waste. This sample collection was completed prior to the development of the soil consolidation beneficial reuse remedy change described in the ESD. Additional samples were requested by the regulatory agencies and the number of samples collected and the waste characterization data were deemed adequate by Navy and the regulators to evaluate the suitability of the excavated soils as the common fill subgrade layer for the West Gate Landfill (WGL) cover system.

ARAWH Comment 2: One issue we might question is whether lead from the AOC 55C soils has the potential to leach to groundwater. Lead was detected in one soil sample at 383 ppm – not a terribly high level compared with values commonly found in urban areas, but still in excess of the Massachusetts S3/GW1 soil standard of 300 ppm. The ESD (p. 11) asserts that the leaching of lead is not expected to be significant because the AOC 55C composite sample passed the Toxicity Characteristic Leaching Procedure (TCLP) test. It is true that the TCLP limit was not exceeded, but the TCLP criterion for lead is relatively high, at 5,000 µg/l. Lead was in fact detected in all three TCLP tests at levels ranging from 34 to 220 µg/l. The ambient water quality criterion for lead is quite low – 2.5 µg/l (at hardness 100 mg/l). The fact that the TLCP test results are much higher is possible cause for concern, though not alarm, given the site-specific relevance of the test. The TCLP test uses an acid to attempt to extract contaminants from soil, and likely over predicts the level of lead that might be leached out by rainwater percolating through soil. In addition, there should be little or no rain water that permeates the cap to be installed at the West Gate Landfill. Thus, in all probability, lead mobilization and transport from the contaminated soils is unlikely. And should the unexpected occur, it should be noticed. As is prudent, long-term surface water and groundwater monitoring is proposed for the West Gate Landfill site.

Navy Response: As noted in the ESD and in the comment above, the samples collected from the STP and AOC 55C stockpiles for analysis by the TCLP procedure, EPA SW-846 Method 1311, showed no exceedances of the TCLP regulatory limits. Per 40 CFR 261.24, since there are no exceedances of the regulatory limits, the soils do not exhibit the characteristic of toxicity. As also noted in the ESD, post-closure monitoring will be performed consistent with the state landfill closure regulations. The monitoring locations, frequency and constituents to be monitored will be developed under the Post-Closure Monitoring Plan.