RECORD OF DECISION

AREA OF CONCERN 55C
WETLAND AREA NORTH OF TROTTER ROAD
OPERABLE UNIT 22

FORMER NAVAL AIR STATION SOUTH WEYMOUTH
WEYMOUTH, MASSACHUSETTS

BRAC PMO NORTHEAST
U.S. NAVY

AUGUST 2011

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ABBREVIATIONS AND ACRONYMS

AOC	Area of Concern
BRAC	Base Realignment and Closure
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPC	chemical of potential concern
CSF	cancer slope factor
CSM	conceptual site model
EBS	Environmental Baseline Survey
EE/CA	Engineering Evaluation/Cost Analysis
EM	electromagnetic
EPA	United States Environmental Protection Agency
epc	exposure point concentration
ERA	Ecological Risk Assessment
ESD	Explanation of Significant Differences
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	hazard quotient
LOEC	Lowest observable-effect concentration
MassDEP	Massachusetts Department of Environmental Protection
NAS	Naval Air Station
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NFA	No Further Action
NHESP	Natural Heritage and Endangered Species Program
NOEC	No-observable-effect concentration
NPL	National Priorities List
NTCRA	Non-Time-Critical Removal Action
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PPA	potentially productive aquifer
RAB	Restoration Advisory Board
RfD	reference dose
RIA	Review Item Area
RME	reasonable maximum exposure
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SMP	Site Management Plan
USGS	United States Geological Survey
VOC	volatile organic compound

1.0 DECLARATION

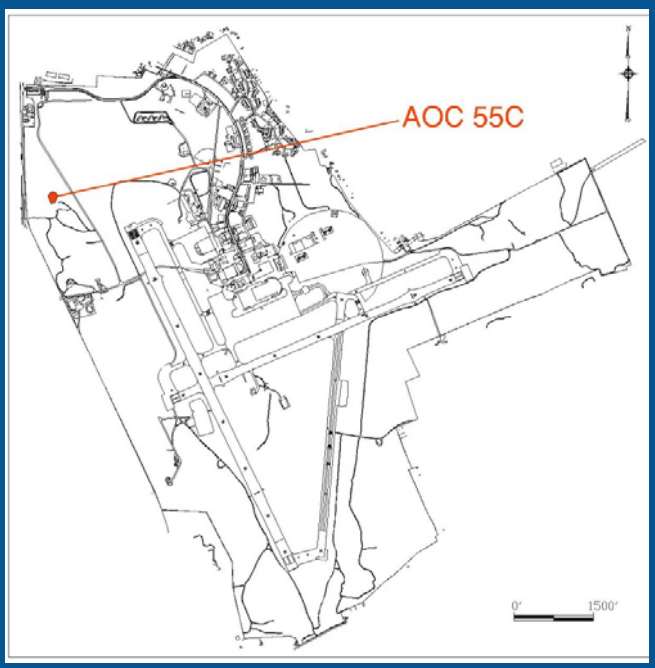
1.1 SITE NAME AND LOCATION

Area of Concern (AOC) 55C, the Wetland Area North of Trotter Road – Operable Unit 22, at the former Naval Air Station (NAS) South Weymouth, Weymouth, Massachusetts, United States Environmental Protection Agency (EPA) ID number MA2170022022.

1.2 STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the No Further Action (NFA) decision for AOC 55C (see Figure 1-1), which was chosen by the Navy and EPA in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC § 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on information contained in the Administrative Record for the site, which is available for review at the Navy's Caretaker Site Office located at NAS South Weymouth and also at public Information Repositories maintained at libraries in the adjacent towns of Weymouth, Abington, Rockland, and Hingham. The Navy and EPA have agreed on the NFA decision for this site, and the Massachusetts Department of Environmental Protection (MassDEP) concurs (see Appendix A for MassDEP concurrence letter).

FIGURE 1-1. AOC 55C LOCATION MAP



1.3 DESCRIPTION OF SELECTED REMEDY

The Navy and EPA, in consultation with MassDEP, have determined that no further CERCLA remedial action is necessary at AOC 55C to protect the public health and welfare or the environment from actual or threatened releases of hazardous substances, pollutants, or contaminants into the environment. No Further Action (under CERCLA) is the Selected Remedy for AOC 55C.

1.4 STATUTORY DETERMINATIONS

Potential threats to human health and the environment have been removed at AOC 55C; therefore, no further remedial action is required. This NFA determination meets the requirements of CERCLA Section 121 and the NCP. Because no hazardous substances, pollutants, or contaminants remain at the site in excess of levels that allow for unlimited use and unrestricted exposure, five-year reviews will not be required.

The Selected Remedy will allow for the reasonably anticipated future land use, which is non-residential open space. This ROD documents the final remedy for AOC 55C and does not include or affect any other sites at NAS South Weymouth.

1.5 AUTHORIZING SIGNATURES

This ROD documents that No Further Action is necessary to ensure protection of human health and the environment at AOC 55C (Wetland Area North of Trotter Road) at the former NAS South Weymouth. MassDEP's statement on the selected decision is presented in Appendix A.

Concur and recommend for implementation:

8/19/11

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

Date

Concur and recommend for implementation:

9/21/11

James T. Owens, III
Director, Office of Site Remediation and Restoration
EPA Region 1 – New England

Date

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND BRIEF DESCRIPTION

The former NAS South Weymouth (the Base), EPA ID number MA2170022022, is located primarily in the Town of Weymouth, Massachusetts. Portions of NAS South Weymouth extend into the adjacent Towns of Abington and Rockland, Massachusetts. The Base was developed during the 1940s for dirigible aircraft used to patrol the North Atlantic during World War II. The facility was closed at the end of the war and was reopened in 1953 as a Naval Air Station for aviation training. The Base was in continuous use from that time until it was operationally closed on September 30, 1996, and was administratively closed on September 30, 1997. NAS South Weymouth was placed on the National Priorities List (NPL) in May 1994 by EPA, pursuant to CERCLA.

AOC 55C, the Wetland Area North of Trotter Road, is a portion of an area originally identified in the basewide Phase I Environmental Baseline Survey (EBS) as Review Item Area (RIA) 55. RIA 55 was a large area containing debris such as concrete slabs, a Corsair airplane wing, rusted 55-gallon drums, tires, shoes and other household items, and automotive debris. As documented in various EBS reports, based on site-specific characteristics, RIA 55 was divided into four separate sites (RIA 55A, RIA 55B, RIA 55C, and RIA 55D) that later were reclassified as AOCs.

AOC 55C is a small (less than 1 acre) parcel in a forested wetland area located in the northwestern portion of the Base. It consists of a small pond and adjacent wetland and is surrounded by other wetlands and upland forest. Access to AOC 55C is via an unpaved road at the southeastern perimeter. An area adjacent to the site contains a seasonal surface water body with the characteristics of a vernal pool. A vernal pool is an area that contains standing water in the spring, provides a breeding habitat for semi-aquatic species, and dries out in the hotter summer months. This surface water body has been identified as a 'certifiable' **vernal pool**; however, the Massachusetts Natural Heritage and Endangered Species Program (NHESP) has not to date classified the area as a certified vernal pool. Prior to the 2010 removal action, debris was scattered around the perimeter of the pond, over the soil surface, and in subsurface soils throughout the boundaries of AOC 55C (see Figure 2-1). No information is available regarding historical uses of the AOC 55C area.

FIGURE 2-1. AOC 55C SITE CONDITIONS AND DEBRIS, 2007

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

Surface and subsurface soil, sediment, surface water, and groundwater samples have been collected at AOC 55C as part of a series of investigations from 2001 to 2010. An electromagnetic (EM) survey was performed to determine the extent of debris. The debris and associated soils with contaminant concentrations exceeding cleanup goals were removed in 2010. Table 2-1 provides brief summaries of investigations and removal actions conducted at AOC 55C.

TABLE 2-1. AOC 55C INVESTIGATIONS AND REMOVAL ACTIONS

INVESTIGATION	DATE	ACTIVITIES
Phase I EBS	1995	The **basewide** survey identified 97 RIAs, including RIA 55, for further action. The survey included record reviews, interview, and site visits but did not include sampling. Scattered metallic debris was observed in the area of RIA 55.
Phase II EBS	2002	RIA 55C was identified in 2001 and investigated as part of EBS Phase II Mobilization 2. Surface and subsurface soil from 3 soil borings, and 3 co-located sets of sediment and surface water samples were collected in the wetland near the mounded debris areas identified at RIA 55C. All samples were analyzed for the target compound list (TCL) and target analyte list (TAL) chemicals, polycyclic aromatic hydrocarbons (PAHs), and extractable and volatile petroleum hydrocarbons (EPH/VPH). The results were compared to human health and ecological risk-based **benchmarks** and were summarized in a 2002 field report. Metals, PAHs and pesticides were detected in all media at concentrations that exceeded screening criteria.
Phase II EBS	2004	Based on the EBS Mobilization 2 sampling results, additional samples (3 surface water, 7 sediment, and 14 soil were collected as part of Mobilization 3 of the Phase II EBS. Analyses and sampling results were similar to Mobilization 2 and are summarized in a 2004 field report. There were exceedances of human health and ecological risk-based screening criteria.
EM Survey	2007	An EM survey was performed to determine the extent of **metallic debris** and to aid in future sampling efforts. The survey identified surface and buried debris concentrated south and southeast of the vernal pond.
Ecological Risk Assessment (ERA)	2009	Based on the exceedances identified during the EBS investigations and discussions with the regulators, the Navy collected 19 sediment samples for lead and pH. Based on the results, 6 of the 19 sediment locations were selected for laboratory chemical and **toxicological** analysis. Three reference samples were also collected from nearby wetland areas for comparison. Four surface water samples and one reference sample were also collected for chemical and toxicological analyses. A **wetland functions and values** assessment was also conducted. Results were incorporated into the ERA, which concluded that surface soil and sediment at AOC 55C posed potential risk to ecological receptors.
Human Health Risk Assessment (HHRA)	2009	The HHRA used all previously collected data to determine if environmental media posed potential risk to future site residents (the most sensitive potential receptor). The HHRA **concluded** that AOC 55C potentially posed an unacceptable cancer risk to future residents exposed to soil (either surface or mixed surface/subsurface), sediment, and surface water. Non-cancer risks and risks from lead were less than EPA target levels.
Engineering Evaluation/Cost Analysis (EE/CA)	2009	The EE/CA compared the cost and effectiveness of either **excavating** debris and associated soils or leaving the material in place. The report recommended excavation, confirmatory sampling, and wetland restoration for AOC 55C. Cleanup goals for the recommended removal action were selected based on ecological and human health risk values as well as Base background values.
Non-Time-Critical Removal Action (NTCRA)	2011	Debris and associated impacted environmental media were removed from 19 grids, post-excavation samples were collected, and based on **confirmatory sample** results, additional excavation was conducted at some grids to achieve cleanup goals. The excavated area was backfilled with clean topsoil mixed with organic compost to achieve a minimum organic content of 12

TABLE 2-1. AOC 55C INVESTIGATIONS AND REMOVAL ACTIONS

INVESTIGATION	DATE	ACTIVITIES
		percent, similar to the hydric soil in the surrounding wetland areas. Native vegetation (grasses, trees and shrubs) was planted after the area was graded to promote a wetland habitat. **Post-restoration monitoring** will be performed to ensure the success of the wetland restoration and to control invasive non-native plants, as needed.
Groundwater Investigation	2011	Five **piezometers** were installed to measure water levels and collect groundwater samples to determine if the removed debris and associated soil had affected groundwater quality. Concentrations of the detected analytes were less than screening levels, except for one pesticide in one sample. The health risk for this sample was determined to be within EPA's acceptable risk level for recreational users. Future recreational use of the wetland area is consistent with the planned use of AOC 55C as open (forested) space.

Additional information about terms in **blue text** *is provided in the Administrative Record Reference Table included at the end of this ROD.*

There have been no cited violations under federal or state environmental law or any past or pending enforcement actions pertaining to the cleanup of AOC 55C.

2.3 COMMUNITY PARTICIPATION

The Navy performs public participation activities in accordance with CERCLA and the NCP. The Navy has kept the community and other interested parties apprised of NAS South Weymouth environmental activities through informational meetings, fact sheets, press releases, public meetings, regular contact with local officials, and a public website. Also, the Navy meets on a regular basis with the Restoration Advisory Board (RAB), which is composed of community leaders, government agency representatives, and local citizens, to discuss the progress of the environmental cleanup activities at NAS South Weymouth. Representatives from the Navy, EPA Region 1, MassDEP, and local government attend public meetings and hearings. A brief summary of public outreach efforts for AOC 55C is provided below.

The RAB has met frequently since its inception in 1995 and currently meets bi-monthly. AOC 55C investigation activities, results, and the progress of the removal action have been discussed at RAB meetings. Information Repositories for NAS South Weymouth have been established at the Tufts Library in Weymouth, Massachusetts, the Abington Public Library in Abington, Massachusetts, the Hingham Public Library in Hingham, Massachusetts, and the Rockland Memorial Library in Rockland, Massachusetts. Documents and other relevant information relied on in the remedy selection process for AOC 55C, including a copy of the Administrative Record Index, are available for public review at the Information Repositories.

The Navy distributed copies of the Proposed Plan to approximately 320 community members, local elected officials, and the local Information Repositories. In accordance with Sections 113 and 117 of CERCLA, the Navy provided a public comment period from April 11, 2011, to May 11, 2011, for the proposed NFA decision described in the Proposed Plan for AOC 55C. A public meeting to present the Proposed Plan was held on April 25, 2011, at the New England Wildlife Center in Weymouth. The public meeting was followed by a public hearing to accept oral comments on the Proposed Plan. **Public notice** of the meeting/hearing and availability of documents was published in the *Patriot Ledger* on April 11, 2011, *Weymouth News* on April 13, 2011, and *Rockland Mariner/Standard* on April 15, 2011. Comments received on the Proposed Plan are addressed in Section 3.

2.4 SCOPE AND ROLE OF OPERABLE UNIT

The Navy is the lead agency and EPA is the lead regulatory agency for CERCLA activities at NAS South Weymouth. MassDEP also comments on environmental site activities. The United States Department of Defense is the sole source of cleanup funding for the property under the Navy Base Realignment and

Closure (BRAC) program. There are several Operable Units at NAS South Weymouth that the Navy is addressing under CERCLA. This ROD pertains to AOC 55C, Operable Unit 22.

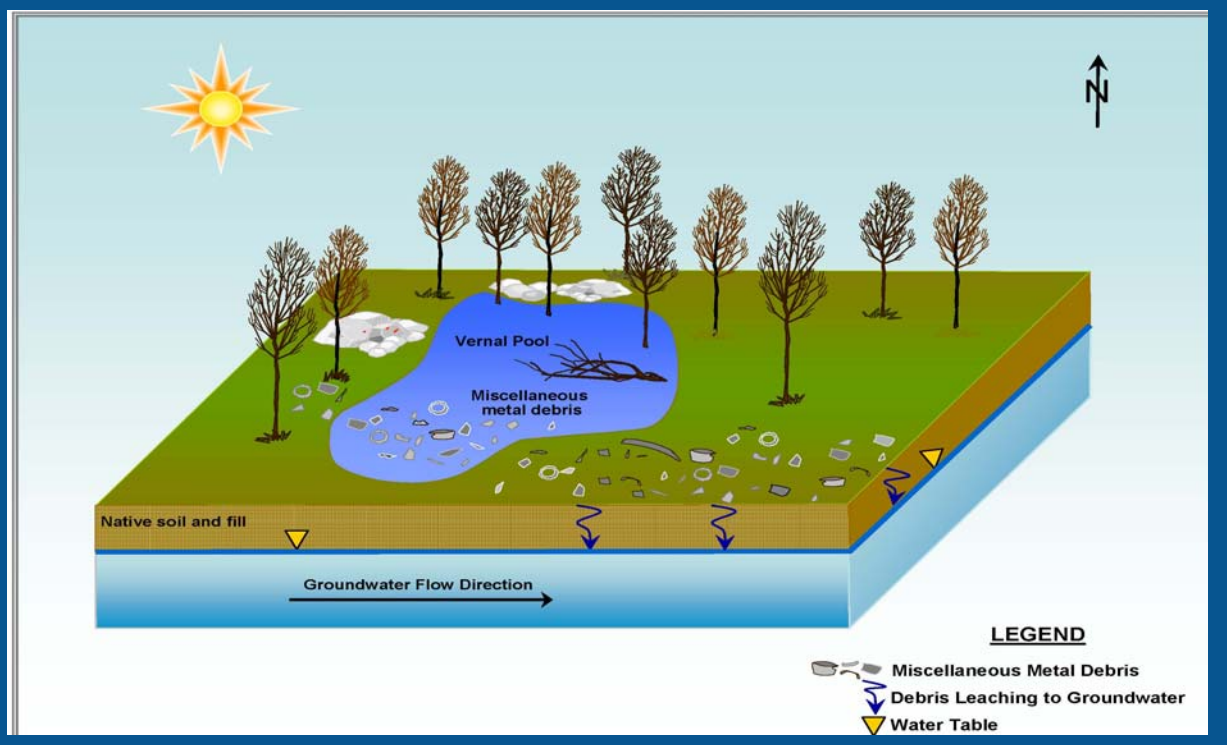
AOC 55C is part of a comprehensive environmental investigation and cleanup program currently performed at NAS South Weymouth under CERCLA authority, pursuant to the Federal Facility Agreement that became effective April 7, 2000. AOC 55C was originally identified in the Phase I EBS Report as part of RIA 55. In accordance with the EBS process for NAS South Weymouth, the identified RIAs required further evaluation. At NAS South Weymouth, EBS RIAs were designated as CERCLA AOCs when CERCLA hazardous substances were detected in excess of human health or ecological risk benchmarks and applicable Base background values. The Navy then conducted either streamlined risk assessments and/or removal actions at the various AOCs. At AOC 55C, the Navy performed human health and ecological risk assessments and conducted a removal action to mitigate unacceptable risks identified in the risk assessments.

The ROD for AOC 55C is one component of the Superfund program at NAS South Weymouth. AOC 55C has proceeded on an independent track from the other Operable Units and AOCs to enable the Navy to expedite site closure and property transfer. The signing of this ROD by the Navy and EPA indicates the completion of the Superfund process for AOC 55C. No additional actions or investigations of AOC 55C are required under CERCLA. The restored wetland will be monitored to evaluate the success of the restoration. The selected NFA decision for AOC 55C is not expected to have an impact on the strategy or progress for the remaining environmental investigation sites at NAS South Weymouth. Additional details on the strategy and schedule for the remediation of the other Operable Units and a schedule for AOC activities at NAS South Weymouth are available in the Navy's Site Management Plan, which is updated regularly.

2.5 SITE CHARACTERISTICS

Figure 2-2 presents the AOC 55C conceptual site model (CSM), which identifies pre-removal action potential contaminant sources, contaminant release mechanisms, transport routes, and receptors. While the source of contamination at AOC 55C was not definitively identified, it was suspected that the

FIGURE 2-2. AOC 55C CONCEPTUAL SITE MODEL



contamination was the result of historic dumping of miscellaneous metallic and other debris, located within the site boundaries. The primary contaminant release and transport mechanisms were releases to surface and subsurface soil via contact with metallic debris on the ground and within the subsurface and leaching to groundwater or to surface water and sediments in the vernal pool at AOC 55C. A wetlands delineation conducted in 2000 identified AOC 55C as a forested wetland dominated by red maple. It showed the wetland encompassed by AOC 55C as a spatially-isolated wetland feature, lacking surface connections to other wetlands or surface waters, and indicated that it is hydrologically connected to the nearest wetland (15 feet away). The November 2007 wetlands functions and value assessment confirmed the presence of dense vegetation. Based on this information, wind transport and surface water runoff were not considered as transport mechanisms at the site. Human health and ecological receptors are discussed in Sections 2.7.1 and 2.7.2, respectively.

2.5.1 Physical Characteristics

AOC 55C consists of less than one acre of relatively flat undeveloped land in a forested wetland area of the former NAS South Weymouth. The site consists of a wetland area that drains to a small pond in the northern portion of the site. The site is surrounded by other wetlands and upland forest. Access to the site is provided by an unpaved road at the southeastern perimeter. The ponded area contains a seasonal surface water body that has been identified as a certifiable vernal pool. Prior to the NTCRA, metallic debris was scattered around the perimeter of the pond, over the soil surface, and in subsurface soils throughout the boundaries of AOC 55C.

Wetland soils in the vicinity of AOC 55C are mapped by the Natural Resources Conservation Service as Swansea Muck that formed from glacial till and partially from the underlying bedrock. The existing peat and wetland areas, such as those in the vicinity of the site, consist of level, poorly drained, organic soils. Bedrock has not been investigated at AOC 55C, but the bedrock beneath NAS South Weymouth has been consistently characterized in other investigations as Dedham Granite, which is a Proterozoic-age igneous intrusive rock. Based on other investigations at the base, bedrock is approximately 30 feet below ground surface (bgs) in the vicinity of AOC 55C.

AOC 55C is located above a medium-yield potentially productive aquifer that is not used as a drinking water supply. The water table is relatively flat in this area of the Base, with **groundwater flow** toward French Stream to the southeast. The depth to groundwater at AOC 55C ranged from 4 to 7 feet bgs in July 2010.

Most of the AOC 55C area is contained within an approximately 0.9-acre delineated, isolated, wetland system that is predominantly forested and contains **palustrine** open water and scrub-shrub areas. The site is vegetated primarily by red maple trees, with a densely vegetated undergrowth of sweet pepperbush, glossy buckthorn, and red raspberry.

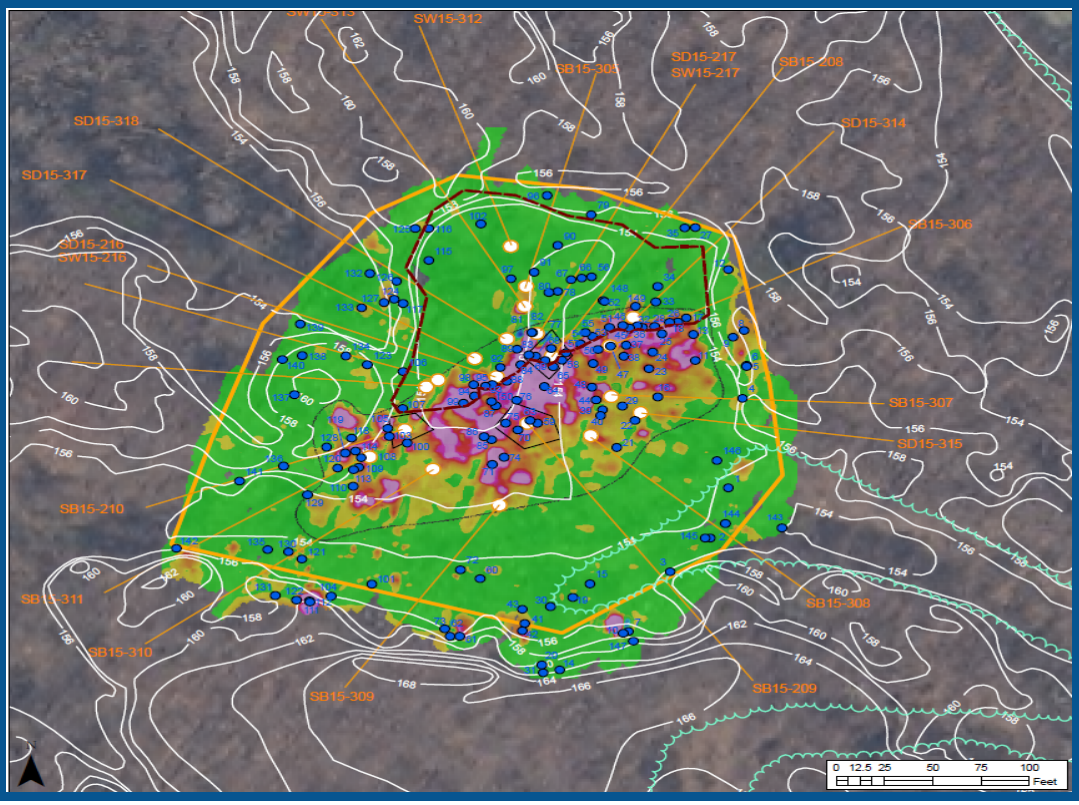
2.5.2 Nature and Extent of Contamination

Environmental samples were collected during a number of investigations, as summarized in Table 2-1. The data were used to perform a streamlined HHRA and ERA, see Sections 2.7.1 and 2.7.2, respectively. Metals, PAHs, Aroclor-1260, and pesticides were detected in soil/sediment at concentrations that exceeded ecological and human health risk-based screening levels, leading to the NTCRA to excavate debris and soil/sediment (see Section 2.7.3). Confirmatory soil and sediment samples were collected during the NTCRA to ensure that all material with concentrations greater than cleanup goals was removed. The information below describes the contamination present at the site before the removal action.

Debris

Figure 2-3 shows the approximate site boundary of AOC 55C (indicated by the orange polygon) where the EM survey was conducted. The red polygon indicates the approximate extent of the seasonal surface water body in February 2007. Items identified at AOC 55C included small pieces of miscellaneous scrap metal, pipes, and vehicle/machine parts. The pink areas on Figure 2-3 indicate locations with the greatest densities of metallic debris, while the yellow areas indicate a lesser amount of metallic debris. The majority of the metal debris was located in the middle of the site in the surface and subsurface, oriented northeast to southwest over an area of more than 19,000 square feet. The entire debris area identified in the EM survey was targeted for removal.

FIGURE 2-3. AOC 55C ELECTROMAGNETIC SURVEY RESULTS



Soil/Sediment

Surface and subsurface soil samples were collected during a number of environmental investigations, as summarized in the EE/CA (Tetra Tech, 2009). Sampling and analysis of soil was generally limited to the top 2.5 feet of soil, except for the three mounded areas from which samples were collected to depths of 4 to 4.5 feet. The depth of the affected area was assumed to be limited to the upper 2 to 4 feet based on the apparent mechanism of release (surface dumping). Sediment samples were initially collected downgradient of the soil samples. During subsequent sampling efforts, sediment sample locations were determined based on the previous sediment and soil results.

The results of the analyses were compared to human health and ecological benchmarks (Tetra Tech, 2009). Concentrations of metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and dieldrin were detected above human health screening benchmarks in soil samples. Concentrations of some metals in soil samples also exceeded ecological benchmarks. In sediment samples, concentrations of metals, pesticides, and PAHs were above ecological benchmarks.

Surface Water

Ten surface water samples were collected at AOC 55C; these samples were co-located with sediment samples. Concentrations of some metals in surface water also exceeded ecological benchmarks.

Groundwater

Groundwater samples were collected from five piezometers as part of the supplemental groundwater investigation. Volatile organic compounds (VOCs), PAHs, and polychlorinated biphenyls (PCBs) were not detected in any of the samples. Fourteen metals were detected, all at concentrations less than Base background levels. Three pesticides were detected at low levels, with one exceedance of screening levels for the pesticide dieldrin.

Based on the proposed land use for AOC 55C (to remain as an open space wetland), it is expected that any potential exposure to groundwater would be via discharge to surface water and potential surface water contact by recreational receptors. Risks to recreational users from dieldrin concentrations are within the EPA acceptable risk range and less than the state target cancer risk level. Based on this risk evaluation, no further action for groundwater is necessary.

2.6 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCES USES

NAS South Weymouth was designated for closure under the BRAC Act of 1990, as part of the BRAC Commission's 1995 Base Closure List (BRAC IV). In September 1996, operational closure of NAS South Weymouth began with the transfer of aircraft to other Navy facilities and through personnel reduction. NAS South Weymouth was closed administratively under BRAC on September 30, 1997. The Base property will be transferred to the local redevelopment authority for development in accordance with the 2005 reuse plan.

AOC 55C remains part of the former NAS South Weymouth; however, the Navy plans to transfer the property as part of the redevelopment of the Base. The wetland at AOC 55C has been restored as part of the 2010 NTCRA. The reuse plan and zoning in the vicinity of the site indicate that the area is anticipated to remain as forested open space to protect the wetland resource and vernal pool and allow for recreational use.

All medium- and high-yield aquifers mapped by the United States Geological Survey (USGS) are considered by MassDEP to be potentially productive aquifers (PPAs) or drinking water source areas, unless they have been specifically excluded as such by the MassDEP. A **medium-yield** aquifer associated with French Stream underlies AOC 55C. Water beneath the site is not currently used for domestic, commercial, or industrial purposes. There are no public water supply wells located on the site. The Town of Weymouth currently supplies municipal water to the base, and there is no current plan for future use of groundwater at the Base as a drinking water source.

2.7 SUMMARY OF SITE RISKS

A **HHRA** and **ERA** were performed at AOC 55C in accordance with the streamlined risk assessment process for the Base. The risk assessments used the surface soil, subsurface soil, sediment and surface water data collected during the EBS program and during the 2007 ecological toxicity investigation. The HHRA was conducted using data from surface soil samples, subsurface soil samples (collected at the groundwater interface), sediment samples, and surface water samples. The ERA evaluated data from surface soil, sediment and surface water samples (it was assumed that ecological receptors were not exposed to subsurface soil. The HHRA and ERA summary below describes the pre-removal action risks which were the basis for the EE/CA and removal action completed in 2010.

2.7.1 Summary of Human Health Risk

The streamlined HHRA was conducted using chemical concentrations detected in surface and subsurface soil, sediment, and surface water samples. Key steps in the risk assessment process included identification of chemicals of potential concern (**COPCs**), exposure assessment, toxicity assessment, and risk characterization. Tables summarizing data used in the HHRA and associated results are presented in Appendix B of the HHRA (Tetra Tech, 2009a). Appendix C1 of this ROD includes representative tables from the HHRA.

Identification of COPCs

The COPCs and exposure point concentrations (EPCs) identified in surface soil, subsurface soil, surface water, and sediment at AOC 55C are presented in the HHRA Tables 3.1 through 3.4 (included in Appendix C1). EPCs are the concentrations used in the risk assessment to estimate exposure and risk from each COPC. For each COPC, the tables include the mean and maximum detected concentrations, EPC, and how the EPC was derived.

Exposure Assessment

During the **exposure assessment**, current and potential future exposure pathways through which humans might come into contact with the chemicals identified in the previous step were evaluated. Potential exposure routes for soil include inadvertent ingestion (swallowing small amounts of soil) and dermal contact (skin exposure). Potential exposure routes for sediment and surface water include inadvertent dermal contact and ingestion. The HHRA considered receptor exposure under future hypothetical residential land use (Table 2-2 below), which is the most conservative future use (the most sensitive receptors). Risks to all other receptors are expected to be less than those calculated for future residents.

TABLE 2-2. RECEPTORS AND EXPOSURE ROUTES EVALUATED IN HHRA

RECEPTORS	EXPOSURE ROUTES
Future Resident (child/adult/lifetime)	• Inadvertent dermal contact (contact with surface soil/sediment particles) • Inadvertent dermal contact (contact with mixed surface and subsurface soil/sediment particles) • Inadvertent dermal contact (wading in surface water) • Inadvertent ingestion (of soil, sediment and surface water)

Toxicity Assessment

The toxicity assessment identified the types of adverse health effects caused by exposure to site COPCs and determined the relationship between the magnitude of exposure and the severity of adverse effects (i.e., dose-response relationship) for each COPC. Based on the quantitative dose-response relationships determined, toxicity values for both cancer (cancer slope factor [CSF]) and non-cancer (reference dose [RfD]) effects were derived and used to estimate the potential for adverse effects.

Carcinogenic risk information and non-carcinogenic hazard information relevant to the AOC 55C COPCs for oral and dermal routes of exposure are shown in the HHRA Tables 6-1 and 5-1, respectively (included in Appendix C1). Because the site is a wetland, inhalation of dust was considered to be an insignificant route of exposure.

Risk Characterization

During the risk characterization, the outputs of the exposure and toxicity assessments were combined to characterize the baseline risk (cancer risks and non-cancer hazards) at the site if no action was taken to address the contamination. Potential **cancer risks** and **non-cancer hazards** were calculated based on

the reasonable maximum exposure (RME) scenario, which assumes the maximum level (worst-case scenario) of human exposure that could reasonably be expected to occur. The HHRA presents equations and discusses in detail the methods used to calculate the site risks. RME cancer risk estimates and hazard indices for the significant receptors and routes of exposure across all media are shown in Tables 9.3A through 9.5B of the HHRA (included in Appendix C1 of this ROD).

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over an estimated lifetime of 70 years as a result of exposure to the carcinogen. EPA's generally acceptable risk range for site-related cancer exposures is 1×10^{-4} to 1×10^{-6} (from 1 in 1 million to 1 in 10,000). For non-carcinogens, the risk to human health is expressed as a Hazard Index (HI). An HI greater than 1.0 suggests that adverse health effects are possible. Table 2-3 below provides a summary of the calculated risks for AOC 55C prior to implementing the NTCRA to address the contamination at the site. Total HIs for all applicable exposure routes ranged from 0.1 for hypothetical future adult residents to 1.4 for hypothetical future child residents (where surface soils remain undisturbed by any future development or construction activities).

TABLE 2-3. ESTIMATED POTENTIAL HUMAN HEALTH RISKS, BEFORE REMOVAL ACTION

EXPOSURE SCENARIO			CANCER RISK	NON-CANCER HI
Future residents under conditions where surface soils remain undisturbed	Future Adult Residents	Surface Soil	8×10^{-6}	0.1
		Sediment	7×10^{-6}	0.008
		Surface Water	4×10^{-8}	0.007
		Total	**2×10^{-5}**	0.1
	Future Child Residents	Surface Soil	2×10^{-5}	0.8
		Sediment	6×10^{-5}	0.4
		Surface Water	3×10^{-7}	0.1
		Total	**8×10^{-5}**	**1.4**
	Future Lifetime Residents	Total	**1×10^{-4}**	NA
Future residents under conditions where surface soils have been mixed with subsurface soils during development	Future Adult Residents	Mixed Soil	3×10^{-5}	0.08
		Sediment	7×10^{-6}	0.008
		Surface Water	4×10^{-8}	0.007
		Total	**4×10^{-5}**	0.1
	Future Child Residents	Mixed Soil	7×10^{-5}	0.7
		Sediment	6×10^{-5}	0.4
		Surface Water	3×10^{-7}	0.1
		Total	**1×10^{-4}**	**1.3**
	Future Lifetime Residents	Total	**2×10^{-4}**	NA

NA - Not applicable.
Bolded values indicate unacceptable risks.
Mixed soil indicates a future exposure scenario where surface and subsurface soils have been mixed during development.

No major sources of **uncertainty**, other than those typically associated with risk assessment estimates, were identified for the AOC 55C HHRA. Based on the conclusions of the HHRA, an EE/CA was prepared and the NTCRA performed. As discussed in Section 2.7.3, the post-excavation confirmations samples indicated that the cleanup goals established in the EE/CA were met.

2.7.2 Summary of Ecological Risk

The ERA evaluated potential risks to ecological receptors due to the presence of chemical stressors (i.e., COPCs) in environmental media at AOC 55C. The ERA included three steps: (1) problem formulation, (2) risk analysis, and (3) risk characterization. Tables summarizing data used in the ERA and associated results are presented in Section 4 of the ERA (Tetra Tech, 2009b). Appendix C2 of this ROD includes representative tables from the ERA. The COPCs selected for use in the ERA are presented in Table 4.4 of the ERA (included in Appendix C2 of this ROD).

The following ecological receptor groups and pathways were evaluated in the ERA: terrestrial plants and invertebrates exposed to surface soil; invertebrates exposed to sediment; aquatic receptors (invertebrates, plants, and amphibians) exposed to surface water; and wetland and terrestrial vertebrates exposed to surface soil and sediment. Food-web modeling and toxicity testing were conducted as described in the ERA. The results were used to calculate no-observable-effects concentrations (NOECs), lowest-observable-effects concentrations (LOECs), and hazard quotients (HQs) for ecological receptors exposed to COPCs to determine if significant ecological risks existed at the site.

The ERA concluded that concentrations of chemicals in surface water posed no unacceptable risks to aquatic organisms at AOC 55C but that elevated levels of metals in surface soil posed potential risks to terrestrial plants and invertebrates and wildlife, that elevated levels of metals, PAHs, and PCBs posed potential risks to sediment invertebrates, and that elevated levels of metals in sediment posed potential risks to wildlife. Based on the conclusions of the ERA, an EE/CA was prepared and the NTCRA performed. As discussed in Section 2.7.3, the post-excavation confirmatory sampling indicated that the cleanup goals established in the EE/CA were met.

2.7.3 Non-Time Critical Removal Action

The results of the HHRA and ERA indicated that unacceptable ecological and future human health risks existed at AOC 55C due to chemical concentrations in sediment and surface soil. Surface water was not identified as a medium of concern. Based on these conclusions, the Navy completed an EE/CA in 2009. The EE/CA compared the cost and effectiveness of either **excavating** debris and associated soils or leaving the material in place. The report recommended excavation, confirmatory sampling, off-site disposal, and wetland restoration for AOC 55C. The EE/CA described the basis for the human health and ecological benchmarks used for screening and development of the final Preliminary Remediation Goals (PRGs). The PRGs developed provide the criteria (along with removal of metal debris) to be used to determine when the remedial goals have been met. Because the background values used for screening are those for surface soil, and the sediments and soils are co-located, the PRGs are for combined surface soil and sediment. The PRGs (cleanup goals) for the recommended removal action were selected based on the lower of the ecological or human health risk-based values, unless the established Base background value is higher. The human health risk-based PRG is the 2009 Regional Screening Level for residential soil and the ecological risk-based PRGs are the geometric mean of the no observable effects concentration and lowest observable effects concentration developed from sediment toxicity testing. The cleanup goals for the chemicals that were retained as COCs are shown in Table 2-4. Table 2-4 also includes the maximum concentration of each COC in the post-excavation confirmation samples to indicate that the cleanup goals were achieved.

The Navy conducted an NTCRA from January to April 2010 that included excavation of debris, soil, and sediment to remove the material associated with the identified unacceptable risks to human health and to ecological receptors.

TABLE 2-4. CLEANUP GOALS FOR SOIL/SEDIMENT AT AOC 55C

SOIL/SEDIMENT COCS	UNITS	CLEANUP GOAL	SELECTION BASIS	MAXIMUM POST-EXCAVATION SAMPLE CONCENTRATOIN
Arsenic	mg/kg	5.31	Background	4.1
Benzo(a)anthracene	µg/kg	810	Background	517
Benzo(a)pyrene	µg/kg	1,829	Background	354
Benzo(b)fluroanthene	µg/kg	770	Background	302
Cadmium	mg/kg	8.1	Eco risk	6.9
Copper	mg/kg	249	Eco risk	53.7
Dibenzo(a,h)anthracene	µg/kg	96	Background	54.4

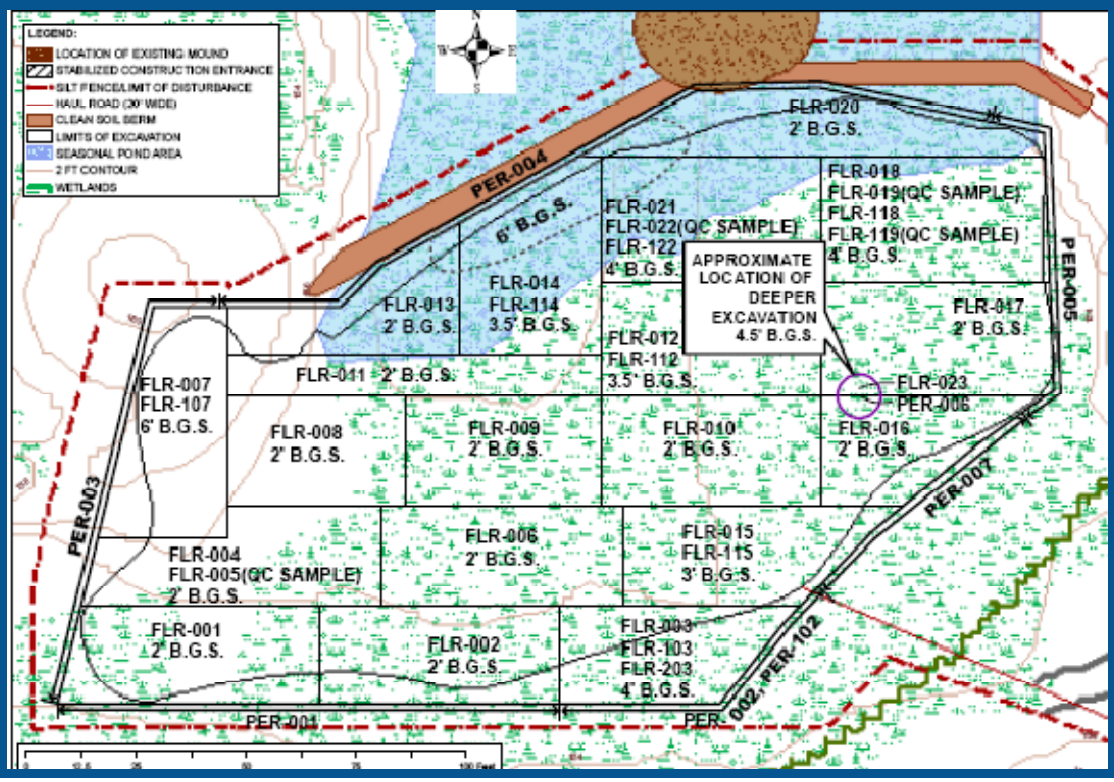
TABLE 2-4. CLEANUP GOALS FOR SOIL/SEDIMENT AT AOC 55C

SOIL/SEDIMENT COCS	UNITS	CLEANUP GOAL	SELECTION BASIS	MAXIMUM POST-EXCAVATION SAMPLE CONCENTRATOIN
Dieldrin	µg/kg	52	Background	39.1
Indeno(1,2,3-cd)pyrene	µg/kg	175	Background	254
Lead	mg/kg	722	Eco risk	297
Mercury	mg/kg	0.49	Background	0.47
Zinc	mg/kg	395	Eco risk	298
Aroclor-1260	µg/kg	220	Human health risk	208
Total Aroclors	µg/kg	871	Eco risk	423
Total PAHs	µg/kg	17,992	Eco risk	6262

The removal was implemented in a **grid pattern** of nineteen 1,000 square-foot sections. The pond was sealed off with a berm of clean soil for the excavation. All soils were initially excavated to a depth of 2 feet bgs. Confirmation samples were collected from the floor and sidewalls of each excavation grid area, and the results were compared to the cleanup goals. Figure 2-4 shows the sample grids and depths of excavation in each grid.

Grids with confirmation sample results exceeding cleanup goals were re-excavated until the confirmation sample results met the goals. An additional 2 feet were excavated from the one sidewall with a confirmation sample exceedance. Floor confirmation sample exceedances were re-excavated in 1 to 2 foot increments, to a maximum depth of 6 feet. Following the re-excavation, the confirmation sample results were acceptable with the single exception of one exceedance at the floor of a grid that was excavated to 3.5 feet bgs. At this location, the regulatory agencies agreed that the relatively low concentration was not likely to pose unacceptable risk because of the sample depth.

FIGURE 2-4. AOC 55C REMOVAL ACTION SAMPLING GRID



In a change from the off-site disposal component of the NTCRA, the Navy proposed that the excavated materials be used as common fill for the subgrade layer of the West Gate Landfill cap. This change was documented in an Explanation of Significant Differences (ESD) (Navy, 2010) and accepted by the regulators. Following signature of the ESD, approximately 1,620 cubic yards of material was moved from AOC 55C and placed beneath the cap of the West Gate Landfill.

After excavation was completed, clean soil was brought in to backfill the excavation. The excavated areas were backfilled with a topsoil mixture containing approximately 50 to 75 percent topsoil mixed with 25 to 50 percent organic compost to achieve a minimum organic content of 12 percent. The area was then graded to promote a viable wetland habitat. The area was replanted with native vegetation, including a mix of grasses, shrubs, and trees (see Figure 2-5). Post-restoration wetland monitoring to ensure the success of the restoration will continue for 2 years. Invasive plant species control will be performed if determined necessary based on the wetlands monitoring. The work was documented in the 2011 Remedial Action Completion Report (Shaw, 2011).

A groundwater investigation was completed in July 2010 to determine if there were any residual groundwater impacts from the soil and debris removed from the site (Tetra Tech, 2011). The groundwater investigation results indicated that groundwater at AOC 55C does not pose significant risk to ecological and human receptors.

The overall objective for the remediation of CERCLA sites is to protect human health and the environment from current or future risks posed by the site. The NTCRA removed the unacceptable risks at the site.

FIGURE 2-5. AOC 55C SITE CONDITIONS POST-RESTORATION

Based on the removal action, groundwater investigation, and the current and reasonably anticipated future use of the site, no further CERCLA remedial action is warranted for environmental media at AOC 55C.

2.8 DOCUMENTATION OF SIGNIFICANT CHANGES

CERCLA Section 117(b) requires an explanation of significant changes from the selected remedy presented in the Proposed Remedial Action Plan that was published for public comment. No significant changes to the remedy, as originally identified in the Proposed Remedial Action Plan, were necessary or appropriate.

2.9 STATE ROLE

MassDEP has reviewed the relevant site information to determine if the selected decision is in compliance with applicable or relevant and appropriate state environmental and facility siting laws and regulations. MassDEP's concurrence on the selected decision in this ROD is presented in Appendix A.

3.0 RESPONSIVENESS SUMMARY

3.1 STAKEHOLDER COMMENTS AND LEAD AGENCY RESPONSES

The comment period for AOC 55C was from April 11, 2011, to May 11, 2011, with a public meeting held on April 25, 2011. Participants in the public meeting included RAB members and representatives of the Navy, EPA, and MassDEP. Questions and concerns raised at the meeting were addressed at the meeting. Following the public meeting, a public hearing was held. One individual provided comments during the public hearing, which are documented in the hearing transcript. One comment letter was received during the comment period. These comments and the associated responses are provided in Table 3-1. The public hearing transcript and written comment letter are included in Appendix E.

TABLE 3-1. SUMMARY OF COMMENTS FROM PUBLIC COMMENT PERIOD

COMMENT	RESPONSE
Mr. James Cunningham, a RAB member from Weymouth, stated at the public hearing that he is glad that the Navy has completed a removal action but remains concerned that the wetlands were so disturbed that wildlife may be impacted. He hopes that the 2 years of wetland monitoring to be performed by the Navy will indicate a return to a natural wetland. He appreciated that the removal action did not disturb the adjacent vernal pool. He agreed that the NFA proposed for the site will allow the area to return to its natural state.	The Navy appreciates Mr. Cunningham's support for the No Further Action proposal for AOC 55C. The Navy is committed to performing wetland monitoring to evaluate the success of the restoration completed in 2010. The first inspection was completed in early June 2011.
Ms. Anne Hilbert, a concerned citizen from North Weymouth, provided a comment letter indicating a concern that the metal debris has impacted the Weymouth drinking water. She stated that she cannot accept the Navy's No Further Action recommendation because there was no health study completed outside of the Base. She believes No Further Action leaves children under 10 highly susceptible to contracting cancer.	After removal and off-site disposal of the metallic debris and wetland sediments, the Navy sampled groundwater at AOC 55C. The groundwater results were presented in *Groundwater Investigation Report for Area of Concern 55C* (Tetra Tech, 2011). The results indicated that groundwater was not impacted by the debris. Site groundwater flows to the east-southeast, not toward the Weymouth drinking water supply at Weymouth Great Pond located to the west of the Base. The groundwater aquifers at the Base are not hydraulically connected to the Great Pond aquifer. The Weymouth Water Department 2009 annual water quality report states that each year the water is tested for more than 125 potential drinking water contaminants. The report indicates that concentrations of all contaminants detected were less than allowable levels (http://www.weymouth.ma.us/dpw/

TABLE 3-1. SUMMARY OF COMMENTS FROM PUBLIC COMMENT PERIOD	
COMMENT	RESPONSE
	Weymouth_2009_CCR_final_version.pdf)

3.2 TECHNICAL AND LEGAL ISSUES

No technical or legal issues associated with the AOC 55C ROD were identified.

Administrative Record Reference Table

DETAILED ADMINISTRATIVE RECORD REFERENCE TABLE

Detailed site information referenced in this ROD in bold blue text is contained in the Administrative Record. For access to information contained in the Administrative Record for AOC 55C, please contact the NAS South Weymouth Caretaker Site Office, 1134 Main Street, Building 11, South Weymouth, Massachusetts, 02190.

Item	Reference Phrase in ROD	Location in ROD	Location of Information in Administrative Record
1	**vernal pool**	Section 2.1	Tetra Tech, 2009a. Ecological Risk Assessment for AOC 55C. October. Page 2-1.
2	**Basewide**	Table 2-1	Stone and Webster Environmental Technology & Services (Stone & Webster), 1996. Final Report, Phase I EBS. November 18. Page 213.
3	**benchmarks**	Table 2-1	Stone & Webster, 1998. Final Phase II EBS Sampling Work Plan (Rev. 1). 13 October. Pages 13 to17.
4	**metallic debris**	Table 2-1	Tetra Tech EC (TtEC). EM Survey Completion Report for AOC 55C. May 2. Page 1-1.
5	**toxicological**	Table 2-1	Tetra Tech, 2009a. Pages 3-1 to 3-3.
6	**wetlands functions and values**	Table 2-1	Tetra Tech, 2009a. Pages 4-36 to 4-37.
7	**concluded**	Table 2-1	Tetra Tech, 2009b. Human Health Risk Assessment for AOC 55C. October. Page 19.
8	**excavating**	Table 2-1	Tetra Tech, 2009. Pages 13 to15.
9	**confirmatory sample**	Table 2-1	Shaw Environmental and Infrastructure (Shaw), 2011.Draft Remedial Action Completion Report, Removal Action for AOC 55C. April. Pages 4-2 to 4-5.
10	**post-restoration monitoring**	Table 2-1	Shaw, 2011. Page 5-1.
11	**piezometers**	Table 2-1	Tetra Tech, 2011. April.
12	**Public notice**	Section 2.3	Tetra Tech, 2011. April.
13	**groundwater flow**	Section 2.5.1	Tetra Tech, 2011. Groundwater Investigation Field Report for AOC 55C. February. Figure 3.
14	**palustrine**	Section 2.5.1	TtNUS, 2009a. Page 4-36 and 4-37
15	**medium-yield**	Section 2.6	ENSR Corporation (ENSR), 2006. Draft Hydrogeologic Investigations Technical Memorandum, Basewide Assessment. December. Figure 3-7.
16	**HHRA**	Section 2.7	Tetra Tech, 2009b.
17	**ERA**	Section 2.7	Tetra Tech, 2009a.
18	**COPCs**	Section 2.7.1	Tetra Tech, 2009b. Pages 7 to 8 and Tables 2.1 to 2.4.
19	**exposure assessment**	Section 2.7.1	Tetra Tech, 2009b. Pages 9 to 10
20	**cancer risks**	Section 2.7.1	Tetra Tech, 2009b. Tables 8.1 and 8.2
21	**non-cancer hazards**	Section 2.7.1	Tetra Tech, 2009b. Tables 7.1 and 7.2
22	**uncertainty**	Section 2.7.1	Tetra Tech, 2009b. Pages 17 to 18
23	**excavating**	Section 2.7.3	Tetra Tech, 2009. Pages 16 to 18
24	**grid pattern**	Section 2.7.3	Shaw, 2011. Page 3-4

APPENDIX A: MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION LETTER OF CONCURRENCE

Refer to attached copy.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

Mr. James T. Owens, Director
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100
Mail Code: OSRR07-03
Boston, MA 02114-2023

Re: Record of Decision
Area of Concern 55C
Former South Weymouth NAS
MassDEP RTN 4-3002621
September 8, 2011

Dear Mr. Owens:

The Massachusetts Department of Environmental Protection (MassDEP) reviewed the *Record of Decision, Area of Concern 55C – Wetland Area North of Trotter Road, Operable Unit 22, Naval Air Station South Weymouth*, dated August 2011. The Record of Decision summarizes the results from the site investigations that were conducted to characterize the site, summarizes the results from the removal action that was conducted to address unacceptable risks to human health and the environment, and documents the Navy's rationale for selecting a No Further Action decision. MassDEP concurs with the selected decision.

If you have any questions or comments, please contact David Chaffin, Project Manager (617-348-4005), or Anne Malewicz, Federal Facilities Section Chief (617-292-5659).

Sincerely,

Paul Locke
Acting Assistant Commissioner
Bureau of Waste Site Cleanup

cc: D. Barney, USN-S. Weymouth
K. Keckler, USEPA
Chief Executive Officer, SSTTDC
RAB Members
J. Naparstek, MADEP-Boston

This information is available in alternate format. Call Michelle Waters-Ekanem, Diversity Director, at 617-292-5751. TDD# 1-866-539-7622 or 1-617-574-6868
MassDEP Website: www.mass.gov/dep

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APPENDIX B: REFERENCES

ENSR Corporation (ENSR), 2006. Draft Hydrogeologic Investigations Technical Memorandum, Basewide Assessment. Naval Air Station South Weymouth, Weymouth, Massachusetts. December.

EPA, 2009. Regional Screening Levels for Chemical Contaminants at Superfund Sites. Oak Ridge National Laboratory (ORNL). http://epa-prgs.ornl.gov/chemicals/index.shtml. April.

Shaw, 2011. Final Removal Action Completion Report, Area of Concern 55C. Naval Air Station South Weymouth, South Weymouth, Massachusetts. April.

South Shore Tri-Town Development Corporation (SSTTDC), 2005a. Zoning and Land Use By-Laws for the Naval Air Station South Weymouth. May 5, 2005.

SSTTDC, 2005b. Reuse Plan for Naval Air Station South Weymouth. May 5, 2005.

Stone and Webster Environmental Technology & Services (Stone & Webster), 1996. Final Report, Phase I EBS. Naval Air Station South Weymouth, South Weymouth, Massachusetts. November 18.

Stone & Webster, 1998. Final Phase II EBS Sampling Work Plan (Rev. 1). Naval Air Station South Weymouth, South Weymouth, Massachusetts October.

Tetra Tech EC (TtEC). EM Survey Completion Report for AOC 55C. Naval Air Station South Weymouth, South Weymouth, Massachusetts May.

Tetra Tech, 2009. Engineering Evaluation/Cost Analysis for AOC 55C, Debris Area North of Trotter Road. Naval Air Station South Weymouth, Weymouth, Massachusetts. December.

Tetra Tech, 2009a. Final Streamlined Ecological Risk Assessment for AOC 55C, Debris Area North of Trotter Road. Naval Air Station South Weymouth, Weymouth, Massachusetts. October.

Tetra Tech, 2009b. Final Streamlined Human Health Risk Assessment for AOC 55C, Debris Area North of Trotter Road. Naval Air Station South Weymouth, Weymouth, Massachusetts. October.

Tetra Tech, 2010. Non-Time Critical Removal Action Memorandum Area of Concern 55C - Debris Area North of Trotter Road, with Response to Comments. January.

Tetra Tech, 2011. Groundwater Investigation Report for Area of Concern 55C. Naval Air Station South Weymouth, Weymouth, Massachusetts. February.

U.S. Navy, 2010. 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.

U.S. Navy, 2011a. Proposed Plan, Area of Concern 55C - Wetland Area North of Trotter Road, Operable Unit 22, Naval Air Station South Weymouth, Weymouth, Massachusetts. April.

APPENDIX C: RISK ASSESSMENT TABLES

Refer to attached copies.

APPENDIX C1: HHRA RISK TABLES

Refer to attached copies.

TABLE 3.1

SURFACE SOIL EXPOSURE POINT CONCENTRATION SUMMARY
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Antimony	mg/kg	4.5	6.6	12.0		mg/kg	6.6	Student-t	(1)
Arsenic	mg/kg	3.0	4.1	6.2		mg/kg	4.1	Student-t	(1)
Cadmium	mg/kg	5.8	8.7	15		mg/kg	8.7	Student-t	(1)
Lead	mg/kg	238	354	547		mg/kg	238	Average	(3)
Manganese	mg/kg	292	386	550	J	mg/kg	386	Student-t	(1)
Thallium	mg/kg	1.2	NA	1.7		mg/kg	1.7	Maximum	(4)
Vanadium	mg/kg	58	84	156		mg/kg	84	Student-t	(1)
Benzo(a)anthracene	ug/kg	453	886	1500		ug/kg	886	Approximate Gamma 95% UCL	(1)
Benzo(a)pyrene	ug/kg	694	2250	3900		ug/kg	2250	Adjusted Gamma 95% UCL	(1)
Benzo(b)fluoranthene	ug/kg	505	948	1900		ug/kg	948	Approximate Gamma 95% UCL	(1)
Dibenz(a,h)anthracene	ug/kg	80	172	310	J	ug/kg	172	Approximate Gamma 95% UCL	(1)
Indeno(1,2,3-cd)pyrene	ug/kg	297	489	1100		ug/kg	489	Approximate Gamma 95% UCL	(1)
Dieldrin	ug/kg	12	78	62		ug/kg	62	Maximum	UCL > Max(2)
Aroclor, Total	ug/kg	463	1060	1200		ug/kg	1060	Approximate Gamma 95% UCL	(1)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

(1) ProUCL
(2) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for RME EPC.
(3) Lead models use average concentrations.
(4) 95% UCL could not be calculated based on small dataset. Therefore, maximum concentration used for RME EPC.

TABLE 3.2

ALL SOIL EXPOSURE POINT CONCENTRATION SUMMARY
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Antimony	mg/kg	3.8	5.9	12.0		mg/kg	5.9	Approximate Gamma 95% UCL	(1)
Arsenic	mg/kg	2.7	3.4	6.2		mg/kg	3.4	Student-t	(1)
Cadmium	mg/kg	5.2	9.6	22		mg/kg	9.6	Approximate Gamma 95% UCL	(1)
Lead	mg/kg	210	361	547		mg/kg	210	Average	(3)
Manganese	mg/kg	324	417	1100	J	mg/kg	417	Approximate Gamma 95% UCL	(1)
Thallium	mg/kg	1.6	2.1	2.1	--	mg/kg	2.1	Student-t	(1)
Vanadium	mg/kg	78	123	560	J	mg/kg	123	Approximate Gamma 95% UCL	(1)
Benzo(a)anthracene	ug/kg	1570	12900	23000		ug/kg	12900	99% Chebyshev(Mean, Std) UCL	(1)
Benzo(a)pyrene	ug/kg	1740	10200	19000		ug/kg	10200	97.5% Chebyshev(MVUE) UCL	(1)
Benzo(b)fluoranthene	ug/kg	1580	12300	22000		ug/kg	12300	99% Chebyshev(Mean, Std) UCL	(1)
Dibenz(a,h)anthracene	ug/kg	191	411	2500		ug/kg	411	Adjusted Gamma 95% UCL	(1)
Indeno(1,2,3-cd)pyrene	ug/kg	1050	6430	8800		ug/kg	6430	99% Chebyshev(Mean, Std) UCL	(1)
Dieldrin	ug/kg	11	49	62		ug/kg	49	99% Chebyshev(Mean, Std) UCL	(1)
Aroclor, Total	ug/kg	386	666	1200		ug/kg	666	Approximate Gamma 95% UCL	(1)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

(1) ProUCL
(2) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for RME EPC.
(3) Lead models use average concentrations.

TABLE 3.3

SEDIMENT EXPOSURE POINT CONCENTRATION SUMMARY
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Sediment

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Antimony	mg/kg	4.5	7.2	13	J	mg/kg	7.2	Approximate Gamma 95% UCL	(1)
Arsenic	mg/kg	5.0	7.1	12	J	mg/kg	7.1	Approximate Gamma 95% UCL	(1)
Cadmium	mg/kg	7.8	14	38	J	mg/kg	14	Approximate Gamma 95% UCL	(1)
Lead	mg/kg	305	448	1740		mg/kg	305	Average	(3)
Manganese	mg/kg	252	309	551		mg/kg	309	Student-t	(1)
Mercury	mg/kg	0.92	2.1	7.3		mg/kg	2.1	95% Chebyshev(MVUE) UCL	(1)
Silver	mg/kg	13	38	126	J	mg/kg	38	Adjusted Gamma 95% UCL	(1)
Thallium	mg/kg	1.1	2.0	4.6	J	mg/kg	2.0	Approximate Gamma 95% UCL	(1)
Vanadium	mg/kg	61	85	190		mg/kg	85	Approximate Gamma 95% UCL	(1)
Benzo(a)anthracene	ug/kg	4590	37500	52000		ug/kg	37500	99% Chebyshev(Mean, Std) UCL	(1)
Benzo(a)pyrene	ug/kg	3350	14500	34000		ug/kg	14500	99% Chebyshev(MVUE) UCL	(1)
Benzo(b)fluoranthene	ug/kg	3900	17300	32000		ug/kg	17300	99% Chebyshev(MVUE) UCL	(1)
Benzo(k)fluoranthene	ug/kg	1930	13200	18000	J	ug/kg	13200	99% Chebyshev(Mean, Std) UCL	(1)
Dibenz(a,h)anthracene	ug/kg	742	6480	9200	J	ug/kg	6480	99% Chebyshev(Mean, Std) UCL	(1)
Indeno(1,2,3-cd)pyrene	ug/kg	1850	13600	18000	J	ug/kg	13600	99% Chebyshev(Mean, Std) UCL	(1)
Dieldrin	ug/kg	44	460	420		ug/kg	420	Maximum	UCL > Max(2)
Aroclor, Total	ug/kg	430	768	1400		ug/kg	768	Approximate Gamma 95% UCL	(1)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

(1) ProUCL
(2) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for RME EPC.
(3) Lead models use average concentrations.

TABLE 3.4

SURFACE WATER EXPOSURE POINT CONCENTRATION SUMMARY
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Surface Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Antimony	ug/L	2.2	3.3	3.4	J	ug/L	3.3	Student-t	(1)
Arsenic	ug/L	1.7	3.4	3.8	J	ug/L	3.4	95% Chebyshev(Mean, Std) UCL	(1)
Lead	ug/L	8.0	16	27.9		ug/L	16	Approximate Gamma 95% UCL	(1)
Manganese	ug/L	715	979	1500		ug/L	979	Student-t	(1)
Vanadium	ug/L	2.5	4.1	7.3	J	ug/L	4.1	Approximate Gamma 95% UCL	(1)
Bis(2-ethylhexyl)phthalate	ug/L	3.9	5.2	5.9	J	ug/L	5.2	Modified-t UCL	(1)
Aroclor, Total	ug/L	0.49	0.84	1.3		ug/L	0.84	Student-t	(1)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

(1) ProUCL
(2) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for RME EPC.

TABLE 5.1

NON-CANCER CHRONIC TOXICITY DATA -- ORAL/DERMAL
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value (1)	Oral RfD Units	GI Absorption in Toxicity Study	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (MM/DD/YYYY)	Dermal Absorption Factor for Soils (DABS)	Oral Absorption Factor for Soils (OABS)	Oral-water Absorption Adjustment Factor (AAFo)
Antimony	Chronic	4.0E-04	mg/kg-day	0.15	6.0E-05	mg/kg-day	Blood	1000	IRIS	11/12/2007	0.001	1.0	1.0
Arsenic	Chronic	3.0E-04	mg/kg-day	1.00	3.0E-04	mg/kg-day	Skin, blood	3	IRIS	11/12/2007	0.03	1.0	1.0
Cadmium-food	Chronic	1.0E-03	mg/kg-day	0.025	2.5E-05	mg/kg-day	Kidney	10	IRIS	11/12/2007	0.001	1.0	1.0
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.001	1.0	1.0
Manganese - soil	Chronic	7.0E-02	mg/kg-day	0.04	2.8E-03	mg/kg-day	CNS	1	Reg I	1999	0.001	1.0	1.0
Manganese - water	Chronic	2.4E-02	mg/kg-day	0.04	9.6E-04	mg/kg-day	CNS	1	Reg I	1999	0.001	1.0	1.0
Mercury[3]	Chronic	3.0E-04	mg/kg-day	0.07	2.1E-05	mg/kg-day	Immune	1000	IRIS	11/12/2007	0.001	1.0	1.0
Silver	Chronic	5.0E-03	mg/kg-day	0.04	2.0E-04	mg/kg-day	Skin	3	IRIS	11/12/2007	0.001	1.0	1.0
Thallium[4]	Chronic	8.0E-05	mg/kg-day	1.00	8.0E-05	mg/kg-day	Blood	3000	IRIS	11/12/2007	0.001	1.0	1.0
Vanadium[5]	Chronic	9.0E-03	mg/kg-day	0.026	2.3E-04	mg/kg-day	Hair	100	IRIS	11/12/2007	0.001	1.0	1.0
Benzo(a)anthracene	NA	NA	NA	1.00	NA	NA	NA	NA	NA	NA	0.13	1.0	1.0
Benzo(a)pyrene	NA	NA	NA	1.00	NA	NA	NA	NA	NA	NA	0.13	1.0	1.0
Benzo(b)fluoranthene	NA	NA	NA	1.00	NA	NA	NA	NA	NA	NA	0.13	1.0	1.0
Benzo(k)fluoranthene	NA	NA	NA	1.00	NA	NA	NA	NA	NA	NA	0.13	1.0	1.0
Bis(2-ethylhexyl)phthalate	Chronic	2.0E-02	mg/kg-day	1.00	2.0E-02	mg/kg-day	Liver	1000	IRIS	11/12/2007	0.1	1.0	1.0
Dibenz(a,h)anthracene	NA	NA	NA	1.00	NA	NA	NA	NA	NA	NA	0.13	1.0	1.0
Indeno(1,2,3-cd)pyrene	NA	NA	NA	1.00	NA	NA	NA	NA	NA	NA	0.13	1.0	1.0
Dieldrin	Chronic	5.0E-05	mg/kg-day	1.00	5.0E-05	mg/kg-day	Liver	100	IRIS	11/12/2007	0.02	1.0	1.0
Aroclor, Total	Chronic	2.0E-05	mg/kg-day	1.00	2.0E-05	mg/kg-day	Skin/Eyes/ Immune	300	IRIS	11/12/2007	0.14	1.0	1.0

IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA=National Center for Environnmental Assessment
Reg IX = EPA Region IX PRG table, 2004
Reg I = EPA Region I Risk Update #5, 1999
NA = Not Applicable
(1) To be used for oral pathway only. Based on administered dose.
(2) Adjusted RfD = oral RfD x GI absorption value in toxicity study upon which the RfD is based. To be used for dermal pathway only.
(3) Mercuric Chloride
(4) Thallium Sulfate
(5) Vanadium Pentoxide

TABLE 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Chemical of Potential Concern	Oral Cancer Slope Factor(1)	GI Absorption in Toxicity Study	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence Narrative Descriptor	Source	Date (MM/DD/YYYY)	Dermal Absorption Factor for Soils (DABS)	Oral Absorption Factor for Soils (OABS)	Oral-water Absorption Adjustment Factor (AAFo)
Antimony	NA	0.15	NA	NA	(8)	IRIS	11/12/2007	0.001	1.0	1.0
Arsenic	1.5E+00	1.00	1.5E+00	1/(mg/kg-day)	(3)	IRIS	11/12/2007	0.03	1.0	1.0
Cadmium	NA	0.025	NA	NA	(4)	IRIS	11/12/2007	0.001	1.0	1.0
Lead	NA	NA	NA	NA	(4)	IRIS	11/12/2007	0.001	1.0	1.0
Manganese	NA	0.04	NA	NA	(6)	IRIS	11/12/2007	0.001	1.0	1.0
Mercury	NA	0.07	NA	NA	(5)	IRIS	11/12/2007	0.001	1.0	1.0
Silver	NA	0.04	NA	NA	(6)	IRIS	11/12/2007	0.001	1.0	1.0
Thallium	NA	1.00	NA	NA	(7)	IRIS	11/12/2007	0.001	1.0	1.0
Vanadium	NA	0.026	NA	NA	(8)	IRIS	11/12/2007	0.001	1.0	1.0
Benzo(a)anthracene	7.3E-01	1.00	7.3E-01	1/(mg/kg-day)	(4)	EPA-1993		0.13	1.0	1.0
Benzo(a)pyrene	7.3E+00	1.00	7.3E+00	1/(mg/kg-day)	(4)	IRIS	11/12/2007	0.13	1.0	1.0
Benzo(b)fluoranthene	7.3E-01	1.00	7.3E-01	1/(mg/kg-day)	(4)	EPA-1993		0.13	1.0	1.0
Benzo(k)fluoranthene	7.3E-02	1.00	7.3E-02	1/(mg/kg-day)	(4)	EPA-1993		0.13	1.0	1.0
Bis(2-ethylhexyl)phthalate	1.4E-02	1.00	1.4E-02	1/(mg/kg-day)	(4)	IRIS	11/12/2007	0.1	1.0	1.0
Dibenz(a,h)anthracene	7.3E+00	1.00	7.3E+00	1/(mg/kg-day)	(4)	EPA-1993		0.13	1.0	1.0
Indeno(1,2,3-cd)pyrene	7.3E-01	1.00	7.3E-01	1/(mg/kg-day)	(4)	EPA-1993		0.13	1.0	1.0
Dieldrin	1.6E+01	1.00	1.6E+01	1/(mg/kg-day)	B2	IRIS	11/12/2007	0.02	1.0	1.0
Aroclor, Total	2.0E+00	1.00	2.0E+00	1/(mg/kg-day)	(4)	RegIX	2004	0.14	1.0	1.0

IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA=National Center for Environnmental Assessment
Reg IX = EPA Region IX PRG table, 2004
EPA-1993= Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons.
(1) To be used for oral pathway only. Based on administered dose.
(2) Adjusted slope factor (SF) = oral SF x GI absorption value in toxicity study upon which the SF is based. To be used for dermal pathway only.

Weight of Evidence Narrative Descriptions:
(3) - Carcinogenic to Humans
(4) - Likely to be Carcinogenic to Humans
(5) - Suggestive of Carcinogenic Potential
(6) - Inadequate Information to Assess Carcinogenic Potential
(7) - Not Likely to be Carcinogenic to Humans
(8) - Not assessed under the IRIS program

TABLE 9.3A RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RESIDENT - SURFACE SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Antimony	--	--	--	--	Antimony	Blood	9.72E-03	--	2.58E-04	9.97E-03
			Arsenic	1.23E-06	--	1.47E-07	1.38E-06	Arsenic	Skin, blood	7.96E-03	--	9.53E-04	8.92E-03
			Cadmium	--	--	--	--	Cadmium	Kidney	5.10E-03	--	8.14E-04	5.92E-03
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	3.24E-03	--	3.23E-04	3.56E-03
			Thallium	--	--	--	--	Thallium	Blood	1.25E-02	--	4.98E-05	1.25E-02
			Vanadium	--	--	--	--	Vanadium	Hair	5.45E-03	--	8.37E-04	6.29E-03
			Benzo(a)anthracene	1.30E-07	--	6.75E-08	1.98E-07	Benzo(a)anthracene	NA	--	--	--	--
			Benzo(a)pyrene	3.31E-06	--	1.71E-06	5.02E-06	Benzo(a)pyrene	NA	--	--	--	--
			Benzo(b)fluoranthene	1.39E-07	--	7.23E-08	2.12E-07	Benzo(b)fluoranthene	NA	--	--	--	--
			Dibenz(a,h)anthracene	2.53E-07	--	1.31E-07	3.84E-07	Dibenz(a,h)anthracene	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	7.19E-08	--	3.73E-08	1.09E-07	Indeno(1,2,3-cd)pyrene	NA	--	--	--	--
			Dieldrin	2.00E-07	--	1.59E-08	2.16E-07	Dieldrin	Liver	7.28E-04	--	5.81E-05	7.86E-04
			Aroclor, Total	4.27E-07	--	2.38E-07	6.65E-07	Aroclor, Total	Skin/Eyes/ Immune	3.11E-02	--	1.74E-02	4.85E-02
Sediment	Sediment	Sediment	Antimony	--	--	--	--	Antimony	Blood	4.23E-04	--	6.43E-05	4.88E-04
			Arsenic	8.54E-08	--	5.84E-08	1.44E-07	Arsenic	Skin, blood	5.53E-04	--	3.79E-04	9.32E-04
			Cadmium	--	--	--	--	Cadmium	Kidney	3.31E-04	--	3.02E-04	6.33E-04
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	1.04E-04	--	5.91E-05	1.63E-04
			Mercury	--	--	--	--	Mercury	Immune	1.67E-04	--	5.43E-05	2.21E-04
			Silver	--	--	--	--	Silver	Skin	1.78E-04	--	1.01E-04	2.79E-04
			Thallium	--	--	--	--	Thallium	Blood	5.75E-04	--	1.31E-05	5.88E-04
			Vanadium	--	--	--	--	Vanadium	Hair	2.23E-04	--	1.95E-04	4.18E-04
			Benzo(a)anthracene	2.20E-07	--	6.53E-07	8.74E-07	Benzo(a)anthracene	NA	--	--	--	--
			Benzo(a)pyrene	8.52E-07	--	2.53E-06	3.38E-06	Benzo(a)pyrene	NA	--	--	--	--
			Benzo(b)fluoranthene	1.02E-07	--	3.01E-07	4.03E-07	Benzo(b)fluoranthene	NA	--	--	--	--
			Benzo(k)fluoranthene	7.76E-09	--	2.30E-08	7.76E-09	Benzo(k)fluoranthene	NA	--	--	--	--
			Dibenz(a,h)anthracene	3.81E-07	--	1.13E-06	1.51E-06	Dibenz(a,h)anthracene	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	7.99E-08	--	2.37E-07	3.17E-07	Indeno(1,2,3-cd)pyrene	NA	--	--	--	--
			Dieldrin	5.41E-08	--	2.47E-08	7.88E-08	Dieldrin	Liver	1.97E-04	--	9.00E-05	2.87E-04
			Aroclor, Total	1.24E-08	--	3.95E-08	5.18E-08	Aroclor, Total	Skin/Eyes/ Immune	9.02E-04	--	2.88E-03	3.78E-03

TABLE 9.3A RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RESIDENT - SURFACE SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Surface Water	Antimony	--	--	--	--	Antimony	Blood	3.83E-05	--	2.91E-04	3.29E-04
			Arsenic	8.16E-09	--	9.31E-09	1.75E-08	Arsenic	Skin, blood	5.29E-05	--	6.03E-05	1.13E-04
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	1.92E-04	--	5.46E-03	5.65E-03
			Vanadium	--	--	--	--	Vanadium	Hair	2.14E-06	--	9.40E-05	9.62E-05
			Bis(2-ethylhexyl)phthalate	1.17E-10	--	2.13E-08	2.14E-08	Bis(2-ethylhexyl)phthalate	Liver	1.22E-06	--	2.22E-04	2.23E-04
			Aroclor, Total	2.70E-09	--	--	2.70E-09	Aroclor, Total	Skin/Eyes/ Immune	1.97E-04	--	--	1.97E-04
						Total Risk Across Soil	8.18E-06					Total Hazard Index Across Soil	9.65E-02
						Total Risk Across Sediment	6.76E-06					Total Hazard Index Across Sediment	7.79E-03
						Total Risk Across Surface Water	4.16E-08					Total Hazard Index Across Surface Water	6.61E-03
						Total Risk Across All Media and All Exposure Routes	1.50E-05					Total Hazard Index Across All Media and All Exposure Routes	1.11E-01

TABLE 9.3B RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RESIDENT - ALL SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Soil	Antimony	--	--	--	--	Antimony	Blood	8.72E-03	--	2.32E-04	8.95E-03
			Arsenic	1.03E-06	--	1.23E-07	1.15E-06	Arsenic	Skin, blood	6.65E-03	--	7.96E-04	7.45E-03
			Cadmium	--	--	--	--	Cadmium	Kidney	5.62E-03	--	8.98E-04	6.52E-03
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	3.50E-03	--	3.49E-04	3.85E-03
			Thallium	--	--	--	--	Thallium	Blood	1.53E-02	--	6.09E-05	1.53E-02
			Vanadium	--	--	--	--	Vanadium	Hair	8.02E-03	--	1.23E-03	9.25E-03
			Benzo(a)anthracene	1.90E-06	--	9.83E-07	2.88E-06	Benzo(a)anthracene	NA	--	--	--	--
			Benzo(a)pyrene	1.50E-05	--	7.77E-06	2.28E-05	Benzo(a)pyrene	NA	--	--	--	--
			Benzo(b)fluoranthene	1.81E-06	--	9.37E-07	2.74E-06	Benzo(b)fluoranthene	NA	--	--	--	--
			Dibenz(a,h)anthracene	6.04E-07	--	3.13E-07	9.17E-07	Dibenz(a,h)anthracene	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	9.45E-07	--	4.90E-07	1.43E-06	Indeno(1,2,3-cd)pyrene	NA	--	--	--	--
			Dieldrin	1.59E-07	--	1.27E-08	1.71E-07	Dieldrin	Liver	5.79E-04	--	4.62E-05	6.25E-04
			Aroclor, Total	2.68E-07	--	1.50E-07	4.18E-07	Aroclor, Total	Skin/Eyes/ Immune	1.95E-02	--	1.09E-02	3.05E-02
Sediment	Sediment	Sediment	Antimony	--	--	--	--	Antimony	Blood	4.23E-04	--	6.43E-05	4.88E-04
			Arsenic	8.54E-08	--	5.84E-08	1.44E-07	Arsenic	Skin, blood	5.53E-04	--	3.79E-04	9.32E-04
			Cadmium	--	--	--	--	Cadmium	Kidney	3.31E-04	--	3.02E-04	6.33E-04
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	1.04E-04	--	5.91E-05	1.63E-04
			Mercury	--	--	--	--	Mercury	Immune	1.67E-04	--	5.43E-05	2.21E-04
			Silver	--	--	--	--	Silver	Skin	1.78E-04	--	1.01E-04	2.79E-04
			Thallium	--	--	--	--	Thallium	Blood	5.75E-04	--	1.31E-05	5.88E-04
			Vanadium	--	--	--	--	Vanadium	Hair	2.23E-04	--	1.95E-04	4.18E-04
			Benzo(a)anthracene	2.20E-07	--	6.53E-07	8.74E-07	Benzo(a)anthracene	NA	--	--	--	--
			Benzo(a)pyrene	8.52E-07	--	2.53E-06	3.38E-06	Benzo(a)pyrene	NA	--	--	--	--
			Benzo(b)fluoranthene	1.02E-07	--	3.01E-07	4.03E-07	Benzo(b)fluoranthene	NA	--	--	--	--
			Benzo(k)fluoranthene	7.76E-09	--	2.30E-08	7.76E-09	Benzo(k)fluoranthene	NA	--	--	--	--
			Dibenz(a,h)anthracene	3.81E-07	--	1.13E-06	1.51E-06	Dibenz(a,h)anthracene	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	7.99E-08	--	2.37E-07	3.17E-07	Indeno(1,2,3-cd)pyrene	NA	--	--	--	--
			Dieldrin	5.41E-08	--	2.47E-08	7.88E-08	Dieldrin	Liver	1.97E-04	--	9.00E-05	2.87E-04
			Aroclor, Total	1.24E-08	--	3.95E-08	5.18E-08	Aroclor, Total	Skin/Eyes/ Immune	9.02E-04	--	2.88E-03	3.78E-03

TABLE 9.3B RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RESIDENT - ALL SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Surface Water	Antimony	--	--	--	--	Antimony	Blood	3.83E-05	--	2.91E-04	3.29E-04
			Arsenic	8.16E-09	--	9.31E-09	1.75E-08	Arsenic	Skin, blood	5.29E-05	--	6.03E-05	1.13E-04
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	1.92E-04	--	5.46E-03	5.65E-03
			Vanadium	--	--	--	--	Vanadium	Hair	2.14E-06	--	9.40E-05	9.62E-05
			Bis(2-ethylhexyl)phthalate	1.17E-10	--	2.13E-08	2.14E-08	Bis(2-ethylhexyl)phthalate	Liver	1.22E-06	--	2.22E-04	2.23E-04
			Aroclor, Total	2.70E-09	--	--	2.70E-09	Aroclor, Total	Skin/Eyes/ Immune	1.97E-04	--	--	1.97E-04
						Total Risk Across Soil	3.25E-05					Total Hazard Index Across Soil	8.24E-02
						Total Risk Across Sediment	6.76E-06					Total Hazard Index Across Sediment	7.79E-03
						Total Risk Across Surface Water	4.16E-08					Total Hazard Index Across Surface Water	6.61E-03
						Total Risk Across All Media and All Exposure Routes	3.93E-05					Total Hazard Index Across All Media and All Exposure Routes	9.68E-02

TABLE 9.4A RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RESIDENT - SURFACE SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Antimony	--	--	--	--	Antimony	Blood	9.07E-02	--	1.69E-03	9.24E-02
			Arsenic	2.87E-06	--	2.41E-07	3.11E-06	Arsenic	Skin, blood	7.43E-02	--	6.24E-03	8.06E-02
			Cadmium	--	--	--	--	Cadmium	Kidney	4.76E-02	--	5.33E-03	5.29E-02
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	3.02E-02	--	2.12E-03	3.23E-02
			Thallium	--	--	--	--	Thallium	Blood	1.16E-01	--	3.26E-04	1.17E-01
			Vanadium	--	--	--	--	Vanadium	Hair	5.09E-02	--	5.48E-03	5.64E-02
			Benzo(a)anthracene	3.04E-07	--	1.11E-07	4.14E-07	Benzo(a)anthracene	NA	--	--	--	--
			Benzo(a)pyrene	7.71E-06	--	2.81E-06	1.05E-05	Benzo(a)pyrene	NA	--	--	--	--
			Benzo(b)fluoranthene	3.25E-07	--	1.18E-07	4.43E-07	Benzo(b)fluoranthene	NA	--	--	--	--
			Dibenz(a,h)anthracene	5.90E-07	--	2.15E-07	8.04E-07	Dibenz(a,h)anthracene	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1.68E-07	--	6.10E-08	2.29E-07	Indeno(1,2,3-cd)pyrene	NA	--	--	--	--
			Dieldrin	4.66E-07	--	2.61E-08	4.92E-07	Dieldrin	Liver	6.79E-03	--	3.80E-04	7.18E-03
			Aroclor, Total	9.96E-07	--	3.90E-07	1.39E-06	Aroclor, Total	Skin/Eyes/ Immune	2.90E-01	--	1.14E-01	4.04E-01
Sediment	Sediment	Sediment	Antimony	--	--	--	--	Antimony	Blood	3.42E-02	--	1.28E-03	3.55E-02
			Arsenic	1.73E-06	--	2.90E-07	2.02E-06	Arsenic	Skin, blood	4.48E-02	--	7.52E-03	5.23E-02
			Cadmium	--	--	--	--	Cadmium	Kidney	2.68E-02	--	6.00E-03	3.28E-02
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	8.39E-03	--	1.17E-03	9.56E-03
			Mercury	--	--	--	--	Mercury	Immune	1.35E-02	--	1.08E-03	1.46E-02
			Silver	--	--	--	--	Silver	Skin	1.44E-02	--	2.02E-03	1.64E-02
			Thallium	--	--	--	--	Thallium	Blood	4.65E-02	--	2.61E-04	4.68E-02
			Vanadium	--	--	--	--	Vanadium	Hair	1.80E-02	--	3.88E-03	2.19E-02
			Benzo(a)anthracene	4.46E-06	--	3.24E-06	7.70E-06	Benzo(a)anthracene	NA	--	--	--	--
			Benzo(a)pyrene	1.72E-05	--	1.25E-05	2.98E-05	Benzo(a)pyrene	NA	--	--	--	--
			Benzo(b)fluoranthene	2.06E-06	--	1.50E-06	3.55E-06	Benzo(b)fluoranthene	NA	--	--	--	--
			Benzo(k)fluoranthene	1.57E-07	--	1.14E-07	1.57E-07	Benzo(k)fluoranthene	NA	--	--	--	--
			Dibenz(a,h)anthracene	7.70E-06	--	5.61E-06	1.33E-05	Dibenz(a,h)anthracene	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1.62E-06	--	1.18E-06	2.79E-06	Indeno(1,2,3-cd)pyrene	NA	--	--	--	--
			Dieldrin	1.09E-06	--	1.23E-07	1.22E-06	Dieldrin	Liver	1.60E-02	--	1.79E-03	1.77E-02
			Aroclor, Total	2.50E-07	--	1.96E-07	4.46E-07	Aroclor, Total	Skin/Eyes/ Immune	7.29E-02	--	5.72E-02	1.30E-01

TABLE 9.4A RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RESIDENT - SURFACE SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Surface Water	Antimony	--	--	--	--	Antimony	Blood	1.55E-03	--	5.78E-03	7.33E-03
			Arsenic	8.25E-08	--	4.62E-08	1.29E-07	Arsenic	Skin, blood	2.14E-03	--	1.20E-03	3.34E-03
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	7.75E-03	--	1.08E-01	1.16E-01
			Vanadium	--	--	--	--	Vanadium	Hair	8.67E-05	--	1.87E-03	1.96E-03
			Bis(2-ethylhexyl)phthalate	1.19E-09	--	1.06E-07	1.07E-07	Bis(2-ethylhexyl)phthalate	Liver	4.94E-05	--	4.41E-03	4.46E-03
			Aroclor, Total	2.73E-08	--	--	2.73E-08	Aroclor, Total	Skin/Eyes/ Immune	7.95E-03	--	--	7.95E-03
						Total Risk Across Soil	1.74E-05					Total Hazard Index Across Soil	8.43E-01
						Total Risk Across Sediment	6.10E-05					Total Hazard Index Across Sediment	3.78E-01
						Total Risk Across Surface Water	2.63E-07					Total Hazard Index Across Surface Water	1.41E-01
						Total Risk Across All Media and All Exposure Routes	7.86E-05					Total Hazard Index Across All Media and All Exposure Routes	1.36E+00

TABLE 9.4B RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RESIDENT - ALL SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Soil	Antimony	--	--	--	--	Antimony	Blood	8.14E-02	--	1.52E-03	8.29E-02
			Arsenic	2.40E-06	--	2.01E-07	2.60E-06	Arsenic	Skin, blood	6.21E-02	--	5.22E-03	6.73E-02
			Cadmium	--	--	--	--	Cadmium	Kidney	5.25E-02	--	5.88E-03	5.84E-02
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	3.26E-02	--	2.28E-03	3.49E-02
			Thallium	--	--	--	--	Thallium	Blood	1.42E-01	--	3.99E-04	1.43E-01
			Vanadium	--	--	--	--	Vanadium	Hair	7.49E-02	--	8.06E-03	8.30E-02
			Benzo(a)anthracene	4.42E-06	--	1.61E-06	6.03E-06	Benzo(a)anthracene	NA	--	--	--	--
			Benzo(a)pyrene	3.50E-05	--	1.27E-05	4.77E-05	Benzo(a)pyrene	NA	--	--	--	--
			Benzo(b)fluoranthene	4.22E-06	--	1.54E-06	5.75E-06	Benzo(b)fluoranthene	NA	--	--	--	--
			Dibenz(a,h)anthracene	1.41E-06	--	5.13E-07	1.92E-06	Dibenz(a,h)anthracene	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2.20E-06	--	8.02E-07	3.01E-06	Indeno(1,2,3-cd)pyrene	NA	--	--	--	--
			Dieldrin	3.70E-07	--	2.07E-08	3.91E-07	Dieldrin	Liver	5.40E-03	--	3.03E-04	5.71E-03
			Aroclor, Total	6.26E-07	--	2.45E-07	8.71E-07	Aroclor, Total	Skin/Eyes/ Immune	1.82E-01	--	7.15E-02	2.54E-01
Sediment	Sediment	Sediment	Antimony	--	--	--	--	Antimony	Blood	3.42E-02	--	1.28E-03	3.55E-02
			Arsenic	1.73E-06	--	2.90E-07	2.02E-06	Arsenic	Skin, blood	4.48E-02	--	7.52E-03	5.23E-02
			Cadmium	--	--	--	--	Cadmium	Kidney	2.68E-02	--	6.00E-03	3.28E-02
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	8.39E-03	--	1.17E-03	9.56E-03
			Mercury	--	--	--	--	Mercury	Immune	1.35E-02	--	1.08E-03	1.46E-02
			Silver	--	--	--	--	Silver	Skin	1.44E-02	--	2.02E-03	1.64E-02
			Thallium	--	--	--	--	Thallium	Blood	4.65E-02	--	2.61E-04	4.68E-02
			Vanadium	--	--	--	--	Vanadium	Hair	1.80E-02	--	3.88E-03	2.19E-02
			Benzo(a)anthracene	4.46E-06	--	3.24E-06	7.70E-06	Benzo(a)anthracene	NA	--	--	--	--
			Benzo(a)pyrene	1.72E-05	--	1.25E-05	2.98E-05	Benzo(a)pyrene	NA	--	--	--	--
			Benzo(b)fluoranthene	2.06E-06	--	1.50E-06	3.55E-06	Benzo(b)fluoranthene	NA	--	--	--	--
			Benzo(k)fluoranthene	1.57E-07	--	1.14E-07	1.57E-07	Benzo(k)fluoranthene	NA	--	--	--	--
			Dibenz(a,h)anthracene	7.70E-06	--	5.61E-06	1.33E-05	Dibenz(a,h)anthracene	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1.62E-06	--	1.18E-06	2.79E-06	Indeno(1,2,3-cd)pyrene	NA	--	--	--	--
			Dieldrin	1.09E-06	--	1.23E-07	1.22E-06	Dieldrin	Liver	1.60E-02	--	1.79E-03	1.77E-02
			Aroclor, Total	2.50E-07	--	1.96E-07	4.46E-07	Aroclor, Total	Skin/Eyes/ Immune	7.29E-02	--	5.72E-02	1.30E-01

TABLE 9.4B RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RESIDENT - SURFACE SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Surface Water	Antimony	--	--	--	--	Antimony	Blood	1.55E-03	--	5.78E-03	7.33E-03
			Arsenic	8.25E-08	--	4.62E-08	1.29E-07	Arsenic	Skin, blood	2.14E-03	--	1.20E-03	3.34E-03
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Manganese	--	--	--	--	Manganese	CNS	7.75E-03	--	1.08E-01	1.16E-01
			Vanadium	--	--	--	--	Vanadium	Hair	8.67E-05	--	1.87E-03	1.96E-03
			Bis(2-ethylhexyl)phthalate	1.19E-09	--	1.06E-07	1.07E-07	Bis(2-ethylhexyl)phthalate	Liver	4.94E-05	--	4.41E-03	4.46E-03
			Aroclor, Total	2.73E-08	--	--	2.73E-08	Aroclor, Total	Skin/Eyes/ Immune	7.95E-03	--	--	7.95E-03
						Total Risk Across Soil	6.83E-05					Total Hazard Index Across Soil	7.29E-01
						Total Risk Across Sediment	6.10E-05					Total Hazard Index Across Sediment	3.78E-01
						Total Risk Across Surface Water	2.63E-07					Total Hazard Index Across Surface Water	1.41E-01
						Total Risk Across All Media and All Exposure Routes	1.30E-04					Total Hazard Index Across All Media and All Exposure Routes	1.25E+00

TABLE 9.5A RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - LIFETIME RESIDENT - SURFACE SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Lifetime

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Antimony	--	--	--	--	Antimony	Blood				
			Arsenic	4.10E-06	--	3.88E-07	4.48E-06	Arsenic	Skin, blood				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			Manganese	--	--	--	--	Manganese	CNS				
			Thallium	--	--	--	--	Thallium	Blood				
			Vanadium	--	--	--	--	Vanadium	Hair				
			Benzo(a)anthracene	4.34E-07	--	1.78E-07	6.12E-07	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	1.10E-05	--	4.52E-06	1.55E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	4.64E-07	--	1.91E-07	6.55E-07	Benzo(b)fluoranthene	NA				
			Dibenz(a,h)anthracene	8.42E-07	--	3.46E-07	1.19E-06	Dibenz(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	2.40E-07	--	9.83E-08	3.38E-07	Indeno(1,2,3-cd)pyrene	NA				
			Dieldrin	6.66E-07	--	4.20E-08	7.08E-07	Dieldrin	Liver				
			Aroclor, Total	1.42E-06	--	6.29E-07	2.05E-06	Aroclor, Total	Skin/Eyes/ Immune				
Sediment	Sediment	Sediment	Antimony	--	--	--	--	Antimony	Blood				
			Arsenic	1.81E-06	--	3.48E-07	2.16E-06	Arsenic	Skin, blood				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			Manganese	--	--	--	--	Manganese	CNS				
			Mercury	--	--	--	--	Mercury	Immune				
			Silver	--	--	--	--	Silver	Skin				
			Thallium	--	--	--	--	Thallium	Blood				
			Vanadium	--	--	--	--	Vanadium	Hair				
			Benzo(a)anthracene	4.68E-06	--	3.90E-06	8.58E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	1.81E-05	--	1.51E-05	3.32E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	2.16E-06	--	1.80E-06	3.96E-06	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene	1.65E-07	--	1.37E-07	1.65E-07	Benzo(k)fluoranthene	NA				
			Dibenz(a,h)anthracene	8.08E-06	--	6.74E-06	1.48E-05	Dibenz(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	1.70E-06	--	1.41E-06	3.11E-06	Indeno(1,2,3-cd)pyrene	NA				
			Dieldrin	1.15E-06	--	1.47E-07	1.30E-06	Dieldrin	Liver				
			Aroclor, Total	2.62E-07	--	2.36E-07	4.98E-07	Aroclor, Total	Skin/Eyes/ Immune				

TABLE 9.5A RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - LIFETIME RESIDENT - SURFACE SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Lifetime

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Surface Water	Antimony	--	--	--	--	Antimony	Blood				
			Arsenic	9.07E-08	--	5.55E-08	1.46E-07	Arsenic	Skin, blood				
			Lead	--	--	--	--	Lead	NA				
			Manganese	--	--	--	--	Manganese	CNS				
			Vanadium	--	--	--	--	Vanadium	Hair				
			Bis(2-ethylhexyl)phthalate	1.30E-09	--	1.27E-07	1.28E-07	Bis(2-ethylhexyl)phthalate	Liver				
			Aroclor, Total	3.00E-08	--	--	3.00E-08	Aroclor, Total	Skin/Eyes/ Immune				
						Total Risk Across Soil	2.56E-05					Total Hazard Index Across Soil	
						Total Risk Across Sediment	6.77E-05					Total Hazard Index Across Sediment	
						Total Risk Across Surface Water	3.05E-07					Total Hazard Index Across Surface Water	
						Total Risk Across All Media and All Exposure Routes	9.36E-05					Total Hazard Index Across All Media and All Exposure Routes	

TABLE 9.5B RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - LIFETIME RESIDENT - ALL SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Lifetime

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Soil	Antimony	--	--	--	--	Antimony	Blood				
			Arsenic	3.42E-06	--	3.24E-07	3.75E-06	Arsenic	Skin, blood				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			Manganese	--	--	--	--	Manganese	CNS				
			Thallium	--	--	--	--	Thallium	Blood				
			Vanadium	--	--	--	--	Vanadium	Hair				
			Benzo(a)anthracene	6.32E-06	--	2.59E-06	8.91E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	5.00E-05	--	2.05E-05	7.05E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	6.02E-06	--	2.47E-06	8.50E-06	Benzo(b)fluoranthene	NA				
			Dibenz(a,h)anthracene	2.01E-06	--	8.26E-07	2.84E-06	Dibenz(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	3.15E-06	--	1.29E-06	4.44E-06	Indeno(1,2,3-cd)pyrene	NA				
			Dieldrin	5.29E-07	--	3.34E-08	5.63E-07	Dieldrin	Liver				
			Aroclor, Total	8.94E-07	--	3.95E-07	1.29E-06	Aroclor, Total	Skin/Eyes/ Immune				
Sediment	Sediment	Sediment	Antimony	--	--	--	--	Antimony	Blood				
			Arsenic	1.81E-06	--	3.48E-07	2.16E-06	Arsenic	Skin, blood				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			Manganese	--	--	--	--	Manganese	CNS				
			Mercury	--	--	--	--	Mercury	Immune				
			Silver	--	--	--	--	Silver	Skin				
			Thallium	--	--	--	--	Thallium	Blood				
			Vanadium	--	--	--	--	Vanadium	Hair				
			Benzo(a)anthracene	4.68E-06	--	3.90E-06	8.58E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	1.81E-05	--	1.51E-05	3.32E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	2.16E-06	--	1.80E-06	3.96E-06	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene	1.65E-07	--	1.37E-07	1.65E-07	Benzo(k)fluoranthene	NA				
			Dibenz(a,h)anthracene	8.08E-06	--	6.74E-06	1.48E-05	Dibenz(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	1.70E-06	--	1.41E-06	3.11E-06	Indeno(1,2,3-cd)pyrene	NA				
			Dieldrin	1.15E-06	--	1.47E-07	1.30E-06	Dieldrin	Liver				
			Aroclor, Total	2.62E-07	--	2.36E-07	4.98E-07	Aroclor, Total	Skin/Eyes/ Immune				

TABLE 9.5B RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - LIFETIME RESIDENT - ALL SOIL, SEDIMENT, SURFACE WATER
REASONABLE MAXIMUM EXPOSURE
AOC 55C SITE
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Lifetime

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Surface Water	Antimony	--	--	--	--	Antimony	Blood				
			Arsenic	9.07E-08	--	5.55E-08	1.46E-07	Arsenic	Skin, blood				
			Lead	--	--	--	--	Lead	NA				
			Manganese	--	--	--	--	Manganese	CNS				
			Vanadium	--	--	--	--	Vanadium	Hair				
			Bis(2-ethylhexyl)phthalate	1.30E-09	--	1.27E-07	1.28E-07	Bis(2-ethylhexyl)phthalate	Liver				
			Aroclor, Total	3.00E-08	--	--	3.00E-08	Aroclor, Total	Skin/Eyes/ Immune				
						Total Risk Across Soil	1.01E-04					Total Hazard Index Across Soil	
						Total Risk Across Sediment	6.77E-05					Total Hazard Index Across Sediment	
						Total Risk Across Surface Water	3.05E-07					Total Hazard Index Across Surface Water	
						Total Risk Across All Media and All Exposure Routes	1.69E-04					Total Hazard Index Across All Media and All Exposure Routes	

APPENDIX C2: ERA RISK TABLES

Refer to attached copies.

TABLE 4-4

ANALYTICAL SUMMARY - SEDIMENT AND SURFACE SOIL COMBINED DATASET
AREA OF CONCERN 55C
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Chemical	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Sample of Maximum Detected	Average of all Samples(2)	Average of Positive Detects(3)
Volatile Organic Compounds (ug/kg)						
2-BUTANONE	6/20	5.9 J	49 J	SB15-305-NSO-0708030	20.3	20.3
ACETONE	15/20	9 J	490 J	SB15-307-NSO-0708030	131	156
CARBON DISULFIDE	2/20	2.5 J	4.7 J	SD15-316-NSD-072903	4.065	3.6
M+P-XYLENES	3/20	2 J	170	SD15-215-NSD-081601	16.9	81.7
METHYLENE CHLORIDE	2/20	4.3 TB	7.2 TB	SD15-313-NSD-072903	12.5	5.75
TETRACHLOROETHENE	2/20	1.7 J	1.9 J	SB15-210-NSO-082101	3.99	1.8
TOLUENE	8/20	1.4 J	46 J	SD15-316-NSD-072903	10.6	21.3
TOTAL XYLENES	3/20	2 J	170	SD15-215-NSD-081601	16.5	81.7
Semivolatile Organic Compounds (ug/kg)						
2-METHYLNAPHTHALENE	2/27	57	510 J	SD15-314-NSD-072903	227	284
4-CHLOROANILINE	1/21	70 J	70 J	SB15-306-NSO-0708030	356	70
ACENAPHTHENE	8/27	12	3800	SD15-217-NSD-081601	406	907
ACENAPHTHYLENE	7/27	33	1200 J	SD15-217-NSD-081601	224	219
ANTHRACENE	15/27	20	18000	SD15-217-NSD-081601	1154	1888
BENZO(A)ANTHRACENE	21/27	49 J	52000	SD15-217-NSD-081601	2907	3682
BENZO(A)PYRENE	24/27	15 J	34000	SD15-217-NSD-081601	2267	2548
BENZO(B)FLUORANTHENE	22/27	55 J	32000	SD15-217-NSD-081601	2517	3049
BENZO(G,H,I)PERYLENE	17/27	28 J	13000 J	SD15-217-NSD-081601	1025	1480
BENZO(K)FLUORANTHENE	17/27	98 J	18000 J	SD15-217-NSD-081601	1260	1870
BIS(2-ETHYLHEXYL)PHTHALATE	7/21	110 J	825 J	SD15-216-NSD-081601-AVG	344	268
CARBAZOLE	5/21	93 J	1800 J	SD15-217-NSD-081601	350	566
CHRYSENE	20/27	55 J	49000	SD15-217-NSD-081601	2867	3795
DIBENZO(A,H)ANTHRACENE	17/27	7.4 J	9200 J	SD15-217-NSD-081601	472	730
DIBENZOFURAN	3/21	51 J	1900 J	SD15-217-NSD-081601	373	677
DI-N-BUTYL PHTHALATE	2/21	240 J	790	SB15-306-NSO-0708030	393	515
FLUORANTHENE	22/27	84 J	100000	SD15-217-NSD-081601	5851	7141
FLUORENE	8/27	12	8200	SD15-217-NSD-081601	579	1491
INDENO(1,2,3-CD)PYRENE	17/27	22 J	18000 J	SD15-217-NSD-081601	1220	1789
NAPHTHALENE	5/27	16	860	SD15-314-NSD-072903	163	212
PHENANTHRENE	19/27	47 J	54000	SD15-217-NSD-081601	3437	4786
PYRENE	24/27	34 J	100000	SD15-217-NSD-081601	5491	6157
TOTAL PAHS	24/27	49	510400	SD15-217-NSD-081601	30657	34487
Pesticides/PCBs (ug/kg)						
4,4'-DDD	18/21	3.5 J	270 J	SD15-314-NSD-072903, SD15-317-NSD-072903	83.5	97.2
4,4'-DDE	19/21	4.35 J	150	SD15-317-NSD-072903	48.6	53.6
4,4'-DDT	15/20	2.8 J	280	SB15-209-NSO082101-0	63.0	83.4
ALDRIN	2/21	2.2 J	2.8	SD15-315-NSD-071003	2.03	2.5
ALPHA-CHLORDANE	14/20	3.1 J	110 J	SB15-306-NSO-0708030, SD15-314-NSD-072903	25.9	36.0
AROCLOR-1016	1/27	640	640	SD15-318-NSD-090903	48.2	640
AROCLOR-1254	2/27	400	800	55C-SD-SD401-20070215	67.4	600
AROCLOR-1260	22/27	27 J	1400	SD15-314-NSD-072903	375	455
BETA-BHC	1/21	5.3 J	5.3 J	SD15-318-NSD-090903	2.55	5.3
DIELDRIN	6/20	1.6 J	420	SD15-315-NSD-071003	28.0	88.6
ENDOSULFAN SULFATE	1/21	16 J	16 J	SB15-310-NSO-0708030	3.55	16
ENDRIN	2/21	13 J	20 J	SB15-209-NSO082101-0	3.38	16.5
ENDRIN ALDEHYDE	3/20	6.2 J	42	SB15-209-NSO082101-0	5.31	24.4
GAMMA-CHLORDANE	14/20	0.89 J	130	SB15-306-NSO-0708030	24.8	34.4
HEPTACHLOR	1/21	1.3 J	1.3 J	SB15-208-NSO082101-0	1.90	1.3
TOTAL AROCLOR	22/27	27	1400	SD15-314-NSD-072903	443	539
TOTAL DDT	20/21	2.8	489	SB15-307-NSO-0708030	191	201

TABLE 4-4

ANALYTICAL SUMMARY - SEDIMENT AND SURFACE SOIL COMBINED DATASET
AREA OF CONCERN 55C
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Chemical	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Sample of Maximum Detected	Average of all Samples(2)	Average of Positive Detects(3)
Metals (mg/kg)						
ALUMINUM	27/27	5130 J	14600	55C-SD-SD403-20070215	8384	8384
ANTIMONY	23/27	0.65 J	13 J	SD15-216-NSD-081601-AVG	4.49	5.19
ARSENIC	26/27	0.77 J	11.9 J	55C-SD-SD216-20070216	4.19	4.33
BARIUM	27/27	9.9 J	252	55C-SD-SD216-20070216	75.1	75.1
BERYLLIUM	21/27	0.25 J	2.5	55C-SD-SD416-20070215	0.48	0.563
CADMIUM	24/27	0.185 J	37.7 J	SD15-216-NSD-081601-AVG	6.97	7.80
CALCIUM	13/27	1160	11200	55C-SD-SD416-20070215	2114	3632
CHROMIUM	27/27	6.4	190	SD15-314-NSD-072903	24.2	24.2
COBALT	26/27	2.3 J	17.8 J	SD15-216-NSD-081601-AVG	6.26	6.43
COPPER	27/27	2.4 J	752 J	SB15-209-NSO082101-0	150	150
IRON	27/27	5470 J	105000	55C-SD-SD216-20070216	28575	28575
LEAD	40/40	5.8 J	1740	SD15-216-NSD-081601-AVG	287	287
MAGNESIUM	27/27	692 J	3900 J	SB15-308-NSO-0708030	1834	1834
MANGANESE	27/27	47.8 J	551	55C-SD-SD416-20070215	268	268
MERCURY	26/27	0.03 J	7.25	SD15-216-NSD-081601-AVG	0.811	0.841
NICKEL	27/27	4.9 J	116	SD15-216-NSD-081601-AVG	26.3	26.3
POTASSIUM	11/27	192 J	504	55C-SD-SD216-20070216	241	381
SELENIUM	11/27	0.36 J	7.1	55C-SD-SD416-20070215	0.819	1.34
SILVER	21/22	0.19 J	126 J	SD15-216-NSD-081601-AVG	10.7	11.2
SODIUM	12/27	53.4 J	1210	55C-SD-SD416-20070215	170	309
THALLIUM	4/16	1.3	4.6 J	55C-SD-SD416-20070215	1.08	2.475
VANADIUM	27/27	10 J	190	SD15-314-NSD-072903	60.1	60.1
ZINC	27/27	22 J	1960 J	SD15-216-NSD-081601-AVG	450	450
Miscellaneous						
CYANIDE (mg/kg)	1/21	0.64	0.64	SB15-208-NSO082101-0	0.673	0.64
TOTAL ORGANIC CARBON (mg/kg)	10/10	9.1	200000	SD15-318-NSD-090903	83488	83488

NOTES:
1 - The average of the sample and duplicate is used when determining the minimum and maximum concentrations detected concentrations and are considered as one sample when determining the frequency of detection.
2 - Average of all analytical results are calculated using half of the detection limit for nondetects.
3 - Average of positive analytical results only.

Associated Samples

55C-SD-SD216-20070216
55C-SD-SD401-20070215
55C-SD-SD402
55C-SD-SD403-20070215
55C-SD-SD404
55C-SD-SD405
55C-SD-SD406
55C-SD-SD407-20070215
55C-SD-SD408
55C-SD-SD409
55C-SD-SD410
55C-SD-SD411
55C-SD-SD411-20070215
55C-SD-SD412-AVG
55C-SD-SD413-20070216
55C-SD-SD414
55C-SD-SD415
55C-SD-SD416-20070215
55C-SD-SD417
55C-SD-SD418
SB15-208-NSO082101-0
SB15-209-NSO082101-0
SB15-210-NSO-082101
SB15-305-NSO-0708030
SB15-305-NSO-0708031
SB15-306-NSO-0708030
SB15-307-NSO-0708030
SB15-308-NSO-0708030
SB15-309-NSO-0708030
SB15-310-NSO-0708030
SB15-311-NSO-0708030
SD15-215-NSD-081601
SD15-216-NSD-081601-AVG
SD15-217-NSD-081601
SD15-301-NSD-120402-AVG
SD15-312-NSD-071003-AVG
SD15-313-NSD-072903
SD15-314-NSD-072903
SD15-315-NSD-071003
SD15-316-NSD-072903
SD15-317-NSD-072903
SD15-317-NSD-090903
SD15-318-NSD-090903
SD15-318-NSD-100103

TABLE 4-11

RISK CLASSIFICATIONS BASED ON *HYALELLA AZTECA* AND *CHIRONOMUS DILUTUS* TOXICITY TEST RESULTS GROWTH AND SURVIVAL RESULTS
AREA OF CONCERN 55C
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Sample Number	*Hyalella azteca*				*Chironomus dilutus*				Overall Risk Acceptable/ Unacceptable
	Survival		Growth		Survival		Growth		
	Mean Survival (%)	Risk	Mean Growth (mg)[1]	Risk	Mean Survival (%)	Risk	Mean Growth (mg)[2]	Risk	
Laboratory Control Sample									
Lab Control	90%	NA	0.083	NA	95%	NA	1.310	NA	NA
Reference Samples									
55C-SD-SD419	80%	NA	0.053	NA	70%	NA	0.461	NA	NA
55C-SD-SD420	70%	NA	0.068	NA	58%	NA	0.504	NA	NA
55C-SD-SD421	90%	NA	0.081	NA	80%	NA	0.490	NA	NA
Site Samples									
55C-SD-SD216	88%	no unacceptable risk (3)	0.066	no unacceptable site-related risk (5,9)	61%	no unacceptable site-related risk (8,9)	0.698	no unacceptable site-related risk (5)	Acceptable
55C-SD-SD401	23%	potentially unacceptable site-related risk (4,11)	0.045	potentially high magnitude unacceptable site-related risk (6,10)	65%	no unacceptable site-related risk (8,9)	0.870	no unacceptable site-related risk (5)	Unacceptable
55C-SD-SD403	86%	no unacceptable risk (3)	0.061	no unacceptable site-related risk (5,9)	44%	potentially unacceptable site-related risk (4,10)	0.858	no unacceptable site-related risk (5)	Unacceptable
55C-SD-SD407	19%	potentially unacceptable site-related risk (4,11)	0.036	potentially high magnitude unacceptable site-related risk (6,11)	24%	potentially unacceptable site-related risk (4,11)	0.602	no unacceptable site-related risk (5)	Unacceptable
55C-SD-SD413	90%	no unacceptable risk (3)	0.089	no unacceptable risk (7)	66%	no unacceptable site-related risk (8)	0.695	no unacceptable site-related risk (5)	Acceptable
55C-SD-SD416	91%	no unacceptable risk (3)	0.081	no unacceptable risk (7)	58%	no unacceptable site-related risk (8)	0.816	no unacceptable site-related risk (5)	Acceptable

NOTES:
Appendix C presents the complete laboratory report.

NA - Not applicable
1 - Dry weight
2 - Ash-free dry weight
3 - Mean survival in sample is greater than 80 percent
4 - Mean survival in sample is statistically lower than both the mean survival in the laboratory control sample and the reference samples
5 - Mean growth in sample is statistically different than the mean growth in the laboratory control sample, but is not statistically different than the mean growth in the reference samples
6 - Mean growth in sample is statistically different than the mean growth in both the laboratory control and reference samples, and the mean growth in the sample is greater than 20 percent different than the mean growth in the reference samples
7 - Mean growth in sample is not statistically different than the mean growth in the laboratory control sample
8 - Mean survival in sample is statistically lower than the mean survival in the laboratory control sample, but is not statistically lower than the mean survival in the reference samples
9 - Site sample was statistically different than one (1) reference sample.
10 - Site sample was statistically different than two (2) reference samples.
11 - Site sample was statistically different than three (3) reference samples.

TABLE 4-12

NOEC AND LOEC VALUES FOR *HYALELLA AZTECA* AND *CHIRONOMUS DILUTUS*
AREA OF CONCERN 55C
NAS SOUTH WEYMOUTH, WEYMOUTH, MASSACHUSETTS

Chemical	*Hyalella azteca*				*Chironomus dilutus*	
	Survival		Growth		Survival	
	NOEC	LOEC	NOEC	LOEC	NOEC	LOEC
Inorganics (mg/kg)						
Cadmium	7.1	9.3	7.1	9.3	NA	NA
Copper	216	286	216	286	NA	NA
Lead	691	754	691	754	NA	NA
Zinc	315	496	315	496	NA	NA
PCBs (µg/kg)						
Total Aroclor	570	1330	570	1330	NA	NA
PAHs (µg/kg)						
Total PAHs	16308	19849	16308	19849	NA	NA
Miscellaneous (unitless)						
Mean PEC-Q	0.57	0.62	0.57	0.62	NA	NA

NOTES:

- See Section 4.4.2.2 for information on the derivation of NOECs and LOECs.
NA - Not applicable
NOEC - No observable effects concentration
LOEC - Lowest observable effects concentration
PEC - Probable Effects Concentration from MacDonald et al., 2000.

1 - The PEC-Q is calculated by dividing the chemical concentration by the PEC.

APPENDIX D: ADMINISTRATIVE RECORD INDEX

File No.	Vol.	Document No.	Document Type[a]	Document Title	Document Date	Document Author	Document Recipient	Document Location	Area of Concern
1.0 SITE ASSESSMENT									
1.8 Environmental Baseline Survey									
1.8		1.8-1	R	Phase I Environmental Baseline Survey	11/96	Stone & Webster	U.S. Department of the Navy	A.R. File	Basewide
1.8		1.8-2	R	Phase I EBS Report Errata	11/10/97	Stone & Webster	U.S. Department of the Navy	A.R. File	Basewide
1.8		1.8-3	R	Final Phase II Environmental Baseline Survey Field Report, Review Item Area 55C– Area North of Trotter Road-Pond Area	07/02	Stone & Webster	U.S. Department of the Navy	A.R. File	AOC 55C
1.8		1.8-4	R	Phase II Environmental Baseline Survey Field Report, Review Item Area 55C– Area North of Trotter Road-Pond Area	6/04	Stone & Webster	U.S. Department of the Navy	A.R. File	AOC 55C
1.9 Work Plans									
1.9		1.9-1	R	Final Phase II Environmental Baseline Survey Sampling Work Plan (Rev. 1)	10/13/98	Stone & Webster	U.S. Department of the Navy	A.R. File	Basewide RIAs
1.9		1.9-2	L	Meeting Minutes Streamlined Risk Assessment Process South Weymouth Naval Air Station	9/00	EA Engineering, Science, and Technology	U.S. Department of the Navy	A.R. File	Basewide
1.9		1.9-3	R	Draft Work Plan for Review Item Area 55C: Area North of Trotter Road - Pond Area, Naval Air Station South Weymouth, Massachusetts	08/13/01	Stone & Webster	U.S. Department of the Navy	A.R. File	AOC 55C
1.9		1.9-4	R	Draft Work Plan for Review Item Area 55C: Area North of Trotter Road - Pond Area, Naval Air Station South Weymouth, Massachusetts	06/19/03	Stone & Webster	U.S. Department of the Navy	A.R. File	AOC 55C
1.9		1.9-5	R	Final Work Plan for Area of Concern (AOC) 55C: Former Naval Air Station (NAS) South Weymouth, South Weymouth Massachusetts	08/04/05	TtEC	U.S. Department of the Navy	A.R. File	AOC 55C
1.9		1.9-6	R	Final Streamlined Human Health Risk Assessment Work Plan, Areas of Concern at Naval Air Station South Weymouth, South Weymouth, MA	9/01	EA Engineering, Science, and Technology	U.S. Department of the Navy	A.R. File	AOC 55C
1.9		1.9-7	R	Final Streamlined Ecological Risk Assessment Work Plan, Areas of Concern at Naval Air Station South Weymouth, South Weymouth, MA, Revision 1	04/30/02	EA Engineering, Science, and Technology	U.S. Department of the Navy	A.R. File	AOC 55C

APPENDIX D: ADMINISTRATIVE RECORD INDEX (cont.)

File No.	Vol.	Document No.	Document Type[a]	Document Title	Document Date	Document Author	Document Recipient	Document Location	Area of Concern
1.9		1.9-8	R	Sampling and Analysis Plan, Area of Concern 55C, Groundwater Investigation, Naval Air Station South Weymouth, South Weymouth, Massachusetts	9/24/2010	TtNUS	U.S. Department of the Navy	A.R. File	AOC 55C
3.0 REMEDIAL INVESTIGATION									
3.2 Sampling and Analysis Data									
3.2		3.2-1	R	Final Summary Report of Background Data Summary Statistics for Naval Air Station South Weymouth	2/24/00	Stone & Webster	U.S. Department of the Navy	A.R. File	Basewide
3.2		3.2-2	R	Errata to the Final Summary Report of Background Data Summary Statistics	3/8/00	Stone & Webster	U.S. Department of the Navy	A.R. File	Basewide
3.2		3.2-3	R	Supplement to Final Summary Report of the Background Data Summary Statistics for NAS South Weymouth	11/08/02	Stone & Webster	U.S. Department of the Navy	A.R. File	Basewide
3.6 Remedial Investigation Reports									
3.6		3.6-1	R	Human Health Risk Assessment for Area of Concern 55C, Debris Area North of Trotter Road Former Naval Air Station South Weymouth, Weymouth Massachusetts	10/09	TtNUS	U.S. Department of the Navy	A.R. File	AOC 55C
3.6		3.6-2	R	Ecological Risk Assessment for Area of Concern 55C, Debris Area North of Trotter Road, Former Naval Air Station South Weymouth, Weymouth Massachusetts	10/09	TtNUS	U.S. Department of the Navy	A.R. File	AOC 55C
3.6		3.6-3	R	Engineering Evaluation/Cost Analysis for Area of Concern 55C, Debris Area North of Trotter Road, Former Naval Air Station South Weymouth, Weymouth Massachusetts	12-09	TtNUS	U.S. Department of the Navy	A.R. File	AOC 55C

APPENDIX D: ADMINISTRATIVE RECORD INDEX (cont.)

File No.	Vol.	Document No.	Document Type[a]	Document Title	Document Date	Document Author	Document Recipient	Document Location	Area of Concern
4.8 Proposed Plans for Selected Remedial Action									
4.8		4.8-1	R	Final Proposed Plan, AOC 55C, Naval Air Station South Weymouth, Weymouth, Massachusetts	04/11	U.S. Department of the Navy	Public	A.R. File	AOC 55C
5.0 RECORD OF DECISION									
5.3 Responsiveness Summaries									
5.3		5.3-1	L	Copy of Public Comments Received on the Proposed Plan for AOC 55C (included in Appendix E of the Record of Decision)	05/11	Public	U.S. Department of the Navy	A.R. File	AOC 55C
5.3		5.3-2	R	Transcript of the Public Hearing on the Proposed Plan for AOC 55C(included in Appendix E of the Record of Decision)	05/11	Public	U.S. Department of the Navy	A.R. File	AOC 55C
5.3		5.3-3	R	Responsiveness Summary (included as Section 3 of the Record of Decision)	06/11	U.S. Department of the Navy	Public	A.R. File	AOC 55C
5.4 Record of Decision									
5.4		5.4-1	R	Record of Decision, Area of Concern 55C, Naval Air Station South Weymouth, Massachusetts	09/11	U.S. Department of the Navy and EPA	Public	A.R. File	AOC 55C
5.4		5.4-2	R	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., Naval Air Station South Weymouth, Massachusetts	08/10	U.S. Department of the Navy and EPA	Public	A.R. File	AOC 55C, WGL, STP
10.0 ENFORCEMENT/NEGOTIATION									
10.16 Federal Facility Agreements									
10.16		10.16-1	L	Federal Facility Agreement for South Weymouth Naval Air Station National Priorities List Site	4/00	EPA	U.S. Department of the Navy	A.R. File	Basewide
13.0 COMMUNITY RELATIONS									
13.2 Community Relations Plan									
13.2		13.2-1	R	Community Relations Plan Naval Air Station South Weymouth, Massachusetts	7/98	U.S. Department of the Navy	Public	A.R. File	Basewide

APPENDIX D: ADMINISTRATIVE RECORD INDEX (cont.)

File No.	Vol.	Document No.	Document Type[a]	Document Title	Document Date	Document Author	Document Recipient	Document Location	Area of Concern
13.4 Public Meetings/Hearings									
13.4		13.4-1		Restoration Advisory Board Workshop Guidebook	7/94	EPA	Public	A.R. File	Basewide
13.4		13.4-2		Legal Notice: Availability of the Proposed Plan, and Notification of Public Meeting and Comment Period	03/10	Tetra Tech NUS	Public	A.R. File	AOC 55C
13.4		13.4-3		Public Notice: Notification of Restoration Advisory Board Meetings	1995-2010	Tetra Tech NUS and EA Engineering, Science, and Technology	Public	A.R. File	Basewide
13.4		13.4-4		Restoration Advisory Board Meeting Minutes	1995-2010	U.S. Department of the Navy	Public	A.R. File	Basewide
13.4		13.4-5		Legal Notice, Record of Decision Available For AOC 55C	09/11	Tetra Tech NUS	Public	A.R. File	AOC 55C
13.5 Fact Sheets/Information Updates									
13.5		13.5-1	R	The Former Naval Air Station South Weymouth Environmental Fact Sheet	2/98	EA Engineering, Science, and Technology	Public	A.R. File	Basewide
13.6 Mailing Lists									
13.6		13.6-1		Community Relations Mailing List: State, Federal and Local Agencies (including Media and Public Libraries)	N/A	U.S. Department of the Navy	N/A	A.R. File	Basewide
13.6		13.6-2		Community Relations Mailing List: Other Parties (e.g., general public) – CONFIDENTIAL (due to potential Privacy Act violations)	N/A	U.S. Department of the Navy	N/A	A.R. File	Basewide

APPENDIX D: ADMINISTRATIVE RECORD INDEX (cont.)

File No.	Vol.	Document No.	Document Type[a]	Document Title	Document Date	Document Author	Document Recipient	Document Location	Area of Concern
17.0 SITE MANAGEMENT RECORDS									
17.6 Site Management Plans and Reviews									
17.6		17.6-1	R	Site Management Plan Naval Air Station South Weymouth, Massachusetts	10/99	EA Engineering, Science, and Technology	U.S. Department of the Navy	A.R. File	IR SItes
17.6		17.6-2	R	Site Management Plan Revision 1.0 Naval Air Station South Weymouth, Massachusetts	10/00	EA Engineering, Science, and Technology	U.S. Department of the Navy	A.R. File	IR SItes
17.6		17.6-3	R	Site Management Plan Revision 2.0 Naval Air Station Weymouth, Massachusetts	11/01	EA Engineering, Science, and Technology	U.S. Department of the Navy	A.R. File	IR SItes
17.6		17.6-4	R	Site Management Plan Revision 3.0 Naval Air Station South Weymouth, Massachusetts	4/03	EA Engineering, Science, and Technology	U.S. Department of the Navy	A.R. File	IR SItes
17.6		17.6-5	R	Site Management Plan Revision 4.0 Naval Air Station South Weymouth, Massachusetts	12/04	EA Engineering, Science, and Technology	U.S. Department of the Navy	A.R. File	IR SItes
17.6		17.6-6	R	Draft Site Management Plan Revision 5.0 Naval Air Station South Weymouth, Massachusetts	8/05	Tetra Tech NUS	U.S. Department of the Navy	A.R. File	IR Sites
17.6		17.6-7	R	Site Management Plan Revision 6.0 Naval Air Station South Weymouth, Massachusetts	10/31/06	Tetra Tech NUS	U.S. Department of the Navy	A.R. File	IR Sites
17.6		17.6-8	R	Site Management Plan Revision 7.0 Naval Air Station South Weymouth, Massachusetts	09/07	Tetra Tech NUS	U.S. Department of the Navy	A.R. File	IR Sites
17.6		17.6-9	R	Draft Site Management Plan Revision 8.0 Naval Air Station South Weymouth, Massachusetts	09/08	Tetra Tech NUS	U.S. Department of the Navy	A.R. File	IR and AOC Sites
17.6		17.6-10	R	Site Management Plan Revision 9.0 Naval Air Station South Weymouth, Massachusetts	11/09	Tetra Tech NUS	U.S. Department of the Navy	A.R. File	IR and AOC Sites
17.6		17.6-11	R	Site Management Plan Revision 10.0 Naval Air Station South Weymouth, Massachusetts	10/10	Tetra Tech NUS	U.S. Department of the Navy	A.R. File	IR and AOC Sites

(a) R = Report; L = Letter.

NOTES:

AOC = Area of Concern
A.R. File = Administrative Record File
N/A = Not Applicable
NAS = Naval Air Station

File No.	Vol.	Document No.	Document Type[a]	Document Title	Document Date	Document Author	Document Recipient	Document Location	Area of Concern

EBS = Environmental Baseline Survey
EPA = (U.S.) Environmental Protection Agency (Region 1)
RIA = Review Item Area
MassDEP = Massachusetts Department of Environmental Protection

APPENDIX E. TRANSCRIPT OF PUBLIC HEARING AND COMMENT LETTER RECEIVED ON THE PROPOSED PLAN FOR AOC 55C

Refer to attached copies.

Mr. Brian Helland
Remedial Project Manager
BRAC Program Management Office, Northeast
4911 South Broad Street
Philadelphia, Pa 119112

May 7, 2011Attention Mr. Helland,

I am a concerned citizen who has attended many (RAB) meetings down through the years, and wished my elected officials saw fit to attend also.

My concern is that the metal debris, has gone into our drinking water, and still presents a much larger problem to the Town of Weymouth.

The no furthur action I cannot accept, Why? There was no health study done on residents who live in the outside area's of the base. This was an item as an activist we pushed for, instead the study was done in surrounding towns. I would like that explained to me.

This no furthur action leaves children under ten highly suseptable to contracting cancer. I have seven grandchildren under the ages of 10. Is this what the Federal Government has in store for them?

Anne Hilbert
45 Doris Drive
North Weymouth Ma
781-337-3743
fitzy63@comcast.net

Proposed Plan for Area of Concern 55C

Wetland Area North of Trotter Road

Operable Unit 22

Naval Air Station South Weymouth

Weymouth, Massachusetts

Public Hearing

New England Wildlife Center

500 Columbian Street

Weymouth, MA

Monday, 8:00 p.m.

April 25, 2011

(Pubic hearing commenced at 8:00 p.m. conducted by David Barney.)

MR. BARNEY: Good evening. My name is David Barney. I'm the BRAC environmental coordinator for the Naval Air Station South Weymouth.

This is the public hearing portion of our presentation of the Proposed Plan for Area of Concern 55C which is a wetland area north of Trotter Road also known as Operable Unit 22. This is the time during the evening which if anybody has any comments or questions they would like to make and state for the record, now is the opportunity to do so.

MR. CUNNINGHAM: I'd like to make a statement. James Cunningham, member of the Restoration Advisory Board, from Weymouth.

I'm glad that the Navy has removed the hazardous materials from this area, but I'm concerned that the wetlands were so greatly disturbed which could impact the native wildlife. I hope the monitoring through the next full two growing years will result in a complete return to

the natural native wetland.

It is my understanding that the adjacent vernal pool has been left undisturbed, which I appreciate. Vernal pools and wetlands foster the most basic breeding grounds for many native species that are vital to the survival of all wetland wildlife.

I agree that now that the hazardous materials have been removed from this area, the no further action option proposed will allow this area to return to its natural state.

That's it.

MR. BARNEY: Thank you, Jim.

And thank you everyone for your time tonight. We'll adjourn.

(The proceedings adjourned at 8:12 p.m.)

C E R T I F I C A T E

I hereby certify that the foregoing 3 pages contain a full, true and correct transcription of all my stenographic notes to the best of my ability taken in the above-captioned matter at said time and place.

Carol DiFazio
Registered Professional Reporter