

**Site Management Plan**  
**A Road Map for Environmental Cleanup**  
**Naval Air Station Brunswick**  
**Brunswick, Maine**



Prepared for:

Department of the Navy  
Naval Facilities Engineering Command  
BRAC Program Management Office - Northeast  
4911 South Broad Street  
Philadelphia, Pennsylvania 19112-1303

Contract No. N62472-02-D-0810  
Contract Task Order No. 007

Prepared by:



ECC  
33 Boston Post Road West  
Suite 340  
Marlborough, Massachusetts 01752  
Contract No. N62472-02-D-0810

**FINAL Revision: 0**

December 2008



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PREPARED UNDER THE DIRECTION OF:

A handwritten signature in cursive script, appearing to read "Gina M. Calderone".

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Gina Calderone, P.G., C.P.G.  
PROJECT MANAGER/  
SR. HYDROGEOLOGIST

APPROVED FOR SUBMISSION BY:

A handwritten signature in cursive script, appearing to read "Alexander Easterday".

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Alexander Easterday, P.G.  
SENIOR PROJECT MANAGER





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## LIST OF ABBREVIATIONS AND ACRONYMS

AOC	Area of Concern
AR	Administrative Record
ARARs	Applicable Relevant and Appropriate Requirements
BACSE	Brunswick Area Citizens for a Safe Environment
bgs	below ground surface
BRAC	Base Realignment and Closure
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
COC	Contaminant of Concern
DBB	Denitrification-Based Bioremediation
DDT	Diphenyltrichloroethane
DERP	Defense Environmental Restoration Program
DRMO	Defense Reutilization and Marketing Office
DRO	Diesel Range Organics
EBS	Environmental Baseline Survey
ECP	Engineering Change Proposal
EOD	Explosive Ordnance Disposal
EP	Eastern Plume
ESA	Environmental Site Assessment
ESD	Explanation of Significant Differences
FFS	Focused Feasibility Study
ft	feet
FTA	Former Training Area
GRO	Gasoline Range Organics
GWETS	Groundwater Extraction and Treatment System
IAS	Initial Assessment Study
IC	Institutional Control
IR	Installation Restoration
IRP	Installation Restoration Program
ISCO	In-Situ Chemical Oxidation
LTM	Long-Term Monitoring
LTMP	Long-Term Monitoring Plan
LUCIP	Land Use Control and Implementation Plan
MEDEP	Maine Department of Environmental Protection
mg/kg	milogram per kilogram
MMRP	Military Munitions Response Program
MSL	Mean Sea Level
MSAD 75	Maine School Administrative District 75



MW	monitoring well
NAS	Naval Air Station
NE	North East
NEX	Naval Exchange
NFA	No Further Action
NPL	National Priority List
O&M	Operation and Maintenance
ONFF	Old Navy Fuel Farm
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PAOEC	Potential Area of Environmental Concern
PCB	Polychlorinated Biphenyl
PMO	Project Management Office
POL	Petroleum, Oil and Lubricant
ppm	parts per million
PRAP	Proposed Remedial Action Plan
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAB	Restoration Advisory Board
RC	Response Complete
RCP	Response Complete Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RIP	Remedy in Place
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SI	Site Investigation
SMP	Site Management Plan
SVE/AAS	Soil Vapor Extraction/Aquifer Air Sparging
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCA	1,1,1-trichloroethane
TCE	trichloroethylene
TCL	Target Compound List
TPH	total petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UVOx	Ultraviolet Oxidation
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound



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Site Management Plan Schedule



## 1.0 INTRODUCTION

This Final Site Management Plan (SMP) has been prepared to present the current status of the Sites in the Installation Restoration (IR) program and other projects, or areas of concern (AOCs) managed through the Base Realignment and Closure (BRAC) Project Management Office (PMO) Northeast (NE) environmental program for the Naval Air Station (NAS) Brunswick in Brunswick, Maine. ECC has prepared this SMP under the Operation and Maintenance (O&M) Contract, Contract No. N62472-02-D-0810, Contract Task Order No. 017.

This SMP has been prepared as a management tool for planning, reviewing, setting priorities, and tracking progress of environmental remedial response activities to be performed at the NAS Brunswick. This report amplifies the information in the May 2006 *Condition of Property Report for the Naval Air Station Brunswick, Maine*. Projects may be on the main base or at non-contiguous NAS Brunswick properties closing under BRAC 2005. Operational Closure of NAS Brunswick is planned for September 2011.

This report will be used by IR project managers, Stakeholders, and BRAC PMO environmental personnel to identify a road map to environmental remediation which considers closure and transfer timelines; establishes a Baseline and tracks progress of the environmental issues associated with the NASB property; maintains a schedule for conducting Remedial Investigations (RI), Feasibility Studies (FS) and Remedial Actions (RA); Community Environmental Response Facilitation Act (CERFA), and other actions as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at a BRAC activity.

### 1.1 HISTORY AND OVERVIEW OF ENVIRONMENTAL CLEAN-UP PROGRAM

NAS Brunswick has been used by the U.S. Navy since 1943. F4U-1 Corsairs were stationed at NAS Brunswick during WWII. From 1952 –1968, P-2 Neptune aircraft flew at NAS Brunswick. P-3 Orion aircraft arrived at NAS Brunswick in 1965 and have remained stationed at NAS Brunswick to date. The air station was decommissioned for a period of time after WWII and used for non-military activities. The University of Maine and Bowdoin College used the air station for student housing and classroom space from 1946 to 1949. In 1951, the station was officially reinstated as a Naval Air Station (NUS 1983b). In 2005, NAS Brunswick was added to the BRAC closure list. The Naval operations of the base are scheduled to cease in 2011.

Currently, the facility is participating in the Navy's Installation Restoration Program (IRP). In 1987, EPA placed NAS Brunswick on the National Priority List (NPL). Currently, there are 19 areas within NAS Brunswick that have been, or are being, investigated. The remediation of these sites is being conducted under the Navy's IRP and meets the requirements of CERCLA (U.S. Navy 2004) and Superfund Amendments and Reauthorization Act (SARA). In addition, multiple areas of concern have been identified at NAS Brunswick base, which are also presented in this SMP.

The Navy is the lead agency for the site investigation and remediation, with oversight provided by U.S. Environmental Protection Agency (USEPA), Maine Department of Environmental Protection Agency (MEDEP) and the consultant for the Brunswick Area Citizens for a Safe



Environment Group. Site remedies that include institutional controls are noted in the Navy Base Instructions (U.S. Department of Navy March 2008) where the boundaries for the geographic institutional controls and specific restrictions are included for each site. The point-of-contact for the Base Instruction is the NAS Brunswick IRP coordinator.

In 1989, the Agency for Toxic Substances and Disease Registry (ATSDR) initiated the public health assessment process at NAS Brunswick to evaluate possible exposures to site contaminants. Through this process, ATSDR identifies populations who may have been exposed in the past, are currently exposed, or could be exposed in the future to hazardous substances and determines the public health implications of those exposures. From its initial evaluation, ATSDR prepared a preliminary Public Health Advisory (PHA) in 1989. That PHA determined that further environmental characterization and sampling of the site were needed to further assess environmental health hazards at the air station. After more information became available, ATSDR visited NAS Brunswick in 2003 to collect information for the public health assessment, and to identify public health issues and community health concerns related to environmental contamination at the air station. (ATSDR 2005).

An administrative record (AR) for NAS Brunswick IR Program sites is maintained by the US Navy in an electronic format. The NAS Brunswick AR is currently being updated. Updates should be complete by January 2009. An Addendum to the AR was issued by the Navy in March 2008 and includes documents through mid-march 2008.

Additional updates are made periodically to the AR. A copy of the AR is located at the Curtis Memorial Library, 23 Pleasant Street, Brunswick, Maine, 04011.

## 1.2 PHYSICAL SETTING

The Base lies at the head of a peninsula with tidal areas nearby. It is located on 3,094 acres of land, of which approximately 75 percent is forested, grassland, miscellaneous shrub land, marsh, and open water. Some northern portions of the base are home to rare vegetation. The remaining 25 percent (approximately 138 acres) include base operations in areas composed of office buildings, barracks, recreational facilities, base housing, hangars, repair shops, and other facilities to support NAS Brunswick, as well as paved areas including airfield ramps and runways. The base is located 26 miles northeast from Maine's largest city, Portland, and 31 miles south from the capital city of Augusta.

The closest Town of Brunswick water supply field is Jordan Avenue well field, located approximately 0.5 miles northwest of the Base, off of Jordan Avenue. Homeowners in close proximity to the Base boundary, on Old Gurnett Road, Coobs Road and Purinton Road, have individual drinking water wells. The Navy and the MEDEP have sampled some of these residential water supply wells in the past.

The topography of NAS Brunswick is characterized by low, rolling hills with deeply recessed brooks and bedrock outcrops. Ground surface elevations range from mean sea level (MSL) in lowland drainage areas and the Harpswell Cove estuary to more than 100 ft above MSL west and southwest of the southern end of the runways. Topography in the developed areas of the base has been modified by construction, with ground surface elevations generally ranging from 50 to



75 ft above MSL.

Current property uses surrounding NAS Brunswick are primarily suburban and rural residential with some commercial and light industry along nearby Routes 1, 24, and 123. An elementary school, college, and hospital are located within one mile of the base boundary. The southern edge of the base borders the estuary of Harpswell Cove.

### **1.3 ORGANIZATION OF SITE MANAGEMENT PLAN**

The environmental clean-up associated with the Main NAS Brunswick parcel are outlined in this section. The 19 NAS Brunswick sites were defined in the Initial Assessment Study (IAS) in 1983. Most of the areas of concern (sites) were identified during the 1983 site discovery as described in the IAS prepared by Roy F. Weston, Inc. The current status of each of these sites follows in this management plan in summary format. Additional descriptions, the schedule status, and a map of each site are presented in Sections 1 through 5 of this SMP. This SMP is organized as follows:

#### **Installation Restoration Program Sites:**

- Site 1 – Orion Street Landfill – North and Site 3 – Hazardous Waste Burial Area\*
- Site 2 – Orion Street Landfill – South\*
- Site 4 – Acid/Caustic Pit\*\*
- Site 5 – Orion Street Asbestos Disposal Area\*\*
- Site 6 – Sandy Road Rubble and Asbestos Disposal Area\*\*
- Site 7 – Old Acid Caustic Pit\*
- Site 8 – Perimeter Road Disposal Site\*\*
- Site 9 – Neptune Drive Disposal Area\*
- Site 10 – Harpswell Fuel Depot\*\*
- Site 11 – Fire Training Area\*\*
- Site 12 – Explosive Ordinance Disposal (EOD) Area\*
- Site 13 – Defense Reuse and Marketing Office\*\*
- Site 14 – Old Dump Number 3\*\*
- Site 15 – Merriconeag Extension Debris Area\*\*
- Site 16 – Swampy Road Debris Area\*\*
- Site 17 – Former Building 95\*
- Site 18 – West Runway Study Area\*\*
- Eastern Plume Operable Unit\*

#### **Petroleum, Oil and Lubricant Sites (POL):**

- Underground Storage Tank (UST) 001 – Old Navy Fuel Farm\*
- UST 002 – Naval Exchange\*



### **Military Munitions Response Program (MMRP):**

- UXO 001 – Three Areas of Concern on the main base
  - Former Munitions Bunker West Area\*
  - Machine Gun Bore Sight Range\*
  - Skeet Range\*
- UXO - Quarry Site Area of Concern\*
- Site 12 - EOD Area

### **Areas of Concern associated with parcels non-contiguous to NAS Brunswick:**

- McKeen Street Housing Complex\*
- Sabino Hill Rake Station
- Small Point Rake Station
- East Brunswick Remote Radio Parcel
- Topsham Annex Skeet Range
  - UST 003\*
  - UXO 002\*

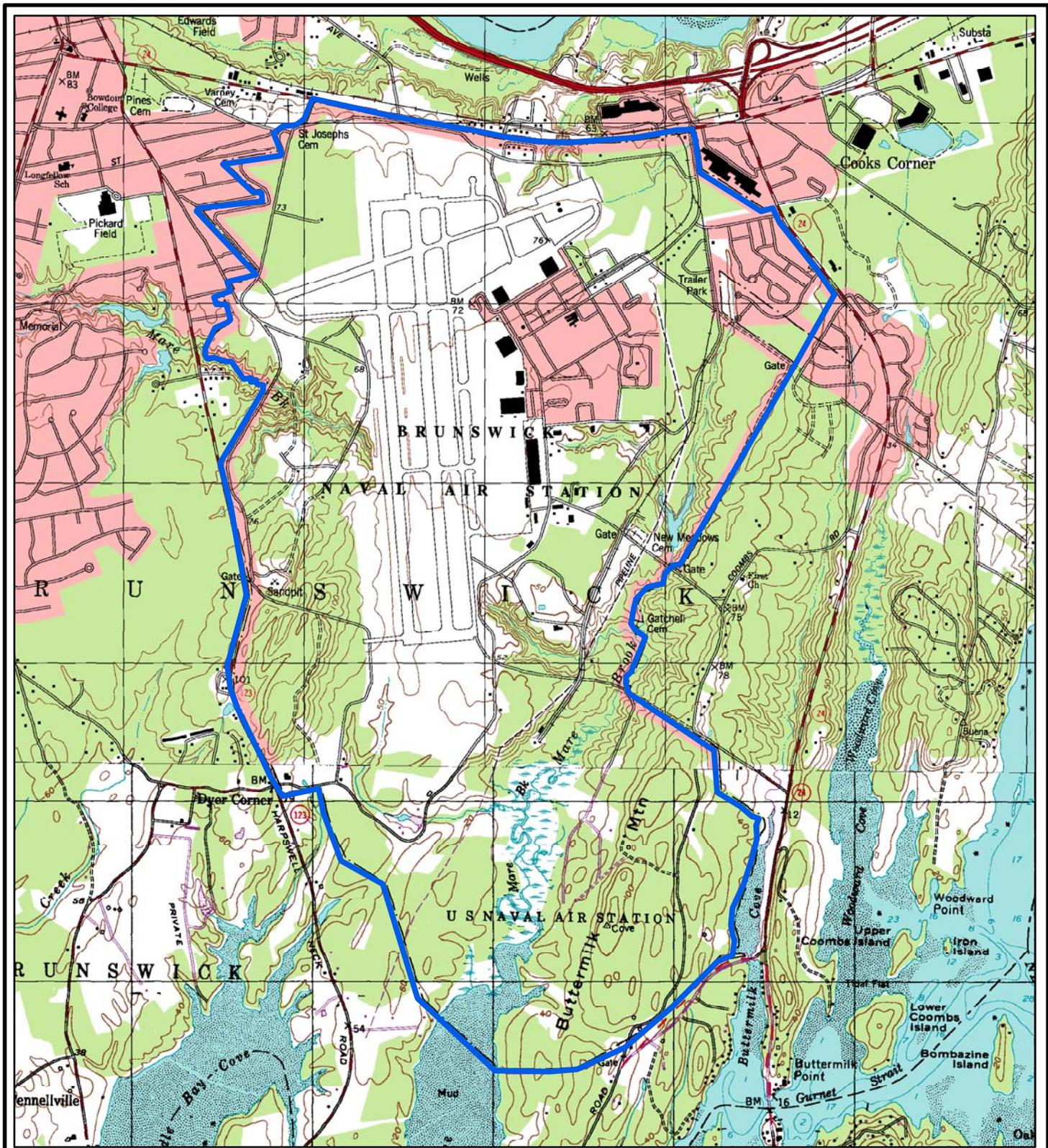
\* = Active sites

\*\* = Inactive site.

The NAS Brunswick location is shown in Figure 1-1. The non-contiguous NAS Brunswick properties are shown on Figure 1-2.

Eleven sites have a Proposed Remedial Action Plan (PRAP)/Record of Decision (ROD) or are categorized as Remedy in Place or Response Complete (RIP/RC). These include; Sites 1 and 3 Landfill, the Eastern Plume, Site 2, Site 4, Site 5, Site 6, Site 8, Site 9, Site 11, Site 13 and Site 17.

Those that have a ROD are in the long-term monitoring (LTM) phase and are described in detail in the Second Five-Year Review Report prepared by ECC in September 2005. Site 17, Building 95, has an RI ongoing and will have a focused FS and RIP completed in 2010. There are six sites for which No Further Action (NFA) has been determined through investigations or removal actions. These NFA sites include; Site 4, Site 11, Site 13, Site 5, Site 6, and Site 8. However, if the building over Site 4 should be removed, further investigation would be required. Of the three POL (Petroleum, Oil, and Lubricant) sites, one (UST [Underground Storage Tank] 001-Old Navy Fuel Farm) has been categorized as RC/RIP since 2004. UST 002 is the active NEX (Naval Exchange) Service Station which will undergo a soil excavation and removal action in 2009. UST 003 is located at the Topsham Annex for which several removal actions were conducted in 2006 and require further investigation. Other sites that require further investigation include Topsham Annex Skeet Range (UXO 002), Former Munitions Bunker West Area, Machine Gun Bore Sight Range, Site 18 – West Runway Study Area and main base Skeet Range, all of which are areas of concern regarding munitions hazards. Site 12 and the Quarry Site Area of Concern are currently being investigated under a Preliminary



Contract No.	N62472-02-D-0810		
Description	NASB Brunswick, Maine		
Coordinate system	NAD 1983, UTM, Zone 19 N in meter		
Sources	Naval Base Boundary provided by Navy. Orrs Island (1978) and Brunswick (1980) 7.5 minute quadrangles provided by USGS.		

Date	Rev.	Date	App. By
16-MAY-2008			
DB	C. Guido		
CB	G. Calderone		
AB			



**Legend**

 NAS Brunswick Boundary

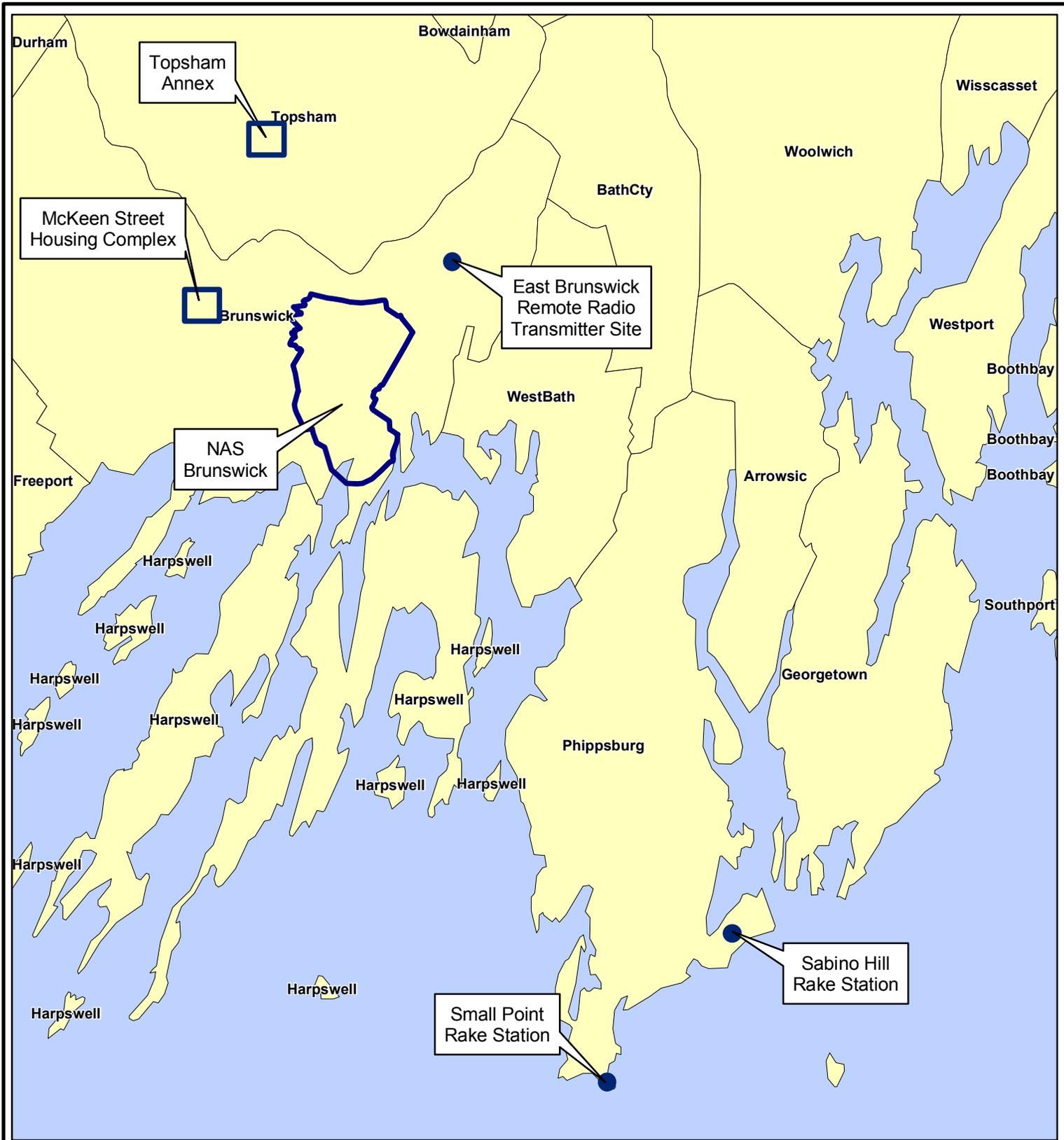
**Figure 1-1**

**Location Map  
Naval Air Station  
Brunswick, Maine**

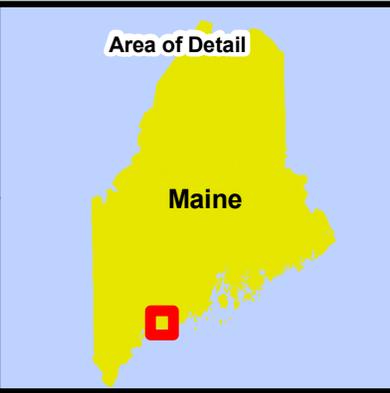
ECC GIS  
C:\NAVY\_GIS\T007\_Brunswick\GISdata\MapDocuments\LocMapNASB\_SMP.mxd

0 875 1,750 3,500 Feet





Contract No.	N62472-02-D-0810			
Description	NASB Brunswick, ME			
Coordinate system	NAD 1983 UTM Zone 19N			
Sources	Naval Base Boundary provided by Navy.			
Date	16-MAY-2008	Rev.	Date	App. By
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**  
 Approximate Property Area

**Figure 1-2**

**Non-Contiguous Properties  
 Naval Air Station  
 Brunswick, Maine**

ECC Marlborough, MA  
 C:\NAVY\_GIS\T007\_Brunswick\GIS\data  
 MapDocuments\LocOverview\_SMP\_v1.mxd

0 3,100 6,200 12,400 Feet





Assessment (PA) under the Navy's Military Munitions Response Program (MMRP) and an Investigation Work Plan for Site 12 is being developed.

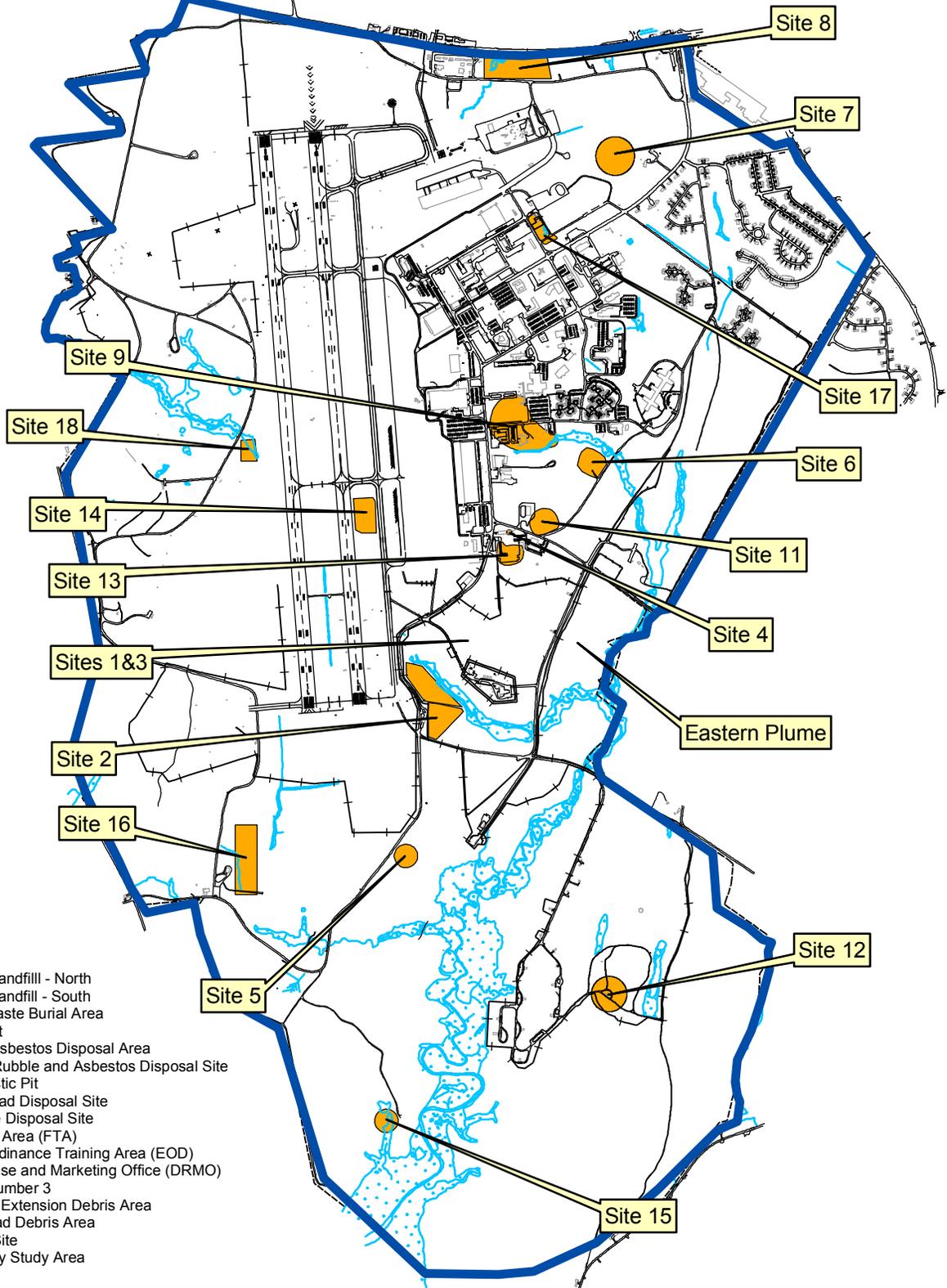
A fact sheet presenting an overview of the history for each of the listed sites, or areas of concern, is presented in sections 1.0 through 5.0. The fact sheets include Introduction, Background, Previous Studies, Recent Activities (within the past year) and Next Steps sections. They are accompanied by a site map and schedules of the various actions underway or planned. Scheduled work could be shifted due to the availability of funding and re-prioritization of work resulting from additional information, timing of the receipt of funding, or previously unknown conditions at the site or area of concern. The IRP sites outlined in the SMP are also discussed in more detail in the 2<sup>nd</sup> Five-Year Review Report for Naval Air Station Brunswick, prepared by ECC and EA Engineering, Science and Technology, dated September 2005 (ECC and EA 2005; also refer to EPA 2001a; EPA 2001b).



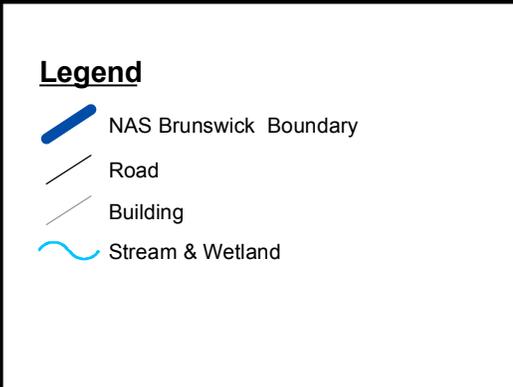
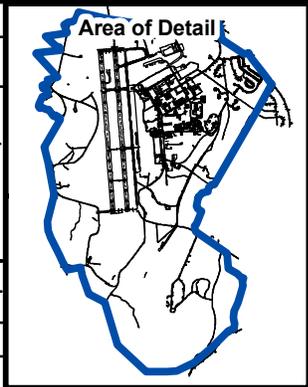


## 2.0 INSTALLATION RESTORATION PROGRAM SITES

The sites outlined in this Section are currently being, or have been, investigated under the Navy's Installation Restoration Program. A fact sheet for each site is provided in this Section. The IRP sites at NAS Brunswick are shown in Figure 2-1.



Contract No.	N62472-02-D-0810			
Description	NASB Brunswick, ME			
Coordinate system	NAD 1983, UTM Zone 19N			
Sources	Naval Base Boundary provided by Navy.			
Date	16-MAY-2008	Rev.	Date	App. By
DB	C. Guido			
CB	A. Easterday			
AB				



**Figure 2-1**

**Naval Air Station Brunswick Installation Restoration Program Sites Brunswick, Maine**

ECC Marlborough, MA, C:\NAVY\_GIS\TO07\_Brunswick\GISData\BasewideIRP\_SMP.mxd

0 550 1,100 2,200 Feet



## SITE 1 – ORION STREET LANDFILL – NORTH AND SITE 3 – HAZARDOUS WASTE BURIAL AREA

### 2.1 SITE 1 – ORION STREET LANDFILL – NORTH AND SITE 3 – HAZARDOUS WASTE BURIAL AREA

#### 2.1.1. INTRODUCTION

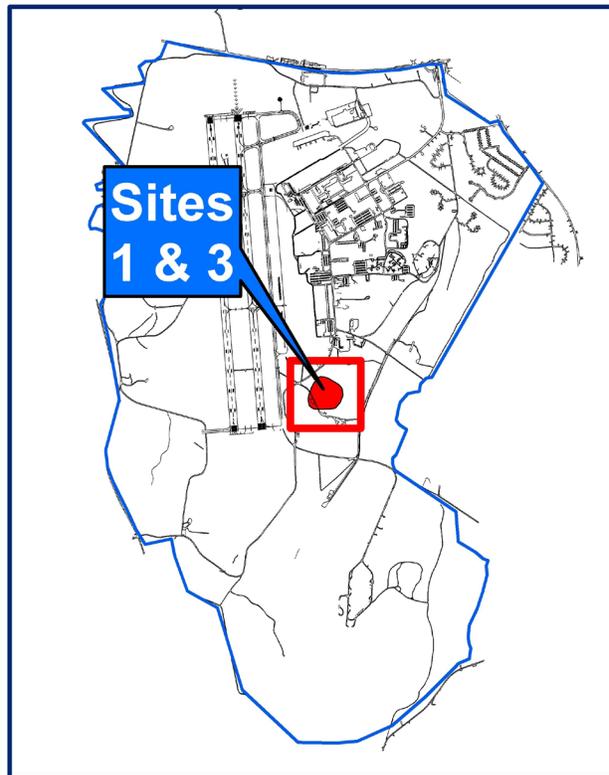
Sites 1 and 3 – Orion Street Landfill North and Hazardous Waste Burial Area, respectively, are two closed landfills within the restricted weapons area in the central portion of Naval Air Station (NAS) Brunswick (Figure 2-2). The combined approximate total land area of the sites is 10 acres located east of Orion Street. Although Site 3 was originally believed to be a separate disposal area from Site 1, field sampling activities did not reveal a clear delineation between the two landfill sites. Therefore, the two sites have been grouped together, since the early 1990's.

#### 2.1.2. BACKGROUND

These sites were grouped together based on their proximity and common historical land use as landfills. Records indicate that the Site 1 landfill was used from 1955 to 1975 for disposing of garbage, food waste, refuse, waste oil, solvents, pesticides, petroleum products, paint wastes, aircraft and automobile parts and various chemicals. Site 3 landfill operated as a disposal area from 1960 to 1973 (E.C. Jordan 1990). Waste reportedly deposited at Site 3 includes solvents, paints, isopropyl alcohol and a non-corrosive decontaminating agent composed primarily of tetrachloroethane.

#### 2.1.3. PREVIOUS STUDIES

In 1983 an Initial Assessment Study (IAS) was completed detailing historical hazardous material usage and waste disposal practices at NAS Brunswick. A Remedial Investigation/Feasibility Study (RI/FS) was completed in 1990. Ground-water contamination from the landfills consisted primarily of chlorinated solvents, benzene, toluene, ethyl benzene, xylenes and inorganics. Soil



Sites 1 and 3 Landfill

contamination detected in test boring soil samples was negligible. All leachate samples contained elevated levels of inorganics including mercury and sediments contained polycyclic aromatic hydrocarbons (PAHs). Public health risk was determined to be minimal. It was concluded that exposure to mercury in soils and sediment may have long-term impacts on some terrestrial organisms. A 1992 Record of Decision (ROD) documented the environmental impacts observed in several media at the sites (ABB-ES 1992, U.S. Navy 1992a). The contaminants of concern (COCs) identified include: volatile organic compounds (VOCs) and Target Analyte List (TAL) metals in groundwater, VOCs, dichlorodiphenyl-



trichloroethane, and TAL metals in landfill leachate seep, TAL metals in surface water and VOCs, semi-volatile organic compounds (SVOCs), PAHs, and metals in sediment (also refer to EA 1995 and EA/ECC 2000b; MEDEP 2003).

Remedial measures at the landfill were initiated in April 1995. Remedial activities included the installation of a slurry wall around the western, northern, and eastern perimeter of the landfill footprint and the installation of a low permeability cap. Two groundwater extraction wells were installed to de-water the landfill within the slurry wall. These wells were deactivated in November 1997 when the water table was lowered almost entirely below the waste fill. Water elevations are measured quarterly and remain below waste elevation.

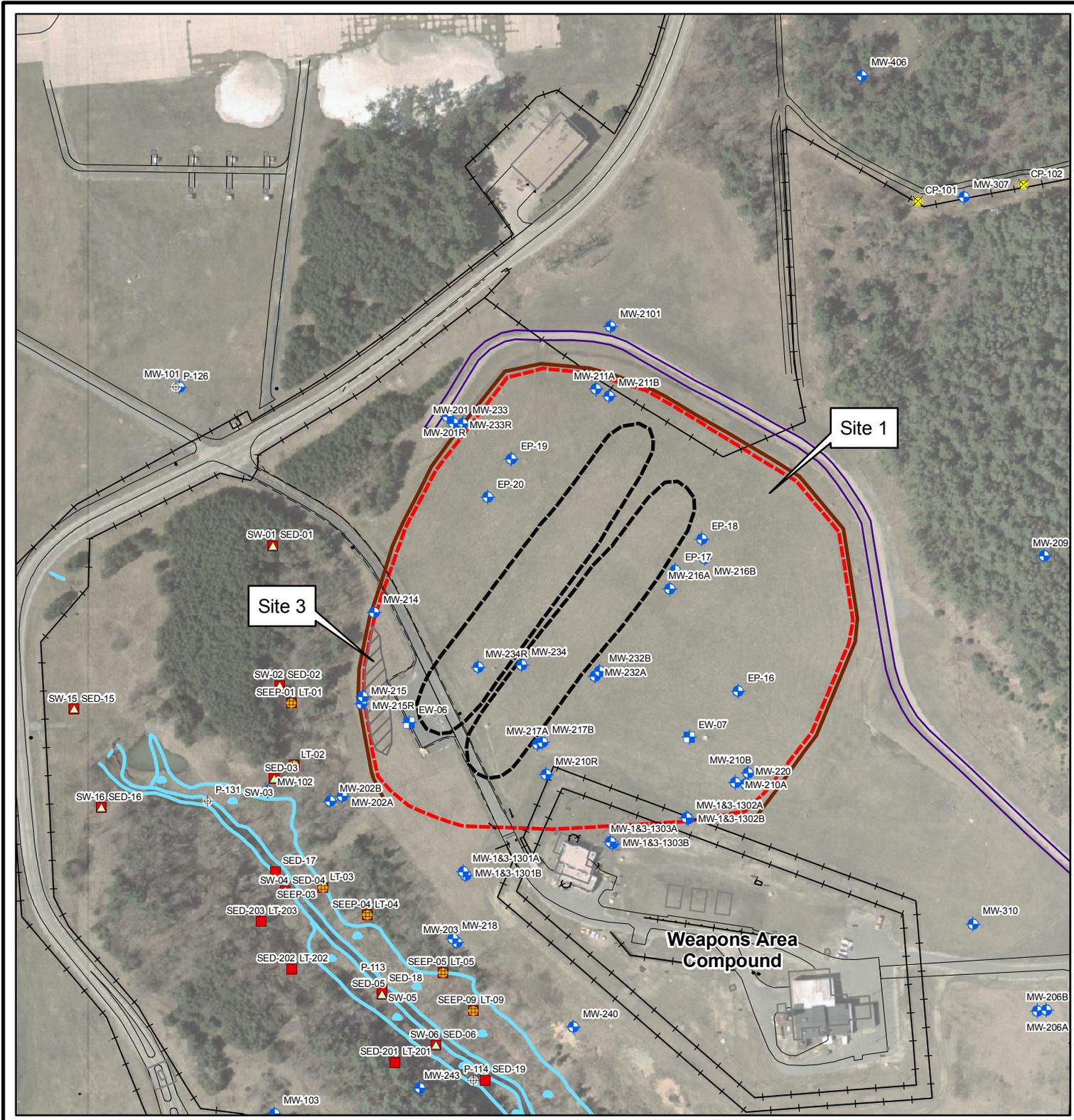
#### **2.1.4 RECENT ACTIVITIES**

Periodic monitoring of groundwater and landfill gas emissions has been ongoing since completion of construction actions. In 2005, six additional wells were installed at the mouth of the slurry wall for the purpose of monitoring groundwater in both shallow and deep horizons. In early 2006, the Long-Term Monitoring (LTM) plan was updated to reflect current conditions and the Base-wide Quality Assurance Project Plan (QAPP) was finalized. Standards developed by EA Science and Technology (January 2006), to compare sediment and leachate sediment seep samples were also incorporated into LTM data analysis and reports in 2006.

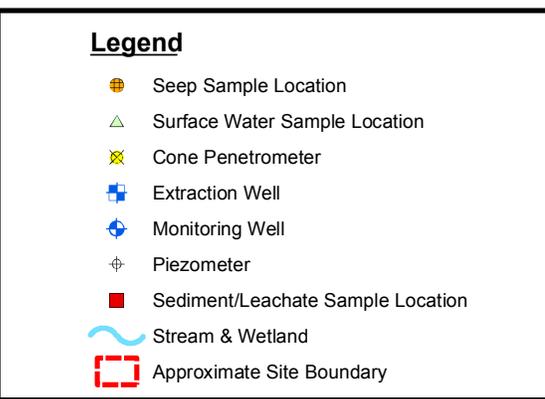
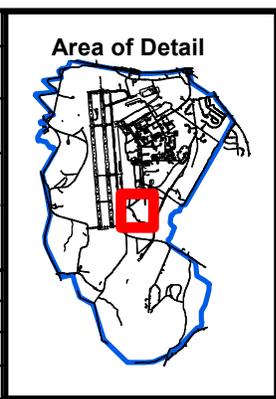


#### **2.1.5 NEXT STEPS**

- Evaluate data from periodic sampling of groundwater to determine the scope of additional monitoring.
- Expand bi-annual institutional control checklist to include noting construction activities or ground disturbances within the Weapons Compound area.
- Evaluate potential impacts of Sites 1 and 3 Landfill to Mere Brook.
- Development of an institutional control boundary for Sites 1 and 3
- Reduce time needed to produce monitoring reports.
- Re-evaluate in 3rd Five Year Review.



<b>Contract No</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM Zone 19N			
<b>Notes</b>				
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



**Figure 2-2**

**Site Plan**  
**Sites 1 & 3 Landfill**  
**Naval Air Station**  
**Brunswick, Maine**

ECC Marlborough, MA  
 C:\NAVY\_GIS\TO07\_Brunswick\Site1and3\MapDocuments\Site1&3\_SMP.mxd

0 80 160 320 Feet





## SITE 2 – ORION STREET LANDFILL – SOUTH

### 2.2 SITE 2 – ORION STREET LANDFILL - SOUTH

#### 2.2.1. INTRODUCTION

Site 2 - Orion Street Landfill South is an inactive, 2-acre landfill located adjacent to Mere Brook and south of Sites 1 and 3 Landfill. It is east of the southern end of the main runways within a restricted area in the central portion of Naval Air Station (NAS) Brunswick (Figure 2-3).

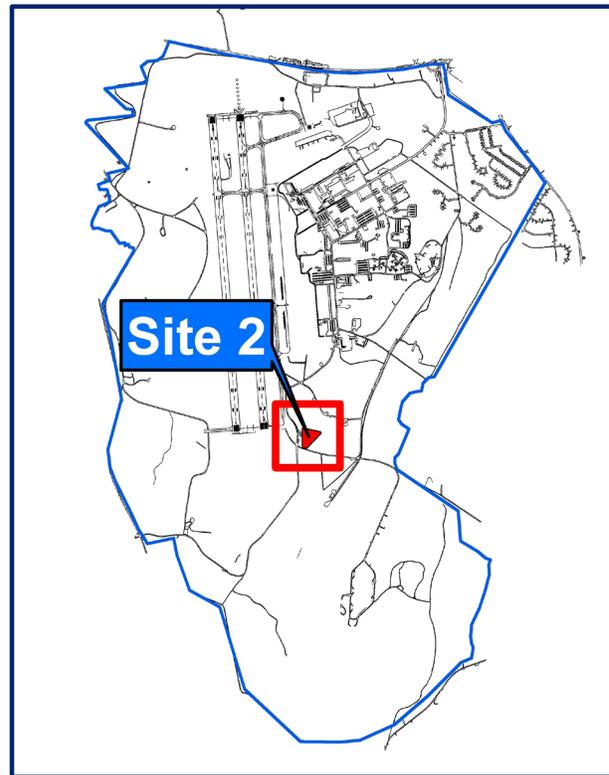
#### 2.2.2. BACKGROUND

Site 2 was used as the base's primary landfill from 1945 until 1955. An on-site incinerator (since demolished) was utilized for refuse reduction. It is not known if the landfill was utilized by non-military tenants during the decommissioned period. The Site 2 landfill occupies approximately two acres and presently supports a dense stand of conifers.

Miscellaneous refuse was once exposed along the eastern side of the landfill, including drums, small containers, office furniture, and domestic wastes. Other wastes reportedly disposed of at the landfill were solvents, paint, oil, toluene, methyl ethyl ketone, and medical supplies. Solid waste was reportedly incinerated at the site before being placed in the landfill and covered with soil. The actual quantity of hazardous materials disposed of at Site 2 is unknown (ABB-ES 1997; Foster Wheeler 1999).

#### 2.2.3. PREVIOUS STUDIES

A preliminary assessment (PA) was completed in December 1982 by NUS Corporation (NUS Corporation 1983a). In 1988, as part of the RI/FS, soil gas, ground penetrating radar, and magnetometer surveys were conducted.



Site 2 – Orion Street Landfill - South

Additionally, soil, ground and surface water and sediment samples were tested. Environmental impacts identified from the investigation data consisted of iron and zinc in surface water, iron and PAHs in sediments, low levels of mercury in stream leachate, and VOCs, metals, inorganics, dichlorodiphenyltrichloroethane (DDT) in the landfill leachate. In 1998, a ROD was completed that identified the COCs at the site (HLA 1998, U.S. Navy 1998). These include: 1) iron and zinc in surface water, 2) iron and the PAH phenanthrene in stream sediment,, 3) 4,4'-dichlorodiphenyl-trichloroethane, 4) 4,4'-dichlorodiphenyl-dichloroethylene, arsenic, cadmium, chromium, lead, mercury, and nickel in leachate seeps, and 5) mercury in surface soil associated with the seep locations.



Selected remedy was Minimal Action that included the following components; institutional controls, removal of surface debris, installation of a monitoring well, and environmental monitoring of groundwater, seeps, surface water, and sediments.

A risk assessment was conducted at this site. The assessment concluded that no unacceptable risk to human health was identified for future residential land use at the Site. Likewise, the carcinogenic risk estimates associated with contaminant exposure at the Site were well below U.S. Environmental Protection Agency (EPA) and MEDEP risk targets. The non-carcinogenic hazard were also well below the target hazard index of 1.0.

An ecological risk assessment conducted in 1998 at the Site concluded that the hazard index for potential exposure to mercury in surface soil was well below the target hazard index of 1.0 (HLA 1998). Following the risk assessment, removal actions were conducted at the Site in 1999 (ECC and EA 2005).

#### **2.2.4. RECENT ACTIVITIES**

Geophysical investigations were conducted in September 2008, including EM-31, EM-61 and resistivity profiling to assess the extent of the former landfill to the north and to assess the potential source of leachate seeps along the western bank of Mere Brook. Soil samples were collected to help define the extent of impact to soils. Groundwater samples were collected from 10 newly installed monitoring wells in October 2008. Periodic monitoring under the LTM program of groundwater, surface water, leachate seep, leachate seep sediment, sediment sampling has been on-going since site removal actions (EA 2000d). Standards developed by ECC and EA Science,

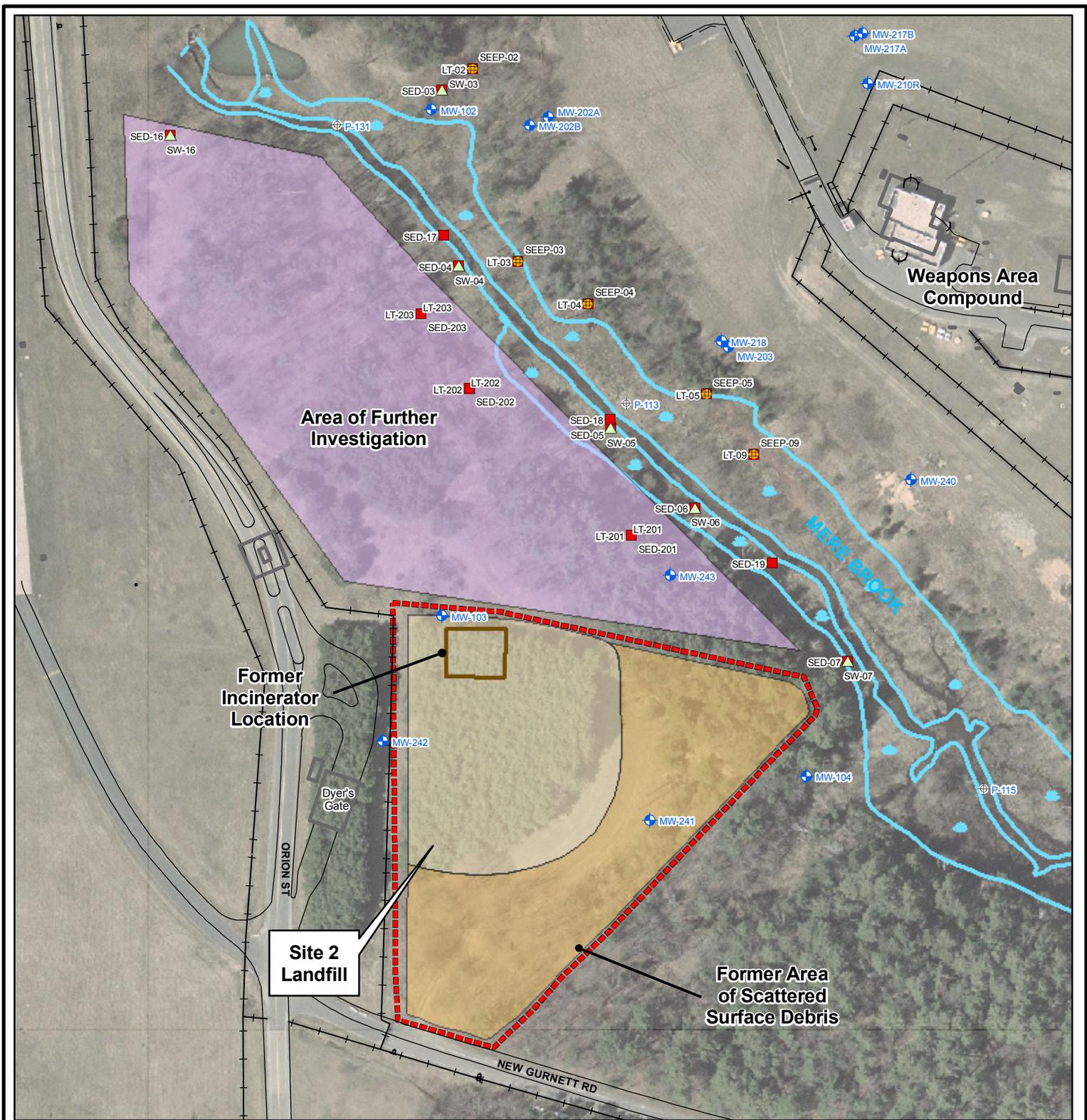


**Site 2 – Monitoring Well and Landfill**

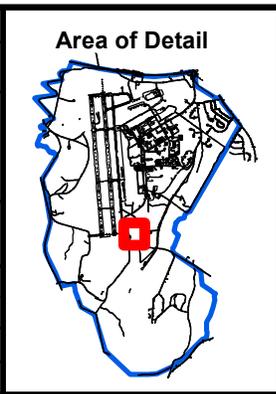
Engineering and Technology (January 2006), to compare LTM sediment and leachate sediment seep sample data, have been incorporated into LTMP data analysis and monitoring event reports. In early 2006, the Base-wide Quality Assurance Project Plan (QAPP) was finalized.

#### **NEXT STEPS**

- Compile geophysical data to provide additional information on subsurface materials.
- Survey test pit, soil boring and monitoring well locations and elevations.
- Evaluate soil data and groundwater monitoring data.
- Evaluate data from periodic sampling of groundwater to determine if contaminate concentrations are remaining below action levels.
- Prepare report summarizing results of activities and provide recommendations for future activities, as necessary.
- Update monitoring performance standard tables.
- Evaluate institutional control boundary.
- Re-evaluate in 3<sup>rd</sup> Five Year Review.



Contract No.	N62472-02-D-0810			
Description	NASB Brunswick, ME			
Coordinate system	NAD 1983, UTM Zone 19N			
Notes				
Date	16-MAY-2008	Rev.	Date	App. By
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- Seep Sample Location
- Surface Water Sample Location
- Monitoring Well
- Piezometer
- Sediment/Leachate Sample Location
- Site Boundary
- Area of Further Investigation
- Site 2 Landfill

**Figure 2-3**

**Site Plan  
Site 2  
Orion Street  
Naval Air Station  
Brunswick, Maine**

ECC Marlborough, MA C:\NAVY\_GIS\TO07\_Brunswick\Site21  
MapDocuments\Site2\_SMP.mxd

0 40 80 160 Feet





## SITE 4 – ACID/CAUSTIC PIT

### 2.3 SITE 4 – ACID/CAUSTIC PIT

#### 2.3.1. INTRODUCTION

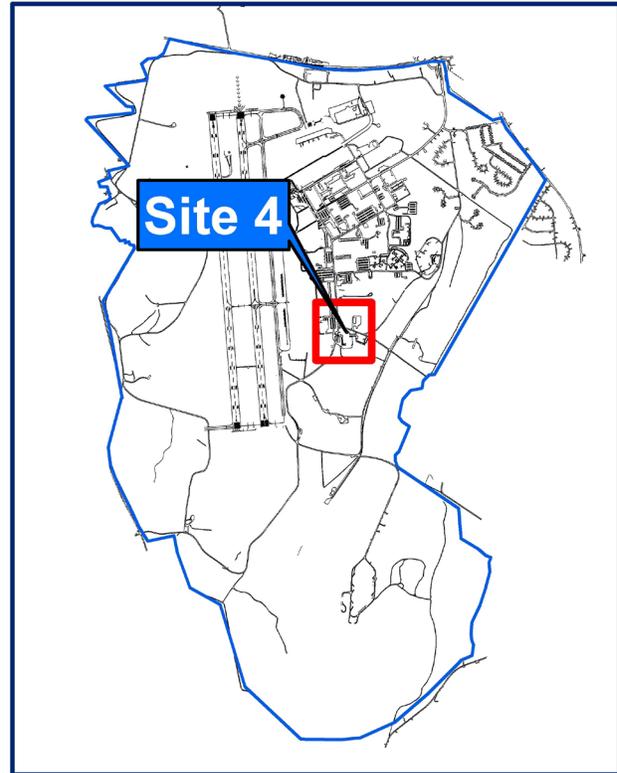
Site 4 - Acid/Caustic Pit is situated off Huey Drive (formerly Old Gurnett Road) between the intersection of Orion Street and Sandy Road. It lies within several hundred feet of Sites 11 and 13 and is located under the eastern portion of Building 584 (Figure 2-4).

#### 2.3.2. BACKGROUND

The pit was used from 1969 to 1974 for the disposal of liquid wastes. The wastes were poured into the pit, which were approximately four square feet and three feet deep. The Eastern Plume is the groundwater contamination resulting, partially, from this site. Based on RI results, the Navy combined Site 4 with Sites 11 and 13 to address both source (e.g., soil) and groundwater contamination.

#### 2.3.3. PREVIOUS STUDIES

During the late 1980s, the Navy completed a RI/FS at Site 4 that included a gas survey, soil borings, and soil and groundwater sampling that was analyzed for Target Compound List organic and inorganic compounds. Halocarbon soil gases were detected in the subsurface around Building 584, but below detection limits in all other samples. Trichloroethene was detected in low concentrations in the groundwater adjacent to Building 584. VOCs were not detected in the subsurface soil samples; however, these samples were not collected directly from the source area due to obstruction caused by the footprint of directly from the source area due to Building 584. Air monitoring samples collected outside the building did not indicate the presence of VOCs. A risk assessment conducted as part of



Site 4 – Acid/Caustic Pit

RI found minimal health risks to humans and no significant risk to terrestrial receptors from soil and groundwater contamination at the site. According to the 1998 Record of Decision (ROD) there is no further action planned for soils at Site 4 (ABB-ES 1998). Any groundwater contamination linked to this site would be addressed by the continued operation of the groundwater remedy for Eastern Plume.



#### **2.3.4. RECENT ACTIVITIES**

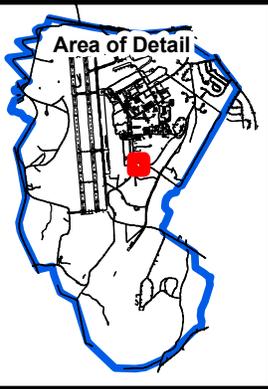
There has been no activity at Site 4 in the past several years.

#### **2.3.5. NEXT STEPS**

- In the event Building 584 is ever demolished, the Navy, in consultation with the U.S. Environmental Protection Agency (USEPA) and the Maine Department of Environmental Protection (MEDEP) will assess the need for further investigation and remedial action.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19N			
<b>Sources</b>	Naval Base Boundary provided by Navy.			
<b>Notes</b>				
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- Monitoring Well
- Building
- Road
- Approximate Site Boundary

**Figure 2-4**

**Site Plan  
Site 4  
Acid/Caustic Pit  
Naval Air Station  
Brunswick, Maine**

ECC Marlborough, MA C:\NAVY\_GISTO07\_Brunswick\ClosedSites\MapDocuments\Site4\_SMP.mxd  
 0 25 50 100 Feet





## SITE 5 – ORION STREET ASBESTOS DISPOSAL AREA

### 2.4 SITE 1 – ORION STREET ASBESTOS DISPOSAL AREA

#### 2.4.1. INTRODUCTION

Site 5 – Orion Street Asbestos Disposal Area covers roughly one quarter acre south of Merriconeag Road and the runways on the air station (Figure 2-5). Sites 5 and 6 were combined for remedial action due to their common historical use as non-hazardous waste disposal sites.

#### 2.4.2. BACKGROUND

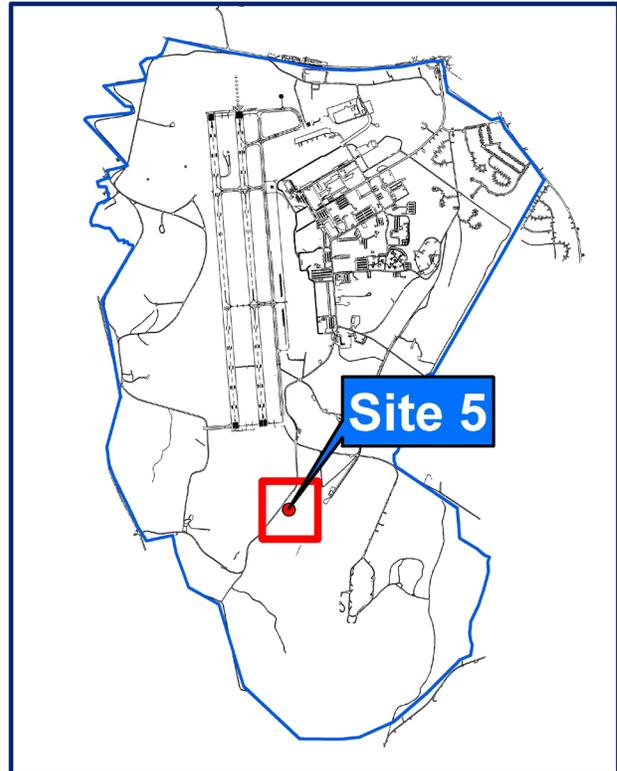
In 1979, Site 5 was reportedly used to dispose of asbestos-lined pipes from a demolished building. The pipes were placed in two trenches and covered with soil. The site is now relatively flat except for an embankment that drops off southeast of the site.

In accordance with the August 1993 ROD remedy for Sites 5 and 6, the asbestos-containing material at Site 5 was excavated and used as sub-grade fill prior to the placement of the low-permeability cap at Sites 1 and 3. After confirmatory sampling, Site 5 was graded to prevent erosion and seeded to establish vegetation.

#### 2.4.3. PREVIOUS STUDIES

A Remedial Investigation/Feasibility Study (RI/FS) was conducted at Sites 5 and 6 which included a geophysical survey, surface soil sampling and physical inspection. Groundwater contamination resulting from asbestos was not a concern because asbestos minerals are stable and do not migrate from the soil. Asbestos was the only contaminant of concern (COC) at both sites. However, it was not detected in the surface soil samples. Therefore, current risks to human health and the environment are minimal. There was a potential risk to workers with possible

future exposure to airborne asbestos during excavation or construction; therefore, the FS developed six alternatives to minimize this risk.



**Site 5 – Orion Street Asbestos Disposal Area**

#### 2.4.4. RECENT ACTIVITIES

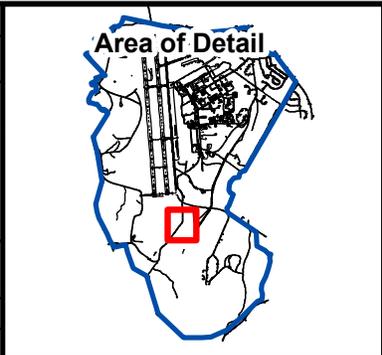
There has been no activity at Site 5 in the past year. This Site is inactive.

#### 2.4.5 NEXT STEPS

There is no further action planned for Site 5.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19N in meters			
<b>Sources</b>	2001 digital orthophotographs provided by ME GIS. Base boundary provided by Navy.			
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	J. Kim			
CB	A. Easterday			
AB				



**Legend**

- Road
- NAS Brunswick Boundary
- Approximate Site Area

**Figure 2-5**

**Site Plan  
Site 5  
Orion Street  
Asbestos Disposal Area  
Naval Air Station  
Brunswick, Maine**

ECC GIS Server  
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Feet



## SITE 6 – SANDY ROAD RUBBLE AND ASBESTOS DISPOSAL AREA

### 2.5 SITE 6 – SANDY ROAD RUBBLE AND ASBESTOS DISPOSAL AREA

#### 2.5.1. INTRODUCTION

Site 6 – Sandy Road Rubble and Asbestos Disposal Site covers approximately one acre northwest of Sandy Road, south of Building 516 (Figure 2-6). Sites 5 and 6 were combined for remedial action due to their common historical use as non-hazardous waster disposal sites.

#### 2.5.2. BACKGROUND

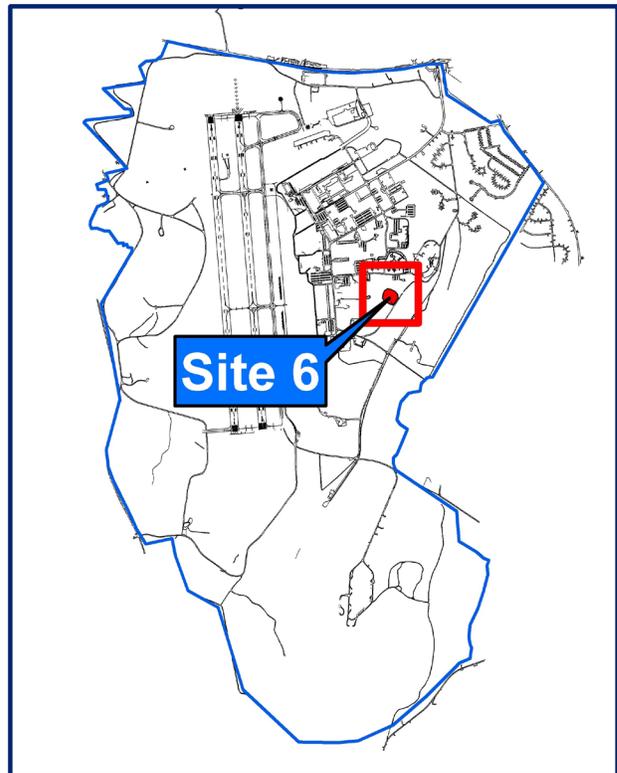
Site 6 is a small depression that was reportedly used to dispose of construction debris, asbestos-lined pipes and aircraft parts. The site is now nearly flat except for a large soil pile in the center of the site. It was estimated that approximately 250 cubic yards of fill material at Site 6 contained asbestos.

In August 1993, a Record of Decision was finalized for the combination of Site 5 and Site 6. The selected remedial alternative was to remove the buried waste and place it beneath a permanent, low permeability cap at Sites 1 and 3 Landfill. The remediation was completed in 1993, and no further action was recommended for Site 6.

#### 2.5.3. PREVIOUS STUDIES

A RI/FS was conducted at Sites 5 and 6 which included a geophysical survey, surface soil sampling and physical inspection. Groundwater contamination resulting from asbestos was not a concern because asbestos minerals are stable and do not migrate from the soil. Asbestos was the only contaminant of concern (COC) at both sites. However, it was not detected in the surface soil samples. Therefore, current risks to human health and the environment are minimal. There was a potential risk to workers with possible

future exposure to air borne asbestos during excavation or construction so the FS developed six alternatives to minimize this risk.



Site 6 – Sandy Road Rubble and Asbestos Disposal Area

#### 2.5.4. RECENT ACTIVITIES

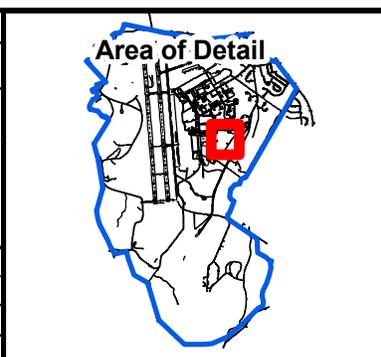
There has been no activity at Site 6 in the past year. This Site is inactive.

#### 2.5.5 NEXT STEPS

There is no further action planned for Site 6.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, Maine			
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19N in meters			
<b>Sources</b>	2001 digital orthophotographs provided by ME GIS. Base boundary provided by Navy.			
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	J. Kim			
CB	A. Easterday			
AB				



**Legend**

- Road
- NAS Brunswick Boundary
- Approximate Site Area

**Figure 2-6**

**Site Plan  
Site 6  
Sandy Road Rubble and  
Asbestos Disposal Area  
Naval Air Station  
Brunswick, Maine**

ECC GIS Server  
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Fig13\_NASB\_Site6.mxd

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## SITE 7 – OLD ACID CAUSTIC PIT

### 2.6 SITE 7 – OLD ACID CAUSTIC PIT

#### 2.6.1. INTRODUCTION

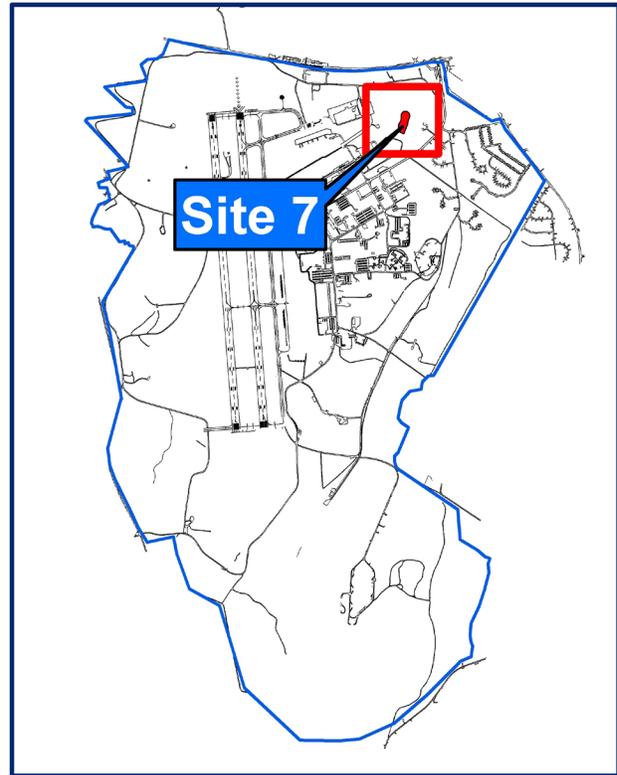
Site 7 - Old Acid Caustic Pit is located in the northern portion of NAS Brunswick northeast of the Old Navy Fuel Farm site and west of Fitch Avenue (and housing units 904 and 905) which, in total occupies approximately 1.4 acres (Figure 2-7).

#### 2.6.2. BACKGROUND

Site 7 is the former location of the Old Acid Caustic Pit used from 1952 to 1969 for liquid waste disposal. Wastes reportedly included transformer oil, battery acid, caustics, solvents, and other miscellaneous liquids. PCBs were a contaminant of concern but testing resulted in non-detect. The site was also used as an equipment lay-down storage area. A lay down area is a designated area for the staging and storing of construction related equipment and/or material. No records of the precise location of the Old Acid Caustic Pit have been found. The suspected source area at Site 7 is approximately 3,800 ft<sup>2</sup> in size and is undeveloped. A drainage ditch is located to the east of and parallels the site access road.

#### 2.6.3. PREVIOUS STUDIES

In 1983, an IAS was completed for NAS Brunswick and Site 7 was identified as a site of potential hazard. A RI/FS was completed in 1990. Subsequent investigations at this site included a soil gas survey, ground-penetrating radar, a terrain conductivity survey, soil test borings, test pit excavations, and well installations. These results were used to identify an approximate location of the pit. Soil contamination was detected in surface and shallow soil samples. Groundwater contamination was also detected.



Site 7 – Old Acid Caustic Pit

A Record of Decision (ROD) was signed in 2002. The selected remedy was institutional controls with groundwater monitoring. The primary COCs identified in the soils at Site 7 are PAH compounds and the pesticide compound DDT, which have been detected in the shallow soils and are present in the site soils at the ground surface to 2 ft bgs. The primary COCs in groundwater are cadmium and manganese. Other organic elements and compounds detected in groundwater include iron, potassium, sodium, and bis(2-ethylhexyl) phthalate. Test pits in the approximate location of the waste disposal pit were excavated during the RI (E.C. Jordan Co. 1990).



A baseline risk assessment was completed to determine potential risk to human health and the environment from exposure to groundwater and soil contaminants (E.C. Jordan Co. 1990; Appendix Q, Volume 4). Results did not indicate a risk to either human or ecological receptors based on current exposure conditions. No ecological risks were associated with the contaminants detected in the surface soils or groundwater at Site 7. Risks to terrestrial organisms with regards to contact or ingestion with soil are presumed to be minimal or insignificant. Groundwater contamination poses no threat to wildlife, as it is inaccessible.

#### **2.6.4. RECENT ACTIVITIES**

In October 2008 a Sampling and Analysis (SAP) to investigate impacts associated with the former caustic pit was finalized. The goals of the study are to determine the source of elevated metals concentrations in groundwater; and collect additional PCB, pesticides, PAHs, and metals data to better characterize the site. Elevated concentrations of cadmium, PAHs and pesticides have also been identified in the soil. Currently a Long Term Monitoring Program (LTMP) is ongoing at Site 7 and results have indicated both cadmium and manganese exceed current drinking water criteria.

Periodic monitoring of groundwater samples has been on-going since the spring of 2005. In early 2006, the Base-wide Quality Assurance Project Plan (QAPP) was finalized. A work plan for installation of three additional monitoring wells is in review.

In 2005 a groundwater monitoring plan was finalized and LTM groundwater monitoring program was initiated (EA 2005). Two

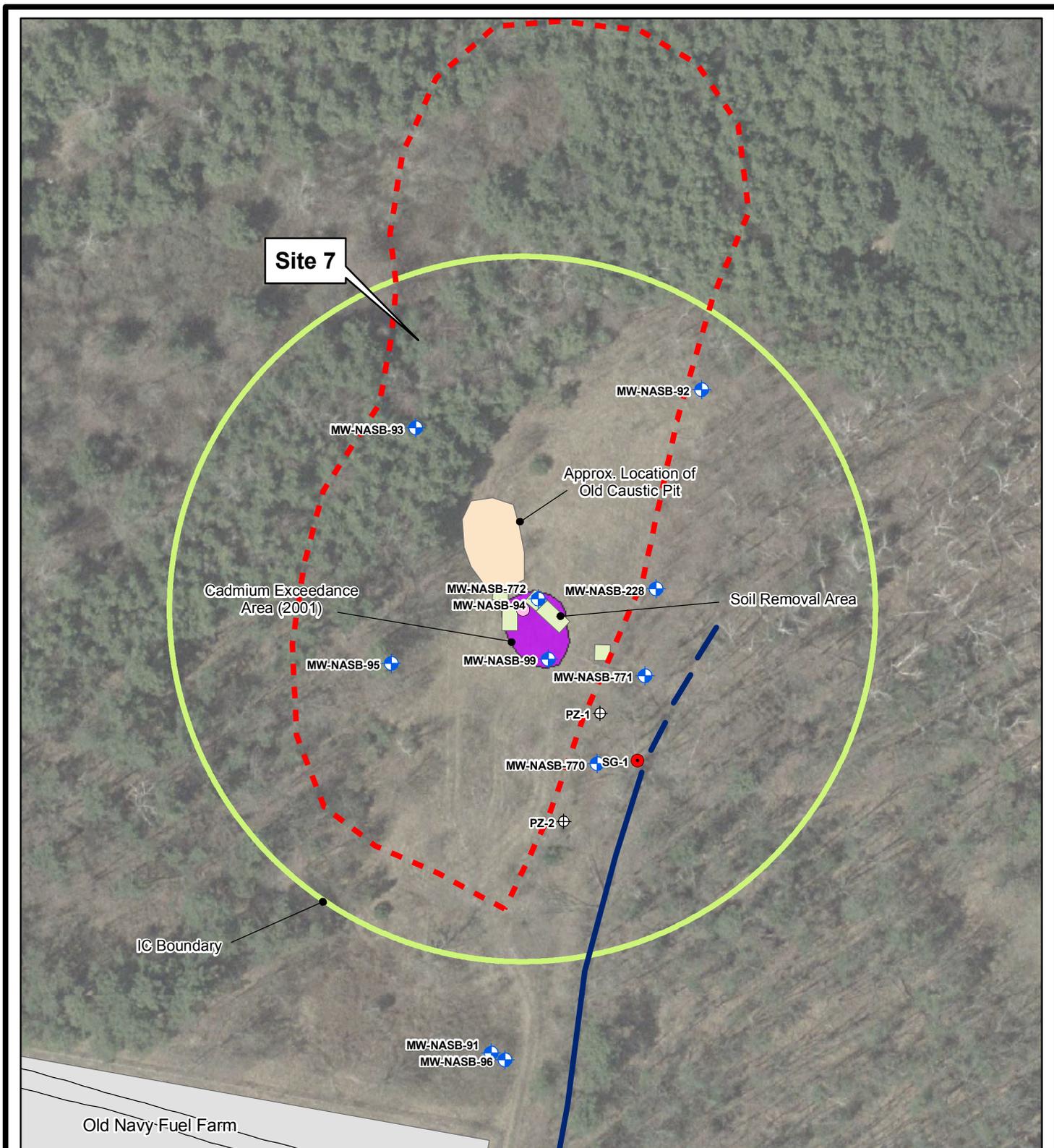
piezometers were installed in 2005 to refine the understanding of localized groundwater flow.



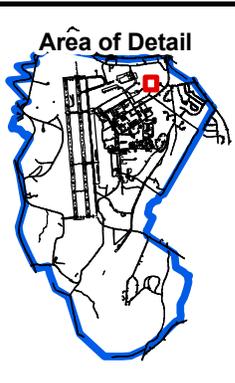
**Site 7 – Monitoring Wells**

#### **2.6.5 NEXT STEPS**

- Final Workplan scheduled for late November 2008.
- Field work is scheduled for December 2008. Work will include soil borings/soil sampling, well completion/groundwater sampling, and well survey.
- Evaluate institutional control boundary.
- Conduct limited investigation to determine if impacted soil and/or material remain in the former source area.
- Re-evaluate in 3<sup>rd</sup> Five Year Review.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19N			
* IC Boundary Marker is former location of monitoring wells MW-NASB-94 & MW-NASB-229.				
Date	16-MAY-2008	Rev.		App. By
DB	C. Guido			
CB	A. Easterday			
AB				



Legend	
	IC Soils Boundary Marker *
	Monitoring Well
	Piezometer
	Stream Gauge
	Drainage Ditch
	Approximate Site Boundary
	Approximate Area of Old Caustic Pit
	Soil Removal Area
	Area of Cadmium GW Exceedance (2001)

**Figure 2-7**

**Site Plan  
Site 7  
Old Acid/  
Caustic Pit  
Naval Air Station  
Brunswick, Maine**

C:\NAVY\_GIS\TO07\_Brunswick\Site7\MapDocuments\Site7\_SMP.mxd

0 25 50 100 Feet





## SITE 8 – PERIMETER ROAD DISPOSAL SITE

### 2.7 SITE 8 – PERIMETER ROAD DISPOSAL SITE

#### 2.7.1. INTRODUCTION

Site 8 – Perimeter Road Disposal Site covers roughly one half acre north of Perimeter Road on Naval Air Station Brunswick (Figure 2-8).

#### 2.7.2. BACKGROUND

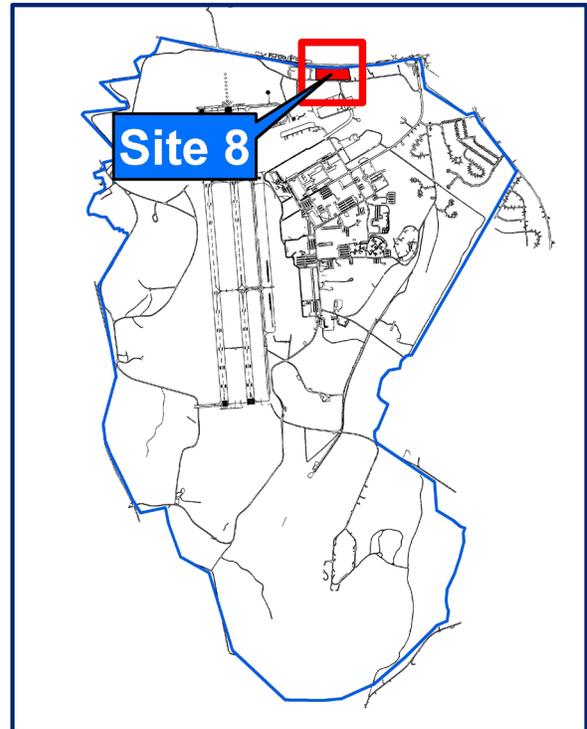
From 1964 to 1974, Site 8 was reportedly a station disposal area for rubble, debris and trash. The site is a flat, open area with steep, wooded embankments leading down to two small tributaries. The surface runoff drains to these tributaries, which eventually flow off-base 1,800 feet, discharge into the Androscoggin River. The Jordan Avenue Wellfield, a municipal drinking water supply for the Town of Brunswick, is located approximately 1,800 ft northwest of Site 8.

#### 2.7.3. PREVIOUS STUDIES

A Remedial Investigation/Focused Feasibility Study (RI/FFS) report was completed in 1990 for Site 8 which included extensive sampling and analysis of groundwater, surface and subsurface soils, leachate and leachate sediments and surface water and sediments. Results showed PAHs (polycyclic aromatic hydrocarbons) in surface and shallow soils. Though other contaminants such as DDT were detected, their levels did not pose a risk to human health or the environment. The study also concluded that Site 8 does not impact the Jordan Avenue Wellfield, the municipal drinking water supply for the Town of Brunswick, due to the limited contamination at the site, the considerable distance between them and groundwater patterns which flow to the tributaries rather than to the well field.

The selected remedy for Site 8 was removal of contaminated soil (estimated at 56,000

cy) including construction debris, rubble and disposal



Site 8 – Perimeter Road Disposal Site

of the material as subgrade material at the Sites 1 and 3 Landfill (ABB. Environmental Services, 1993a).

Confirmatory soil samples were required subsequent to the removal Actions completed at Site 8 (U.S. Navy 1993).

A ROD for Site 8 was published in 1993. Removal of contaminated soil, construction debris and rubble and disposal of subgrade material at Sites 1 and 3 Landfill was the selected remedy. Site 8 was remediated in 1993.



#### **2.7.4. RECENT ACTIVITIES**

There has been no activity at Site 8 in the past several years. Site 8 is inactive.

#### **2.7.5 NEXT STEPS**

There is no further action planned for Site 8.



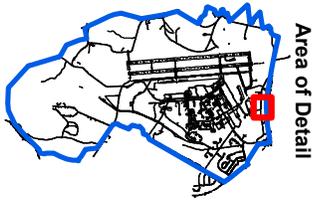
<b>Contract No.</b>	N62472-02-D-0810		
<b>Description</b>	NASB Brunswick, ME		
<b>Coordinate System</b>	NAD 1983, UTM, Zone 19N In meters		
<b>Sources</b>	2001 digital orthophotographs provided by ME GIS. Base boundary provided by Navy.		
<b>Date</b>	16-MAY-2008	Rev.	Date
<b>Drawn</b>	J Kim		Approved
<b>CR</b>	A. Esterday		
<b>App.</b>			

**Legend**

- Road
- Approximate Site Area




**Figure 2-8**



**Site Plan**  
 Site 8  
 Perimeter Road  
 Disposal Site  
 Naval Air Station  
 Brunswick, Maine





## SITE 9 – NEPTUNE DRIVE DISPOSAL SITE

### 2.8 SITE 9 – NEPTUNE DRIVE DISPOSAL SITE

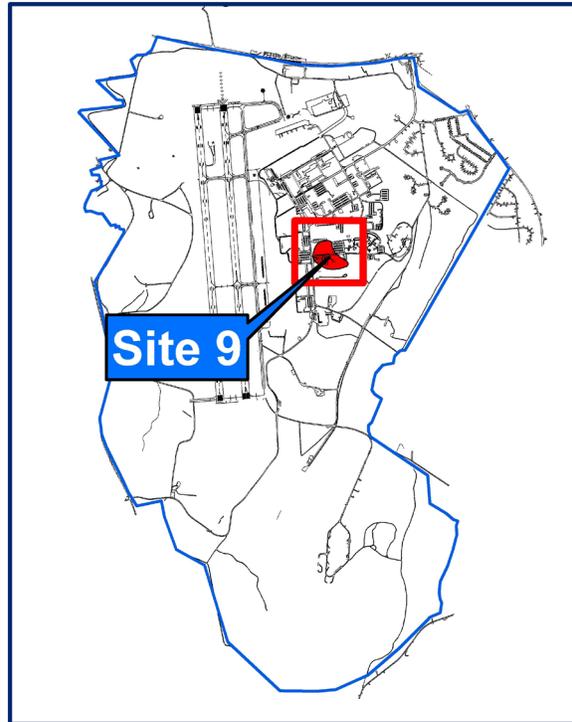
#### 2.8.1. INTRODUCTION

Site 9 – Neptune Drive Disposal Area is approximately 20 acres in the center portion of NAS Brunswick (Figure 2-9) east of Orion Street. It has been identified as a hazardous waste site with three areas of potential impact: the former location of an incinerator near Building 220, an inactive ash landfill and dump area in the former location of Buildings 218 and 219 (enlisted barracks), and a reported disposal area behind Building 201 (the dining facility south of Neptune Drive).

#### 2.8.2. BACKGROUND

The incinerator at Site 9 was reportedly used from 1943 until 1953. Solid wastes were incinerated and the ash was disposed of into the trenches (now referred to as the ash landfill/dump area), and other wastes disposed of into the dump reportedly included solvents which were burned on the ground, paint sludge, and possibly wastes from the metal shop (U.S. Navy 1994 [PRAP]). Historical documents and aerial photographs show what was once a possible solvent burning or dumping area southeast of Building 201. The former burning and dumping area may have been a potential source of contamination. Building 201 also had a septic system that was identified as a suspected source of contamination during the 1990 RI although subsequent investigations failed to identify a source in this area. Land use is residential/commercial; recently demolished structures include barracks buildings. A dining facility and picnic/recreation area are in the vicinity of Site 9. Avenue C/ Neptune Drive divides the site on a west-east axis, and Orion Street borders the western edge of Site 9.

Impoundment ponds were constructed in 1995 on the primary drainage pathway bordering Site 9 and receive surface drainage from the majority of the



Site 9 – Neptune Drive Disposal Site

operations (industrial) area of the base, including the flight line and hangar areas. The impoundment ponds are located to the south, southeast, and east of Building 201.

#### 2.8.3. PREVIOUS STUDIES

The IAS (R.F. Weston, Inc. 1983) identifies this area as the “first dump area used at the Air Station.” The Pollution Abatement Confirmation Study completed in June 1985, recommended further investigation at Site 9.



The RI completed in 1990 identified, among other inorganics, vinyl chloride in the groundwater southeast of Building 201 but none in the test pits or soil borings. From 1995 through 1996, additional source investigations failed to pinpoint a specific source for the vinyl chloride contamination. High levels of PAHs were detected in sediments. Leachate samples contained elevated levels of arsenic, chromium, lead, sodium and zinc. Pesticides were also detected in leachate samples.

A risk assessment concluded that due to the recreational land use in the area, there is greater potential for contact ingestion of potentially contaminated media (soil and sediment). Two VOCs detected in the groundwater (vinyl chloride and 1,1-dichloroethane) are associated with potential public health risks of the shallow groundwater is ingested. An ecological RA concluded that potential deleterious impacts are associated with PAH and pesticide contamination in stream sediments. Test results indicated that the macroinvertebrate community in this area was severely impaired relative to a background location. However, there is little indication that terrestrial organisms would be negatively affected by the contamination.



#### Site 9 - Neptune Dr. Disposal Site

Final ROD for Site 9 was signed in September 1999 and the selected remedy was monitored natural attenuation with long-term monitoring and institutional controls (U.S. Navy 1999). Additional investigation work was completed at Site 9 during 2003/2004 to define the extent

of the ash landfill/dump area and to gain additional geological information at Site 9. Based on the data collected, two additional direct-push borings were completed in 2004. Barracks that were constructed in 1953 north of Avenue C were demolished.

#### 2.8.4. RECENT ACTIVITIES

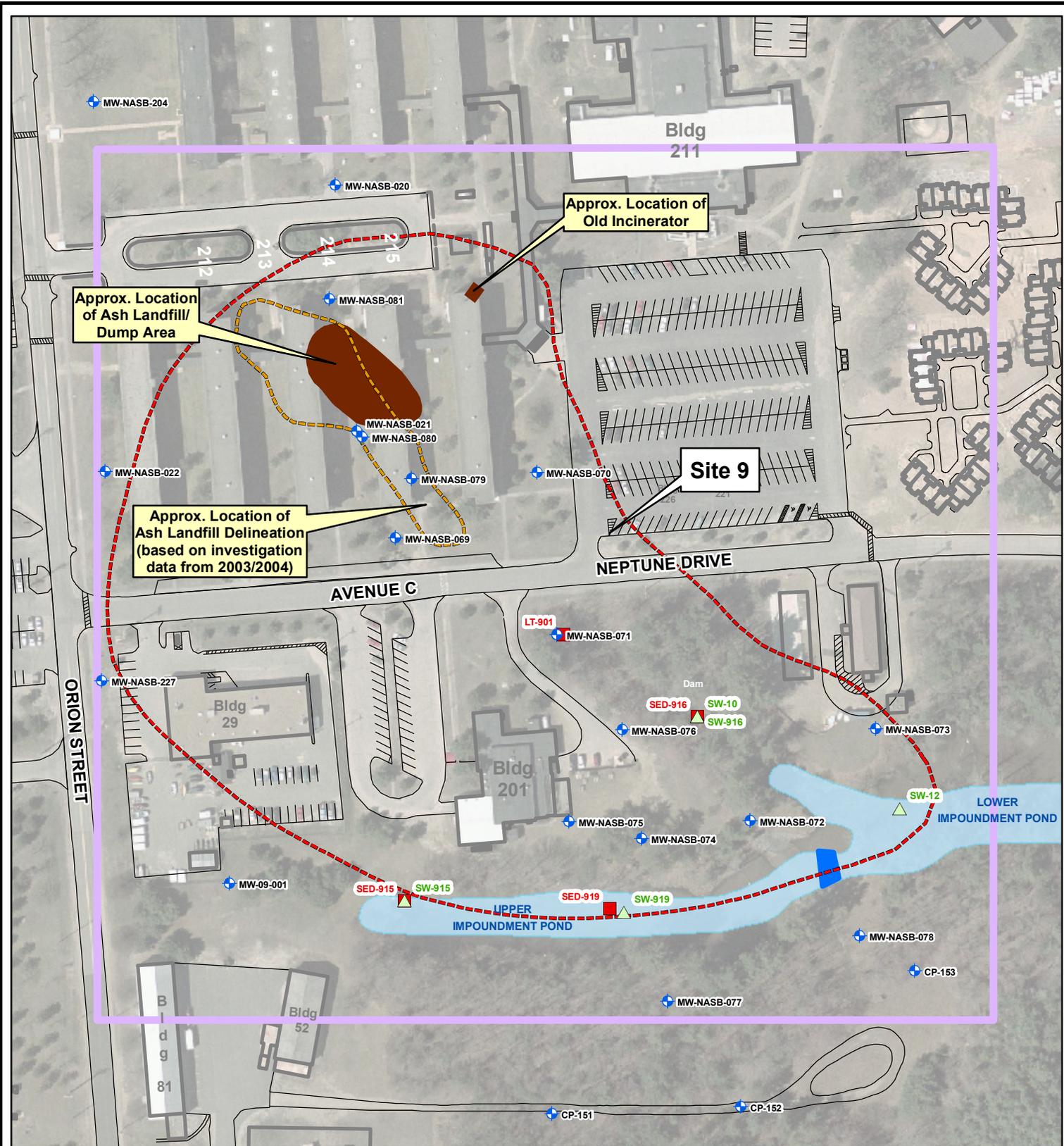
Excavation and soil removal have been accomplished. Clean loam has been placed on site as part of the site restoration activities. The site has been hydroseeded. All ash/soil stockpiles have been properly characterized and disposed of offsite. There is a direct push program planned in the fall of 2008 to define the extent of the ash that is north of the current limits of the excavated area. There was also a direct push effort in the southern boundary to determine the vertical and horizontal extent of ash material. It was determined that the ash material was intermittently mixed with overburden soils.

Periodic monitoring of groundwater, surface water, leachate seep, and sediment is ongoing. DRO (diesel-range organics) has been detected in one of the monitoring wells. Excavation of the ash landfill/dump area started during the 2006 field season. During the excavation activities at Site 9, metal waste (lead) and ash were discovered and were reported as contaminants in the soil.

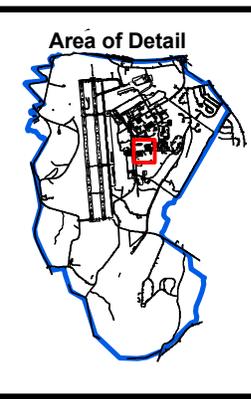
In January 2006, the Base-wide Quality Assurance Project Plan (QAPP) was finalized.

#### 2.8.5 NEXT STEPS

- Install a total of 7 new monitoring wells.
- Evaluate data from periodic sampling of groundwater to determine the effects of the ash removal on groundwater contaminant levels.
- Evaluate institutional control boundary.
- Investigate the source of DRO near Building 201.
- Re-establish monitoring well network disturbed by the removal of the ash landfill.
- Re-evaluate during the 3<sup>rd</sup> Five Year Review.



Contract No.	N62472-02-D-0810			
Description	NASB Brunswick, ME			
Coordinate system	NAD 1983, UTM Zone 19N			
Sources	Naval Base Boundary provided by Navy.			
Notes				
Date	16-MAY-2008	Rev.	Date	App. By
DB	C. Guido			
CB	A. Easterday			
AB				



- Legend**
- ◆ Monitoring Well
  - ▲ Surface Water Sample Location
  - Sediment/Leachate Sample Location
  - Approximate Site Boundary
  - IC Boundary

**Figure 2-9**

**Site Plan  
Site 9  
Neptune Drive  
Disposal Site  
Naval Air Station  
Brunswick, Maine**

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0 35 70 140 Feet





## SITE 10 – HARPSWELL FUEL DEPOT

### 2.9 SITE 10– HARPSWELL FUEL DEPOT

#### 2.9.1. INTRODUCTION

Site 10 – Harpswell Fuel Depot is a tank area located several miles south of Naval Air Station Brunswick on Harpswell Neck Road and immediately adjacent to Middle Bay (Figure 2-10). The site topography is steep. The change in elevation is from 146 feet at the west (inland) boundary to sea level at the shoreline. The storage tanks are above-ground and are clustered near the shore. The tank area is bermed.

#### 2.9.2. BACKGROUND

The Harpswell Fuel Depot was used for fuel storage and distribution for more than 20 years. The site began operation in 1956. All of the tanks at the depot were certified as lead free. One of the tanks contained unleaded fuel since 1975 and all others contained unleaded fuel since 1963. There have been a number of fuel spills at various times, and the soil was saturated with oil. Recovery wells were installed in 1982 to recover fuel from the subsurface. As part of the process, oil is collected in drums and removed by a contractor. A French drain system was installed to carry runoff to an oil/water separator system.

#### 2.9.3. PREVIOUS STUDIES

The Initial Assessment Study (IAS) (R.F. Weston, Inc. 1983) determined that an unknown quantity of lead was discharged to the soil. The source of the lead was tank bottoms that were discharged on the ground during on of two tank cleaning cycles between 1956 and 1963. During this period when the tanks were cleaned, the main holes

were opened near the bottom of the tanks and the scale was discharged near the tank inside the berm. The scale was buried in place. The waste of concern was the



Site 10 – Harpswell Fuel Depot

lead contained in the tank scale that was buried inside the berms. The tanks were cleaned approximately every four years. Records of exact schedules were disposed of when the site operation was taken over by a contractor. In the 7-year period of leaded fuel use, tank cleaning was conducted at least once and possibly twice. The probability of groundwater contamination is low because the tanks are located adjacent to the shore and groundwater discharges at the shore. Because of its proximity, Middle Bay was determined



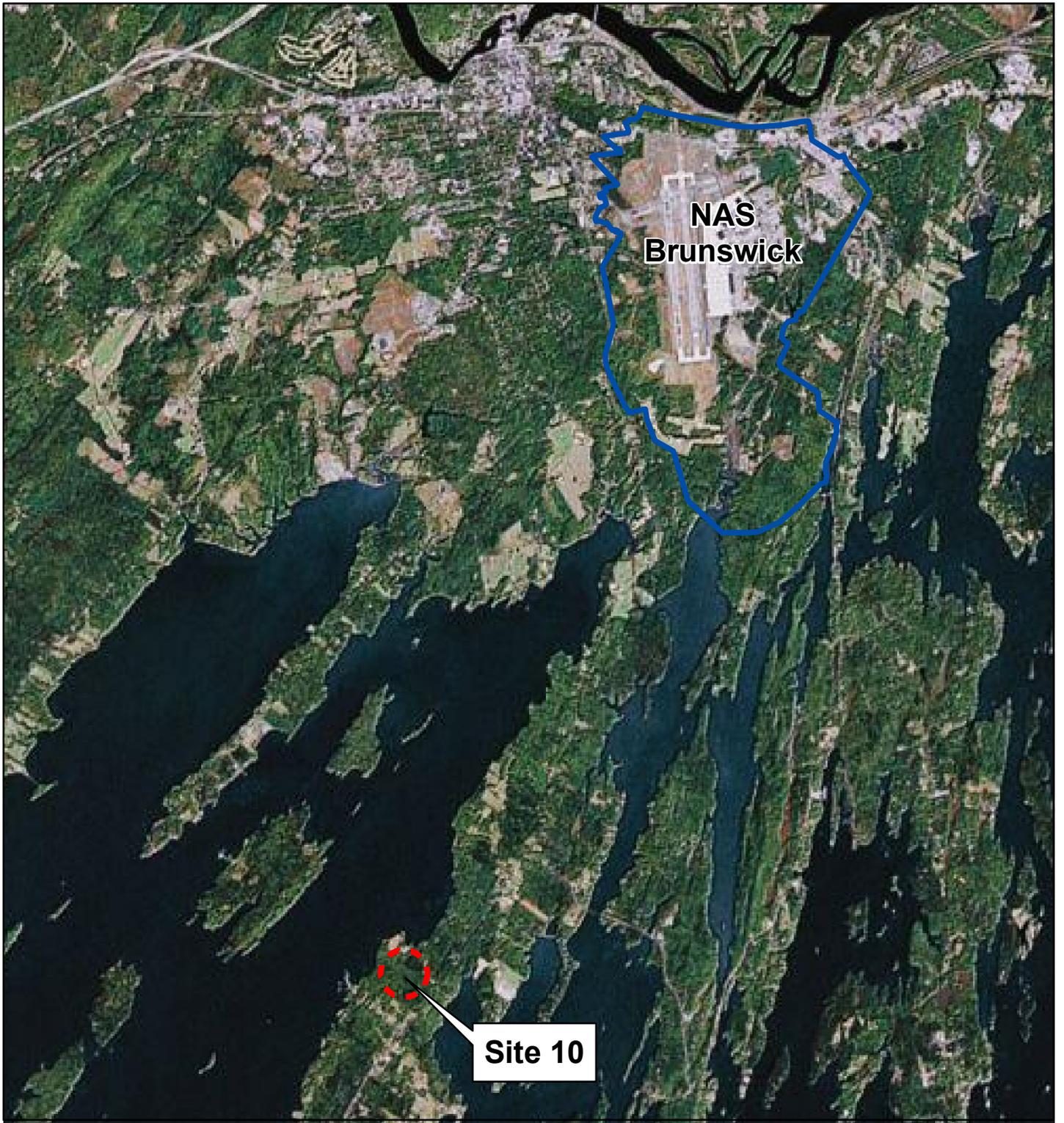
to be the receptor of contaminant discharge. The form of lead (tetraethyl lead) is not in a mobile form. Groundwater monitoring at lead disposal sites related to oil refining has shown that lead does not migrate, therefore, migration is unlikely.

#### **2.9.4. RECENT ACTIVITIES**

No further action was recommended in the IAS conclusions since migration is unlikely.

#### **2.9.5 NEXT STEPS**

There is no further action planned for Site 8.



<b>Contract No.</b>	N62472-02-D-0810		
<b>Description</b>	NASB Brunswick, ME		
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19N in meters		
<b>Sources</b>	2008 digital orthophotographs provided by TerraMetrics. Base boundary provided by Navy.		

Date	16-MAY-2008	Rev.	Date	App. By
DB	J. Kim			
CB	A. Easterday			
AB				



**Legend**

- NAS Brunswick Boundary
- Approximate Site Area

**Figure 2-10**

**Site Plan  
Site 10  
Harpwell Fuel Depot  
Naval Air Station  
Brunswick, Maine**

ECC GIS Server  
C:\NAVY\_GIS\TO17\_NASB\SiteManagementPlan\  
Fig10\_NASB\_Site10.mxd





## SITE 11 – FIRE TRAINING AREA

### 2.10 – FIRE TRAINING AREA

#### 2.10.1. INTRODUCTION

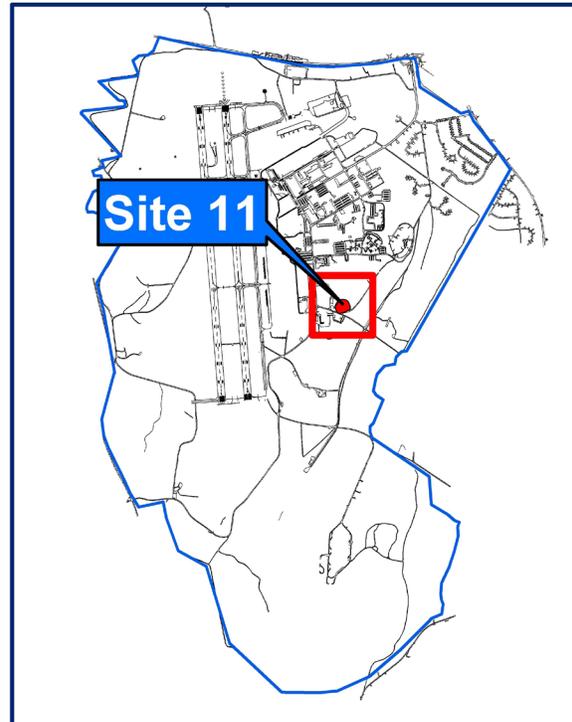
Site 11 – Fire Training Area is situated off Huey Drive (former Old Gurnett Road) between the intersection of Orion Street and Sandy Road. It is located within several hundred feet of Sites 4 and 13 (Figure 2-10). The Site is now the location of the infiltration gallery for the groundwater extraction and treatment system.

#### 2.10.2. BACKGROUND

Site 11 The former Fire Training Area (FTA) was used regularly over a 30-year period but has not been used since the fall of 1990. Waste liquids (fuels, oils, degreasing solvents) were used as fuel for the fire training exercises. The Eastern Plume is the groundwater contamination resulting, partially, from the activities conducted at Site 11. Based on RI results, the Navy combined Site 11 with Sites 4 and 13 to address both source (e.g., soil) and groundwater contamination.

#### 2.10.3. PREVIOUS STUDIES

Though Site 11 was initially identified as a groundwater contamination contributor, resulting in the Eastern Plume, it has since been designated as a No Further Action (NFA) site for soils in a 1998 ROD (ABB-ES 1998). The most prevalent contaminants in groundwater (i.e. trichloroethylene [TCE] and 1,1,1-trichloroethane [TCA]) are consistent with the wastes at the Fire Training Area. Soils from the ground surface down to the groundwater table also contained these contaminants; however, the Navy removed these soils from Site 11 in two



Site 11 – Fire Training Area

separate removal actions. This eliminated the direct exposure risks (i.e. dermal (skin) contact, inhalation, and ingestion) identified in the risk assessment. There is the potential that contaminated soils still exist below the groundwater table, with a continuing impact to groundwater. Groundwater contamination linked to this site would be addressed as part of the continuing remedial action of the Eastern Plume.

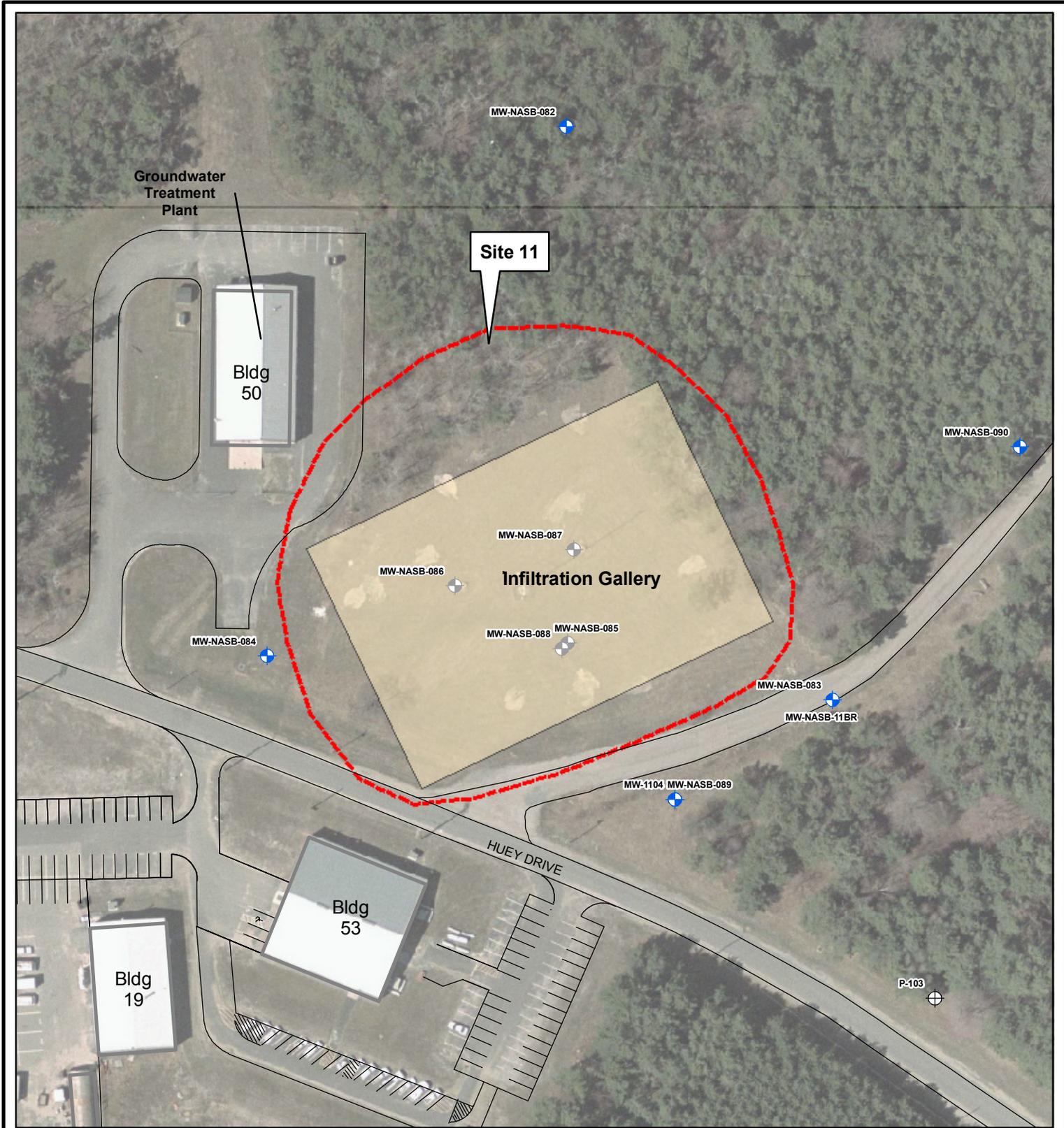


#### **2.10.4 RECENT ACTIVITIES**

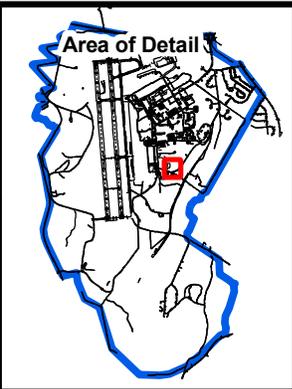
There has been no activity at Site 11 in the past year. Site 11 is inactive.

#### **2.10.5 NEXT STEPS**

- Explanation of Significant Differences (ESD) to include institutional controls so that infiltration gallery and piping associated with GWETS is not disturbed.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19N			
<b>Sources</b>	Naval Base Boundary provided by Navy.			
<b>Notes</b>	Wells MW-NASB-085, MW-NASB-086, MW-NASB-087 & MW-NASB-088 are destroyed/abandoned.			
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- Piezometer
- Monitoring Well Destroyed
- Monitoring Well
- Building
- Road
- Approx. Area of Infiltration Gallery
- Site Boundary

**Figure 2-11**

**Site Plan  
Site 11  
Fire Training Area  
Naval Air Station  
Brunswick, Maine**

ECC Marlborough, MA C:\NAVY\_GIS\T007\_Brunswick\ClosedSites\MapDocuments\Site11\_SMP.mxd  
 0 30 60 120 Feet





## SITE 13 – DEFENSE REUTILIZATION AND MARKETING OFFICE (DRMO)

### 2.11 SITE 13 – DEFENSE REUTILIZATION AND MARKETING OFFICE (DRMO)

#### 2.11.1. INTRODUCTION

Site 13 – Defense Reutilization and Marketing Office (DRMO) Area is situated off of Huey Drive (formerly Old Gurnett Road) between the intersections of Orion Street and Sandy Road. It is located immediately south of Building 584 and Site 4 (Figure 2-11).

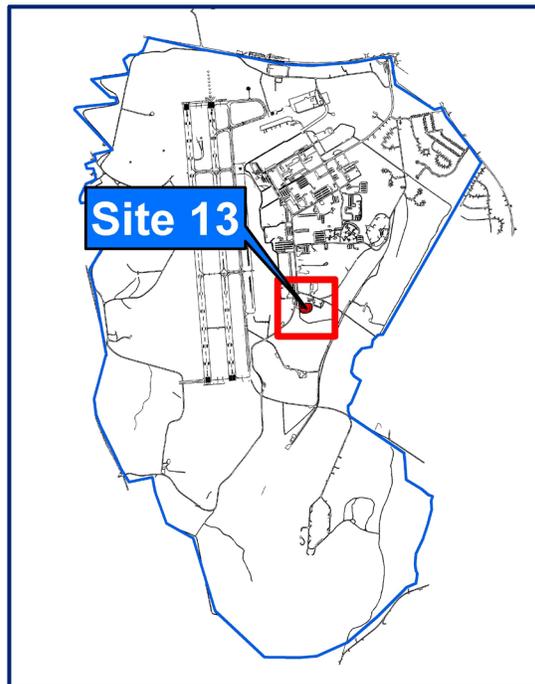
#### 2.11.2. BACKGROUND

Site 13 consisted of three underground storage tanks (UST): one for diesel fuel, the other two for storing waste fuels, oils and degreasing solvent. All three tanks were removed in the late 1980s. The diesel tank was replaced with a fiberglass UST; however, this tank was subsequently removed and replaced with an above-ground tank. The Eastern Plume is the groundwater contamination resulting, partially, from Site 13. Based on RI results, the Navy combined Site 13 with Sites 4 and 11 to address both source (e.g., soil) and groundwater contamination.

#### 2.11.3. PREVIOUS STUDIES

Groundwater sampling down-gradient of Site 13 has shown decreasing VOC contamination since removal of the tanks in the late 1980s. Ground-water samples taken from this area in 1997 contained only low levels of contamination, indicating that Site 13 is no longer acting as a source of contamination for the Eastern Plume. Since the removal of the tanks, the concentrations of VOCs in groundwater have decreased significantly. No removal actions have occurred at Site 13. Though Site 13 was initially identified as a groundwater contamination contributor, it has

since been designated as a No Further Action (NFA) site



Site 13 – Defense Re-use and Marketing Office (DRMO)

for soils in a 1998 ROD (ABB-ES 1998). Any groundwater contamination linked to Site 13 would be focused on as a part of the on-going groundwater remedial operation at the Eastern Plume.

As part of the RI investigation, a risk assessment was completed to evaluate the potential effects of the site on human health and the environment at Site 13. Minimal health risks are associated with exposure to soil at Site 13 due to the paved parking area surrounding Building 584. The risk estimates calculated for the site are, however, below the US EPA target risk range and the MEDEP risk criteria. Currently, groundwater within the



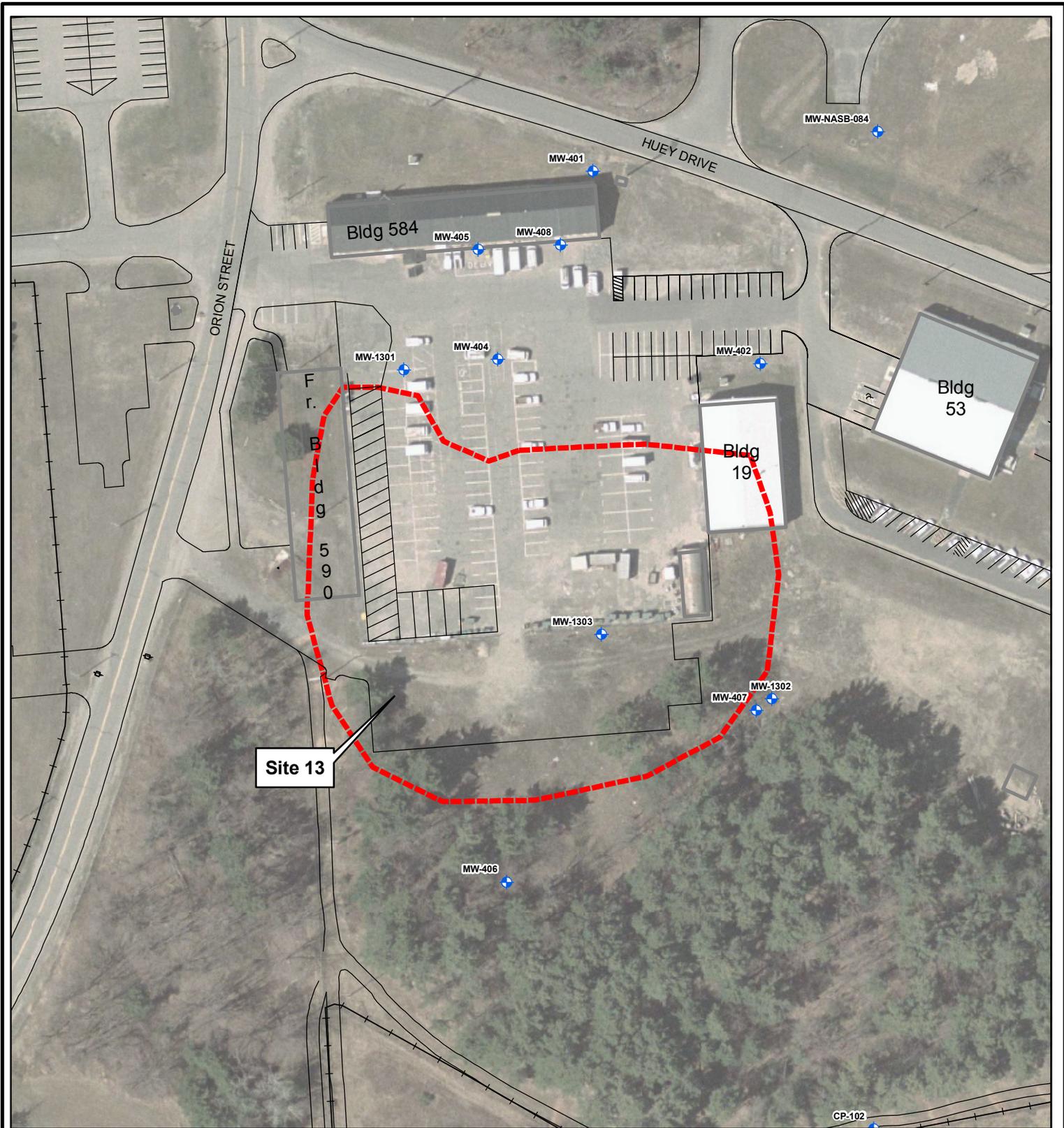
area of the site is not used for potable purposes and, therefore, no significant risk has been identified. An ecological risk assessment was also completed during the RI and the results indicated that risk exposure to terrestrial receptors from soil and/or groundwater contamination is minimal.

#### **2.11.4. RECENT ACTIVITIES**

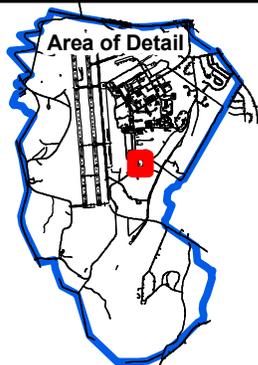
There has been no activity at Site 13 in the past year. Site 13 is inactive.

#### **2.11.5 NEXT STEPS**

- Explanation of Significant Differences (ESD) to include institutional controls so that infiltration pavement is not disturbed.



Contract No.	N62472-02-D-0810			
Description	NASB Brunswick, ME			
Coordinate system	NAD 1983, UTM, Zone 19N			
Sources	Naval Base Boundary provided by Navy.			
Notes				
Date	16-MAY-2008	Rev.	Date	App. By
DB	C. Guido			
CB	A. Easterday			
AB				



### Legend

- Monitoring Well
- Building
- Road
- Site Boundary

**Figure 2-12**

**Site Plan**  
**Site 13**  
**Defense Reuse & Marketing Office**  
**Naval Air Station**  
**Brunswick, Maine**





## SITE 14 – OLD DUMP NUMBER 3

### 2.12 SITE 14 – OLD DUMP NUMBER 3

#### 2.12.1. INTRODUCTION

Site 14 – Old Dump Number 3 was an area that is now surrounded by Runway I-19 and Taxiways A and D (Figure 2-12).

#### 2.12.2. BACKGROUND

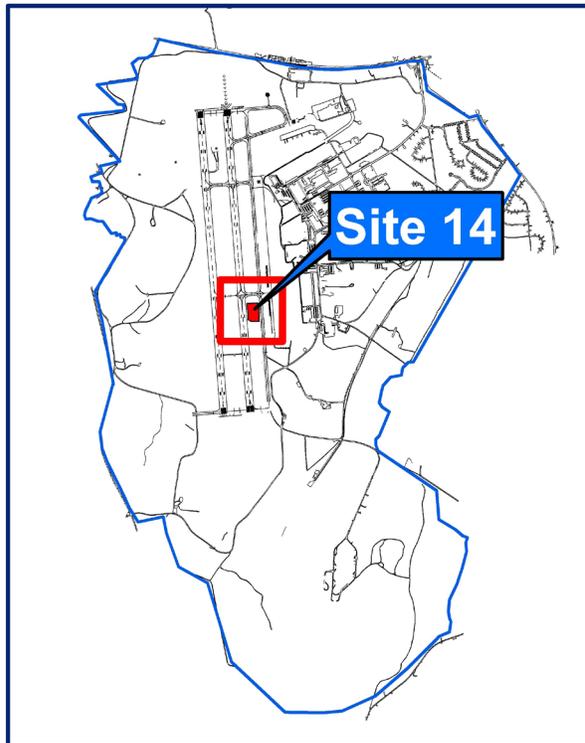
The possible presence of a former disposal area was identified from a notation on a 1946 base map of NAS Brunswick. That drawing showed an area labeled as Dump No. 3 at a location now surrounded by runways that were constructed in 1951. Based on the station's history, it is anticipated that most of the potential disposal activities at Site 14 occurred prior to and during World War II.

#### 2.12.3. PREVIOUS STUDIES

As part of supplemental Remedial Investigation (RI) activities, a magnetometer survey was conducted in the area to assess the presence or absence of refuse material at the Site and the potential soil and groundwater contamination in the area. Observed magnetic anomalies were the result of runway and taxiway lights and drainage structures. No unexplained anomalies were detected. Based on the absence of unexplained anomalies, no further investigations were conducted.

The FS evaluated a No Action alternative for Site 14. No other alternatives were developed or evaluated. No risk assessment was conducted for Site 14 as no contaminants of concern were identified by the RI.

Based on the results of the magnetic data, no test pits or monitoring wells were installed, and no



Site 14 – Old Dump Number 3

further investigations were conducted. It was concluded that the former dump either did not exist or was probably removed during the runway and taxiway construction activities.

#### 2.12.4. RECENT ACTIVITIES

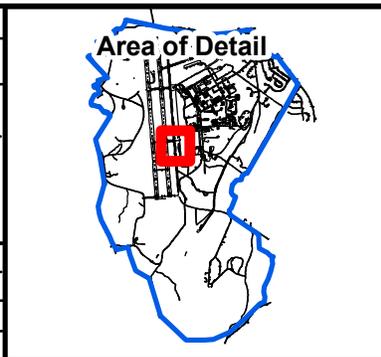
There has been no activity at Site 14 in the past year. Site 14 is inactive.

#### 2.12.5 NEXT STEPS

There is no further action planned for Site 14.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19N in meters			
<b>Sources</b>	2001 digital orthophotographs provided by ME GIS. Base boundary provided by Navy.			
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- Road
- NAS Brunswick Boundary
- Approximate Site Area

**Figure 2-13**

**Site Plan  
Site 14  
Old Dump No. 3  
Naval Air Station  
Brunswick, Maine**

ECC GIS Server  
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0 200  
Feet



## SITE 15 – MERRICONEAG EXTENSION DEBRIS SITE

### 2.13 SITE 15 – MERRICONEAG EXTENSION DEBRIS SITE

#### 2.13.1. INTRODUCTION

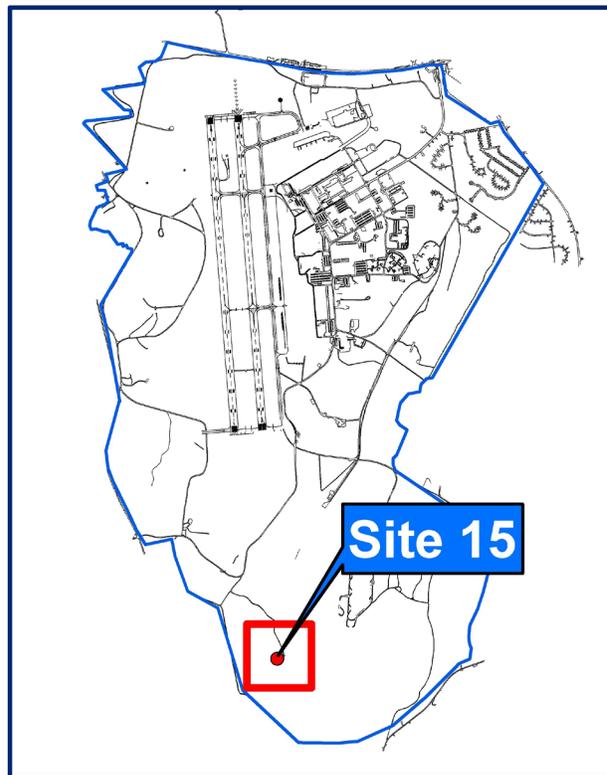
Site 15 - Merriconeag Extension Debris Site is located southeast of the NAS Brunswick golf course near Harpswell Cove (Figure 2-13).

#### 2.13.2. BACKGROUND

The site was reported in 1990 by a NAS employee and consists of a concrete rubble and soil dam that created a 0.75-acre pond on a small, unnamed stream. Miscellaneous debris items were visible on the face of the dam and on the ground surface near its eastern end. There are no Navy records regarding historical dumping at this site.

#### 2.13.3. PREVIOUS STUDIES

A site inspection was conducted in November 1992. The SI included a magnetometer survey, test pits and collection of soil, surface water and sediment samples. The magnetometer survey indicated the presence of ferrous debris at the site and was used to identify three locations for test pits. The test pits encountered few or no debris items. Two soil samples were collected from the test pits and five additional surface soil samples were collected from areas that contained the greatest number of debris items. Four surface water and sediment samples were also collected from the unnamed stream and pond. All asbestos cement pipe sections and scrap metal debris items found were removed from the site and disposed in 1999. A hand-held magnetometer survey in 1999 confirmed no additional metallic items remained after debris items were removed.



**Site 15 – Old Merriconeag Extension Debris Site**

Site 15 was not included in the NAS Brunswick Feasibility Study. A formal risk assessment was not conducted for Site 15. Debris was found on the ground surface with no indications of substantial area of buried waste. Reported concentrations for contaminants in soil, surface water and sediment were compared to state and federal standards and did not indicate a need for remediation.

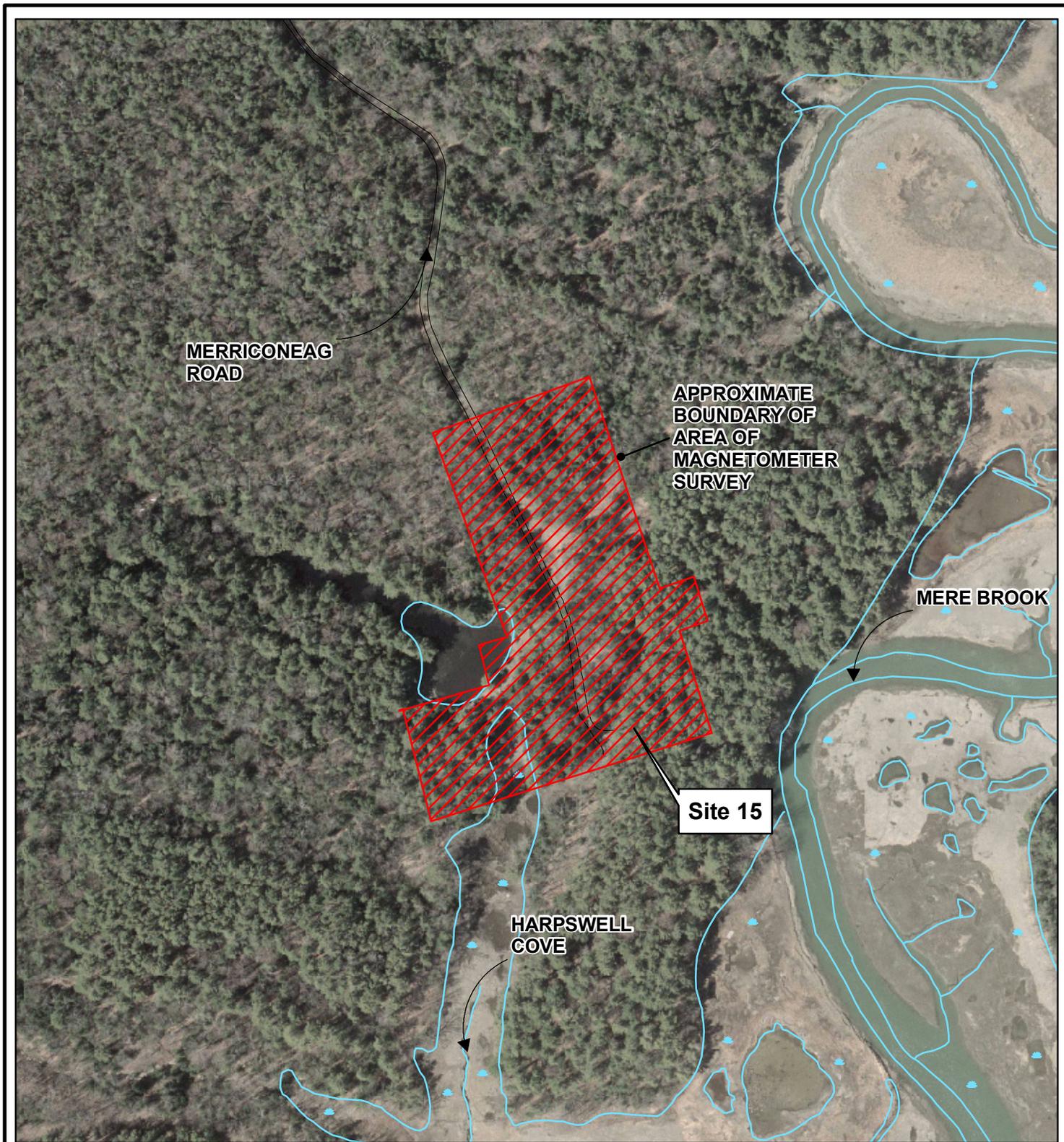


#### **2.13.4. RECENT ACTIVITIES**

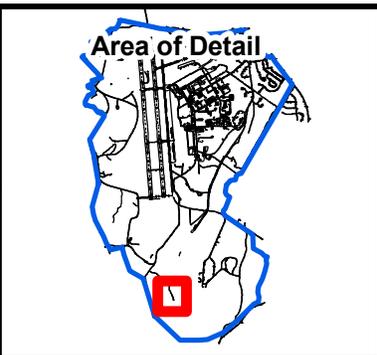
There has been no activity at Site 15 in the past year. This Site is inactive.

#### **2.13.5 NEXT STEPS**

There is no further action planned for Site 15.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19N in meters			
<b>Sources</b>	2001 digital orthophotographs provided by ME GIS. Base boundary provided by Navy.			
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	J. Kim			
CB	A. Easterday			
AB				



**Legend**

- Road
- NAS Brunswick Boundary
- Stream and Wetland Outline
- Approximate Site Area

**Figure 2-14**

**Site Plan  
Site 15  
Merriconeag Extension  
Debris Site  
Naval Air Station  
Brunswick, Maine**

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Fig22\_NASB\_Site15.mxd

0 200  
Feet





## SITE 16 – SWAMPY ROAD DEBRIS AREA

### 2.14 SITE 16 – SWAMPY ROAD DEBRIS AREA

#### 2.14.1. INTRODUCTION

Site 16 – Swampy Road Debris Site is located along the west bank of an unnamed stream in the NAS Brunswick golf course (Figure 2-14).

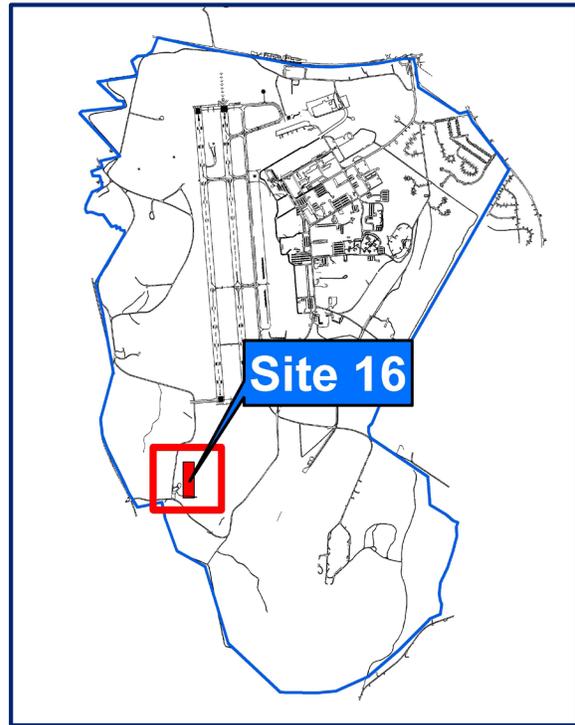
#### 2.14.2. BACKGROUND

The site was brought to the Navy's attention in 1990 by a NAS employee who observed refuse along its banks. Surface debris items were visible at various locations in a 1,700 foot section of this stream. There are no Navy records regarding historical dumping at this site.

#### 2.14.3. PREVIOUS STUDIES

A site investigation was conducted in 1992. The SI included a magnetometer survey, test pits and collection of soil, surface water and sediment samples. The magnetometer survey indicated the presence of ferrous debris items at the site and was used to identify five locations for test pits. The test pits generally encountered shallow debris items over native soils. A total of five soil samples were collected from the test pits and six additional surface soil samples were collected from areas that contained the greatest number of debris items. Five surface water and sediment samples were also collected from the unnamed stream. One surface soil sample was initially found to have a lead concentration of 1250 mg/kg. A confirmation sample taken at the same location in spring 2000 verified the lead concentration to be 84 mg/kg, which is the primary contaminant of concern. Using a hand-held magnetometer, additional debris items were found, recovered and removed for disposal or otherwise identified, assessed

and left in place in December 1999 and May 2000. Site 16



Site 16 – Swampy Road Debris Site

was not included in the NAS Brunswick Feasibility Study. A formal risk assessment was not conducted at this site. Debris was found primarily at the ground surface with no indications of buried waste having environmental significance. Reported concentrations of contaminants in soil, surface water, and sediment were compared to state and federal standards and did not indicate a need for remediation.



#### **2.14.4. RECENT ACTIVITIES**

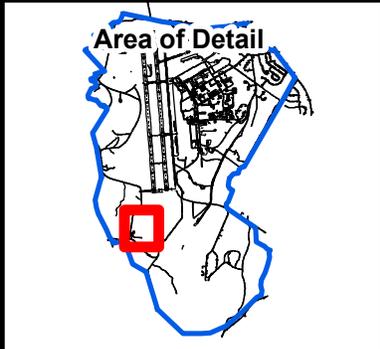
There has been no activity at Site 16 in the past year.

#### **2.14.5 NEXT STEPS**

There is no further action planned for Site 16.



<b>Contract No.</b>		N62472-02-D-0810		
<b>Description</b>		NASB Brunswick, ME		
<b>Coordinate system</b>		NAD 1983, UTM, Zone 19N in meters		
<b>Sources</b>		Naval Base Boundary and 2001 digital orthophotographs provided by ME GIS.		
<b>Date</b>	16-MAY-2008	<b>Rev.</b>		<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- Road
- NAS Brunswick Boundary
- Approximate Site Area

**Figure 2-15**

**Site Plan  
Site 16  
Swampy Road  
Debris Area  
Naval Air Station  
Brunswick, Maine**

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Fig23\_NASB\_Site16.mxd

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## SITE 17 – FORMER BUILDING 95

### 2.15 SITE 17 – FORMER BUILDING 95

#### 2.15.1. INTRODUCTION

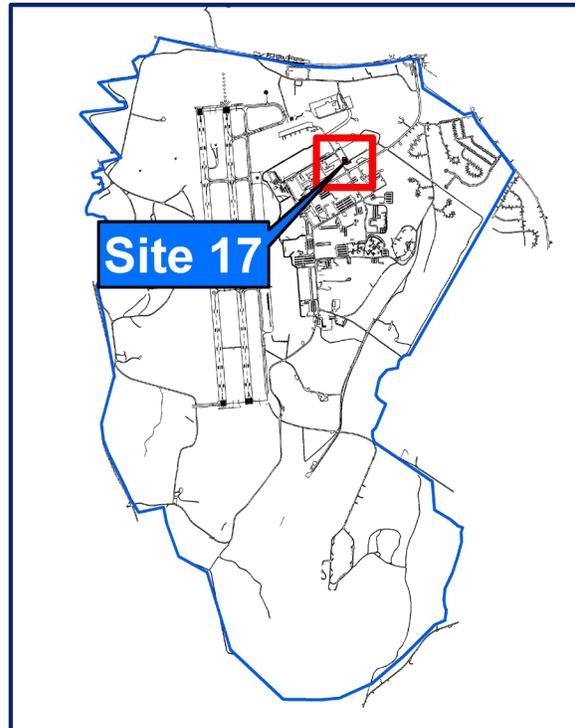
Site 17 – Former Building 95 is located in the north-central area of the base, one block north of Fitch Avenue at the corner of Fifth Street and Avenue B. The site is bounded to the northeast by the former Old Navy Fuel Farm, to the southeast by Avenue B, and to the southwest to northwest by Fifth Street (Figure 2-15).

#### 2.15.2. BACKGROUND

Building 95 and surrounding structures comprised the pesticide/herbicide storage area and distribution center for NAS Brunswick. The site housed base pest control operations that included storage, mixing, and disposal of pesticides and herbicides from 1955 until 1985. In 1985, pest control operations moved from Building 95 to Building 647. Several structures present at the site were demolished by the Navy, and the site is presently grassed over.

#### 2.15.3. PREVIOUS STUDIES

In 1983, a base-wide IAS was completed for NAS Brunswick in which the area of Site 17 was identified as a potential hazard. A site evaluation completed in 1992 identified the presence of several herbicides and pesticides, including 4,4-dichlorodiphenyltrichloroethane and pyrethrins (an insecticide), in the soil and on structures at the site. Additionally, low concentrations of pesticides and inorganics were reported in groundwater samples (ABB-ES 1993b; MEDEP 1991).



Site 17 – Former Building 95

A baseline risk assessment found that DDT and other pesticide and herbicides contributed to unacceptable human health and ecological risks estimated to site soils.

Corrective measures were taken at the site following the risk assessment. Remedial measures included excavating between one and eight feet of soil in the area of concern, placing a permeable geo-textile liner at the bottom of the excavation to act as a marker of the excavation, and backfilling with clean fill. The soil contaminated with pesticides was buried south of Avenue B. Also, south of Avenue B, abandoned railroad tracks running parallel to Avenue B were removed in 1994 (also refer to ABB-ES 1993b; ABB-ES



1994;EA 1999). Note that this site is in the investigation phase. Therefore, a ROD has not yet been signed for Building 95.

#### **2.15.4. RECENT ACTIVITIES**

The Navy prepared a Remedial Investigation Sampling and Analysis Plan (SAP) in 2008. Soil samples were collected in October 2008 to help define the extent of impacts to soils from past operations.

A layer of soil, previously excavated and placed south of Avenue B in 1994 was investigated in October 2008. The total amount of soil to be removed is currently unknown - but will be excavated and disposed of offsite.

The Navy is currently performing long-term monitoring, maintenance, and corrective measures as part of the long-term remedial actions required by the Action Memorandum dated April 1993 (ABB-ES 1993b), and in accordance with the May 2000 LTMP (EA 2000c). A work plan for further subsurface investigations associated with Site 17 has been developed by the Navy and Project Stakeholders. Investigation and sampling activities



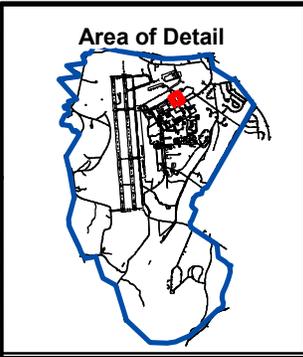
**Site 17 - Viewed from the West**

#### **2.15.5 NEXT STEPS**

- Continue long-term monitoring of groundwater and conduct additional sampling to support clean closure of the site.
- Excavate and dispose of pesticide contaminated soil that was placed south of Avenue B in 1994 during the soil removal action.
- Develop an RI, Focused FS and ROD.
- Develop site specific boundaries for institutional controls and revise the NAS Brunswick base instructions accordingly.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19 N			
<b>Sources</b>	Buildings and Naval Base Boundary provided by Navy.			
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- Former Location of Septic Tank
- Monitoring Well
- Fenceline
- Rail Road Track (Abandoned)
- Approx. Area of Soil Relocation
- Site Boundary

**Figure 2-16**

**Site Plan  
Site 17  
Former Building 95  
Naval Air Station  
Brunswick, Maine**

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## SITE 18 – WEST RUNWAY STUDY AREA

### 2.16 SITE 18 – WEST RUNWAY STUDY AREA

#### 2.16.1. INTRODUCTION

Site 18 – West Runway Study Area is located west of Runway I-19 between Mere Brook and Ordnance Road No. 3 (Figure 2-16).

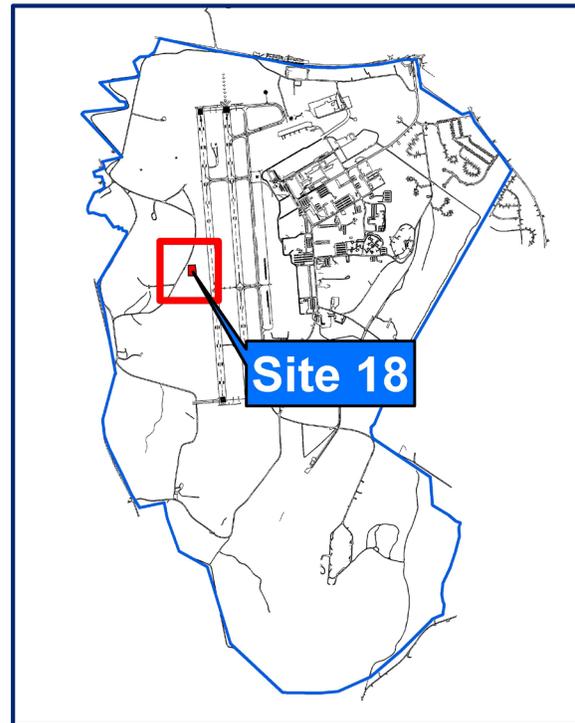
#### 2.16.2 BACKGROUND

The study area was brought to the Navy's attention in 1992 during runway setback clearance activities when a NAS Brunswick employee observed water containing a surface sheen seeping from a hillside along Ordnance Road No. 3. The seep was located approximately 650 feet west of Runway I-19. The seep is near the former location of an ordnance bunker that was dismantled some time in the mid-1970s. There are no Navy records regarding historical dumping at this site. Aerial photographs taken between 1940 and 1980 did not show any indications of active dumping in this area.

#### 2.16.3 PREVIOUS STUDIES

A SI, conducted in 1993 included a geophysical survey using a magnetometer and ground-penetrating radar, excavation of test pits and collection of soil, seep water, surface water and sediment samples. The geophysical survey revealed a small number of anomalous areas that potentially indicated buried debris. These results were used to identify seven locations for test pits. The test pits encountered fill soils and innocuous metallic objects. Surface water and sediment samples were collected from two locations within Mere Brook and at two seep locations, and an additional sediment sample was collected from a third seep location that was

dry at the time of the SI. Finally, in response to comments from the citizen's group,



Site 18 – West Runway Study Area

an additional round of water samples were collected from the three seep locations in spring 1994. Based on the results of this additional round of sampling, no further action was recommended for Site 18.

A formal risk assessment was not conducted for Site 18. Reported laboratory concentrations of analytes/compounds in soil, seep water, source water and sediment were compared to state and federal standards and did not indicate a need for remediation.



#### **2.16.4 RECENT ACTIVITIES**

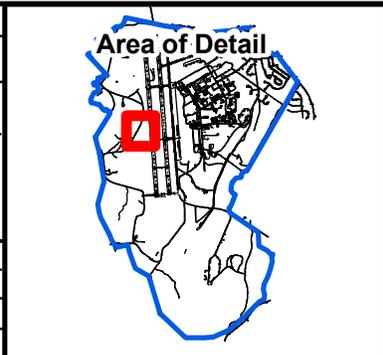
There has been no activity at Site 18 in the past year. This site is inactive.

#### **2.16.5 NEXT STEPS**

There is no further action planned for Site 18.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19N in meters			
<b>Sources</b>	2001 digital orthophotographs provided by ME GIS. Base boundary provided by Navy.			
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- Road
- NAS Brunswick Boundary
- Stream and Wetland outline
- Approximate Site Area

**Figure 2-17**

**Site Plan  
Site 18  
West Runway  
Study Area  
Naval Air Station  
Brunswick, Maine**

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## EASTERN PLUME OPERABLE UNIT

### 2.17 EASTERN PLUME OPERABLE UNIT

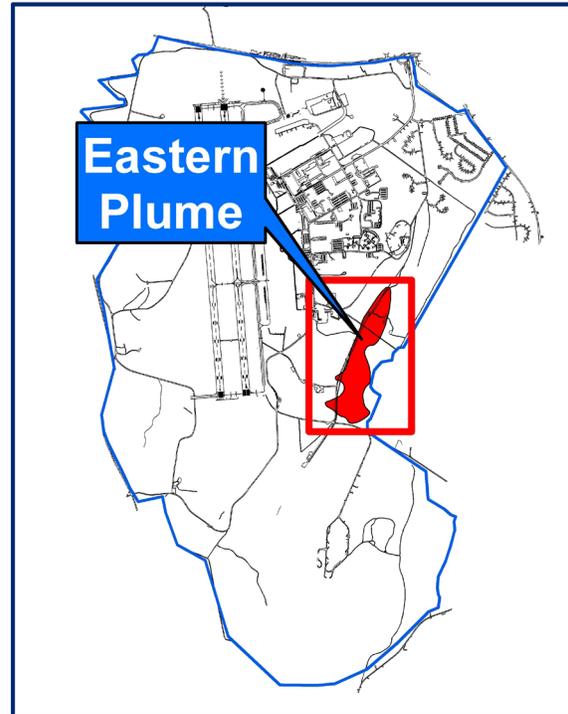
#### 2.17.1. INTRODUCTION

The Eastern Plume (EP) is located in the eastern-central portion of the base. The plume extends north-south along the Weapons Compound Road for approximately 0.6 mi. The northern portion of the plume is located in the woods to the north of Huey Drive (former Old Gurnett Road). The southern two-thirds of the plume are located in a restricted section of the base (Figure 2-17). In May 2001, the Navy completed a subsurface investigation at Site 11 (the former fire training area) and one of the known sources of the Eastern Plume. This investigation indicated that Site 11 is underlain by the upper sand unit which lies above the lower permeability transition unit. The Presumpscot Clay unit was found to overlay the bedrock in some areas beneath Site 11. Bedrock was determined to slope to the south and southeast in this area and was encountered at 25 and 29 ft below grade at Site 11 (EA 2001; EA 2000b).

Beginning in Spring 2006, two VOC compounds (1,1-dichloroethene and trichloroethane) have been reported at concentrations above regulatory criteria in one of the bedrock monitoring wells located at the Eastern Plume. This occurrence is currently undergoing further investigation through the installation of addition bedrock wells

#### 2.17.2. BACKGROUND

The Eastern Plume is the groundwater contamination resulting from three sites; Site 4-Acid Caustic Pit, Site 11-Fire Training Area, and Site 13-Defense Reuse and Marketing Office. Sites 4 and 13 are no longer considered to be contributing to groundwater contamination in the Eastern Plume.



**Eastern Plume Operable Unit**

Site 4 – An acid caustic pit was used from 1969 to 1974 for disposal of liquid waste, and is located under the corner of Building 584. The wastes were poured into the pit which was approximately 4 ft square and 3 ft deep.

Site 11 – A former fire training area that was used regularly between 1960 and 1990.

Waste liquids (fuels, oils, degreasing solvents) were used as fuel for the fire training exercises.

Site 13 – The Defense Reutilization and Marketing Office area immediately south of Building 584 and Site 4. Site 13 consisted of three underground storage tanks: one for diesel fuel, and the other two for storing waste



fuels, oils, and degreasing solvents. All three tanks were removed in the late 1980s. The diesel tank was replaced with a fiberglass underground storage tank; however, this tank was subsequently removed and replaced with an aboveground tank.

The northern third of the plume is located beneath woodland and a recreational and picnic area on base. There are three surface water bodies located in proximity of Eastern Plume. From north to south they are Picnic Pond, Merriconeag Stream and Mere Brook.

The Eastern Plume has been slowly migrating to the south and southeast, with minor diffusion into Picnic Pond (ECC and EA 2005).

### **2.17.3. PREVIOUS STUDIES**

A RI completed in 1990 and Supplemental RI completed in 1991, identified six VOCs as the predominant COCs in groundwater and Sites 4, 11 and 13 as potential sources of contamination. Remedial action objectives and alternatives were developed and screened in the 1992 FS. The preferred remedy of hydraulic containment and contaminant removal was formally documented in the Interim ROD for EP in 1992 (U.S. Navy 1992b).

Subsequently, groundwater extraction system, consisting of five groundwater extraction wells screened through the shallow and deep zones of the overburden aquifer, and a treatment plant with an ultraviolet oxidation (UVOx) system began operating in 1995. This was to remediate both the northern and southern lobes of the Eastern Plume,

to remove dissolved-phase VOCs from groundwater as well as provide hydraulic control of the VOC plume and remove dissolved-phase VOCs from groundwater. A sixth extraction well, screened in the deep zone of the overburden aquifer, was installed near the confluence of Mere Brook and Merriconeag Stream. Pumping of this well was to improve the hydraulic control and remediation of the Eastern Plume as part of the 1998 Final ROD (ABB-ES 1998; EA 2000e; Radian 1999). The Navy completed an equipment change from the UVOx system to an air stripper with carbon polishing of the effluent in 2001. Also in 2001, the Navy conducted direct-push investigations in the Southern Boundary of the Eastern Plume and at Site 11. Selected wells in the Eastern Plume were analyzed for natural attenuation parameters in October 2003. Additional direct-push investigation work in the vicinity of MW-313 during the field work season of 2004 was conducted.

In 2005, the State of Maine Department of Environmental Protection (MEDEP) conducted an initial pore water investigation in Mere Brook to determine whether the Eastern Plume is discharging, in part, to surface water (Gannett Fleming 2003; ECC 2008).

### **2.17.4. RECENT ACTIVITIES**

A Sampling and Analysis Plan (SAP) for 1,4-dioxane was prepared in September 2008. The purpose of the investigation is to better define the extent of 1,4-dioxane and chlorinated volatile organic compounds (VOCs) for remedy selection and treatment. Numerous monitoring wells and several bedrock well couplets will be installed during Fall 2008 and Spring 2009. Discrete zone groundwater sampling and continuous electrical conductivity profiling in the



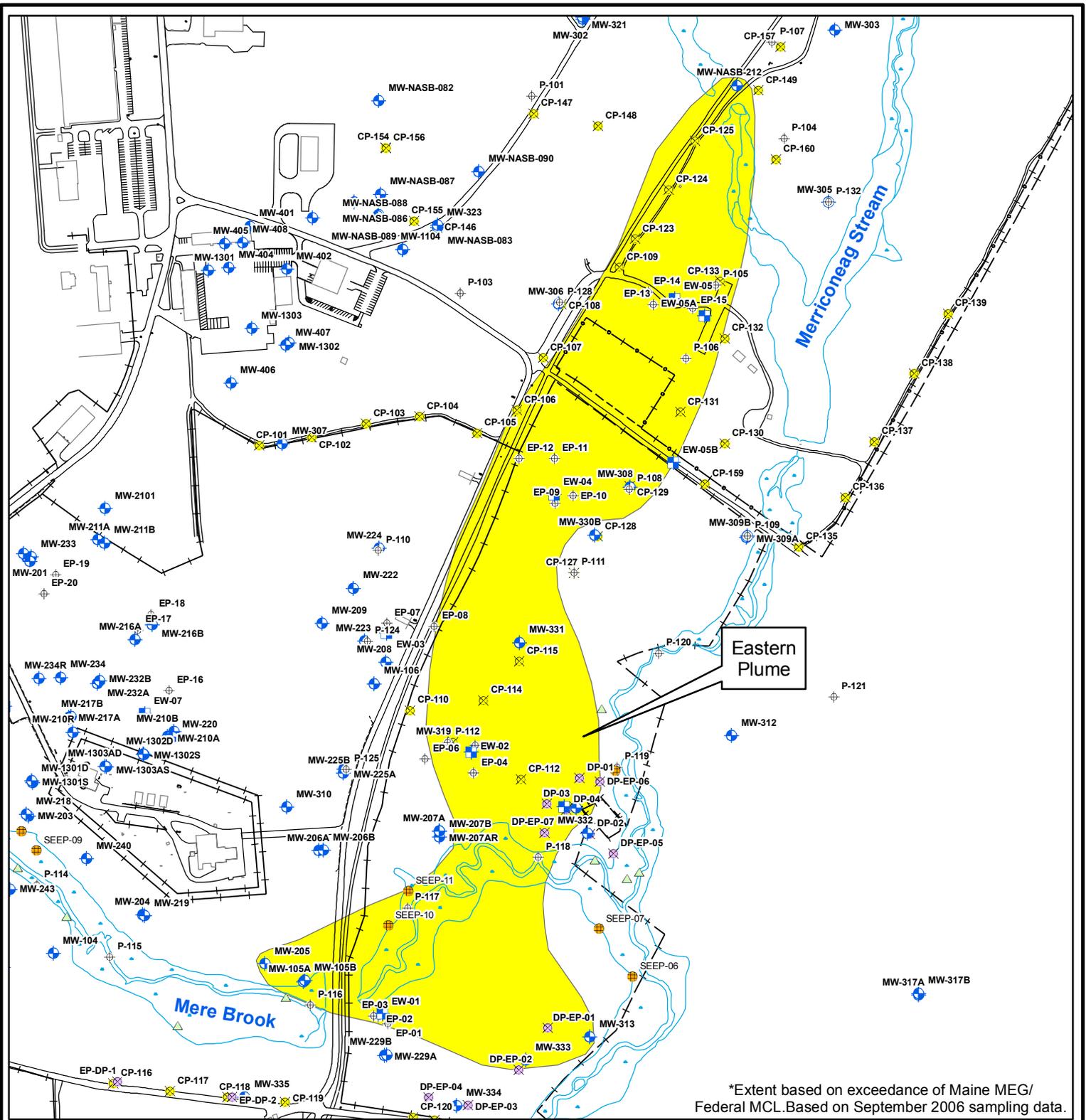
numerous well locations was initiated in October 2008. The Navy along with the MEDEP and EPA conducted pore water sampling in August 2008.

The Navy is currently performing long-term monitoring, maintenance, and corrective measures as part of the long-term remedial actions. Standards developed by EA Science and Technology (January 2006), to compare sediment and leachate sediment seep samples have been incorporated into LTMP data analysis and reports. In early 2006, the Base-wide Quality Assurance Project Plan (QAPP) was finalized. A proposal to increase the number of samples to be tested for 1,4 dioxane is in review.

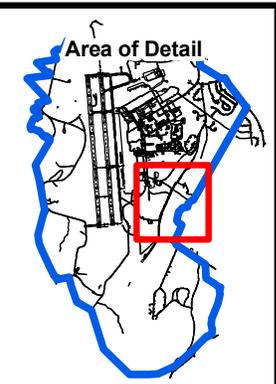
The Navy undertook a more extensive surface water investigation along segments of Mere Brook in 2007. The work plan for this investigation was developed by the Navy and the Project Stakeholders.

### 2.17.5 NEXT STEPS

- Complete and sample numerous permanent monitoring wells.
- Conduct stream gauging in Merriconeag Stream and collect water level measurements in monitoring wells in the spring of 2009.
- Finalize the LTMP and issue updated LTMP.
- Continue assessment of 1,4-dioxane in the Eastern Plume.
- Continue collection of monitored natural attenuation parameters.
- Assess ways to optimize the Long-Term Monitoring Program and remedy.
- Assess migration of Eastern Plume into the area around monitoring well MW-313, assess degree of upwelling into Mere Brook.
- Develop appropriate actions if Building 584 is demolished or if soils are disturbed at Sites 4, 11, and 13.
- Collect additional surface water samples in Mere Brook in the vicinity of MW-313.
- Investigate causes of plume shift.
- Refine institutional control boundary.
- Establish institutional controls for the infiltration gallery and the piping for the GWETS.



Contract No	N62472-02-D-0810			
Description	NASB Brunswick, ME			
Coordinate system	NAD 1983, UTM, Zone 19N			
Sources	Naval Base Boundary provided by Navy.			
Notes				



Legend	
	Seep Sample Location
	Surface Water Sample Location
	Cone Penetrometer
	Direct Push
	Extraction Well
	Monitoring Well
	Piezometer
	Stream & Wetland
	Approx. Extent of Eastern Plume*

**Figure 2-18**

**Site Plan  
Eastern Plume  
Operable Unit  
Naval Air Station  
Brunswick, Maine**

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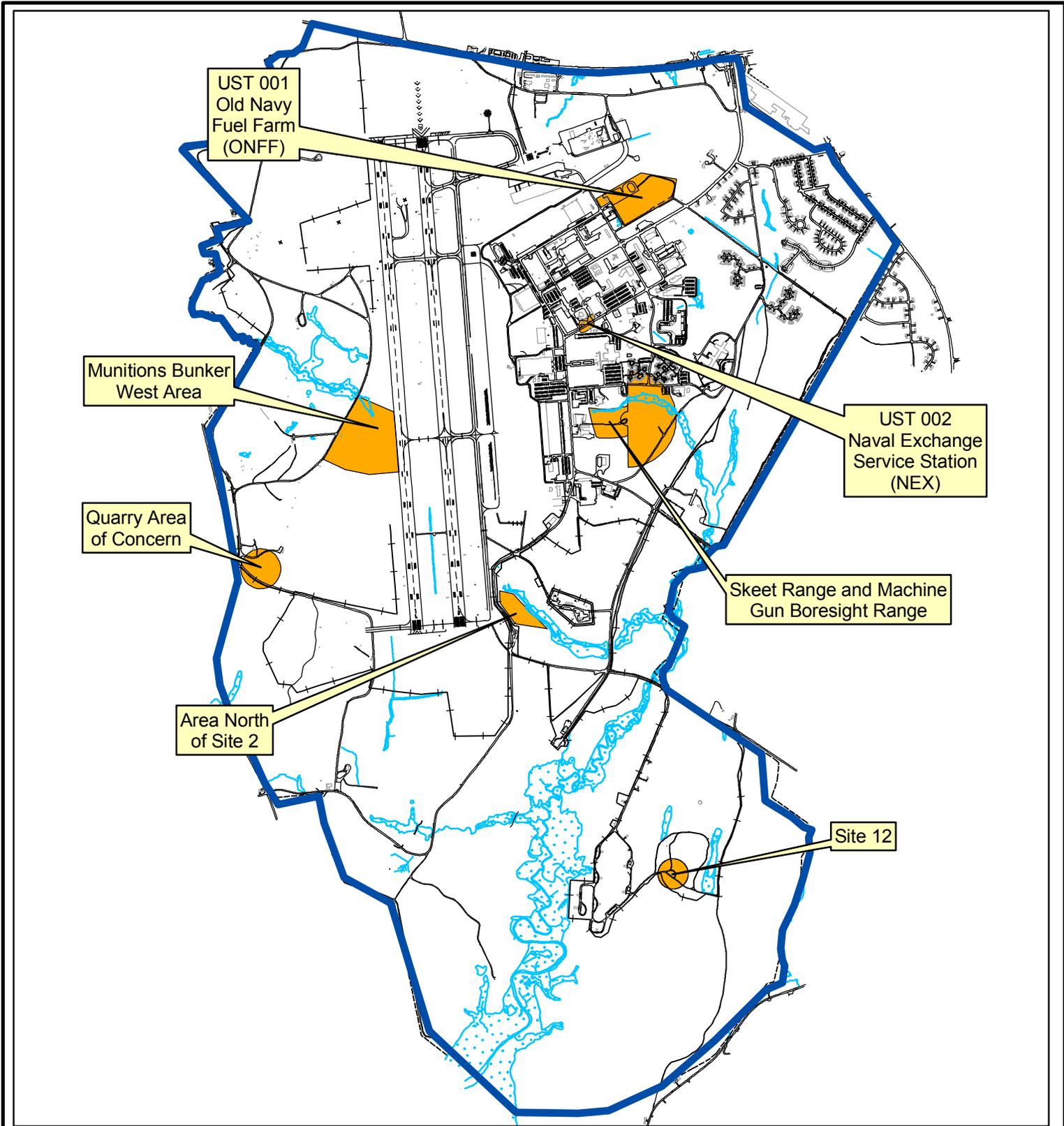
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Date	Rev.	Date	App. By
16-MAY-2008			
DB	C. Guido		
CB	A. Easterday		
AB			

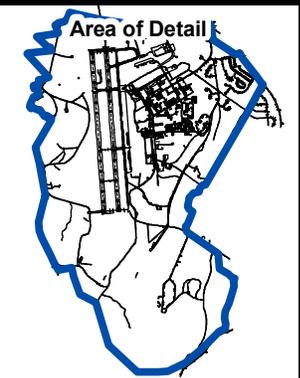


### **3.0 PETROLEUM, OIL AND LUBRICANT SITES**

The sites outlined in this Section are currently being, or have been, investigated under the Navy's Petroleum, Oil and Lubricant (POL) Program. The fact sheet for each site is provided in this Section. The locations of the POL sites are shown in Figure 3-1.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM Zone 19N			
<b>Sources</b>	Naval Base Boundary provided by Navy.			



**Legend**

- Road
- Building
- Base Boundary
- Stream & Wetland

**Figure 3-1**

**Location Map  
Areas of Concern  
Naval Air Station  
Brunswick, Maine**

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 0 550 1,100 2,200 Feet



Date	Rev.	Date	App. By
16-MAY-2008			
DB	C. Guido		
CB	A. Easterday		
AB			



## POL/UST 001 – OLD NAVY FUEL FARM

### 3.1 POL/UST 001 – OLD NAVY FUEL FARM

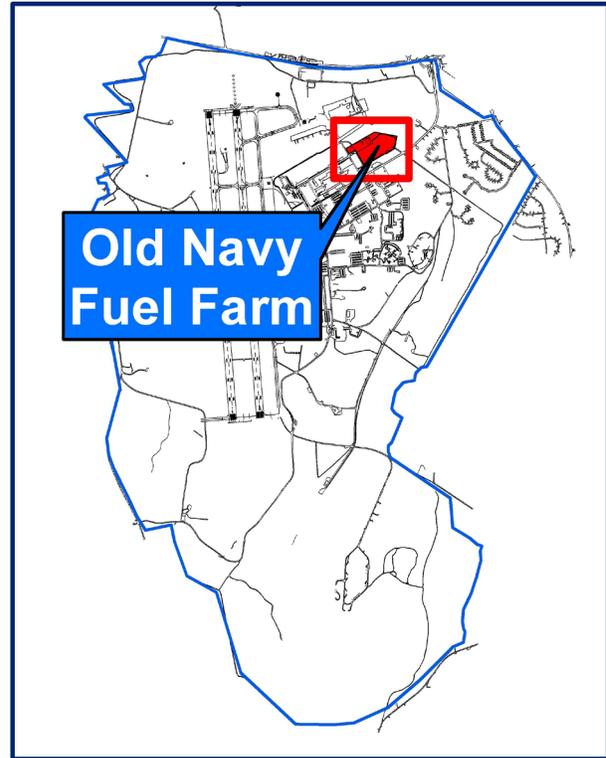
#### 3.1.1. INTRODUCTION

UST 001 – Old Navy Fuel Farm (ONFF) is located on the northeast portion of NAS Brunswick and is bounded on the south by Fitch Avenue, on the west by Sixth Street, and to the north and east by undeveloped land (Figure 3-2). Site 17 is located at the southeastern corner of the Old Navy Fuel Farm and Site 7 is located several hundred feet to the west.

#### 3.1.2. BACKGROUND

The fuel farm site was previously used as a petroleum bulk storage facility and was decommissioned in 1993. Prior to decommissioning, the fuel farm consisted of two separate petroleum bulk storage tank farms which together included nine mounded underground storage tanks (UST). All tanks, piping and associated appurtenances were removed during decommissioning. Storage tanks were used for storage of petroleum sludge, unleaded gasoline, aviation gasoline and ethylene glycol. For several years, a soil vapor extraction/aquifer air sparging (SVE/AAS) system, which later was changed to a biosparging system, was in operation at the Site.

In 1997, only components of the biosparging system and a storm sewer system existed at the site, which has since been removed as part of the remedial actions taken at the Site. In 2002 and 2003, ball fields were constructed on the site after the remedial action was completed.



Old Navy Fuel Farm

#### 3.1.3. PREVIOUS STUDIES

Studies completed in 1990 and 1992 identified two distinct dissolved-phase hydrocarbon plumes. The first plume was located in the east central portion of the ONFF. This plume previously extended downgradient toward the south-southeast and consisted primarily of benzene, toluene, ethylbenzene and xylene (BTEX) compounds. The second dissolved-phase hydrocarbon plume was located in the north-central portion of the western half of ONFF and appeared to originate in the vicinity of the former glycol tanks. This plume consisted principally of BTEX compounds, although at significantly lower concentrations than the eastern hydrocarbon plume. The



Work Plan for Remediation of the Fuel Farm was completed in 1995. The plan included groundwater treatment, removal of well and oil water separators, as well as clean out of drainage network and the disposal for sediment from the pipe cleaning, among other actions. In 2000, a remedial action was completed during which approximately 15,000 tons of petroleum-impacted soil was removed. Originally, the interim remedial action goal was 2500 ppm (parts per million) TPH (total petroleum hydrocarbons) in soil, but the Interim Removal Action Summary of Site Investigation Activities (September 2000) states that the remedial action goal has been changed to 870 ppm TPH in soil. A groundwater monitoring program was implemented the same year to evaluate the effectiveness of the removal.

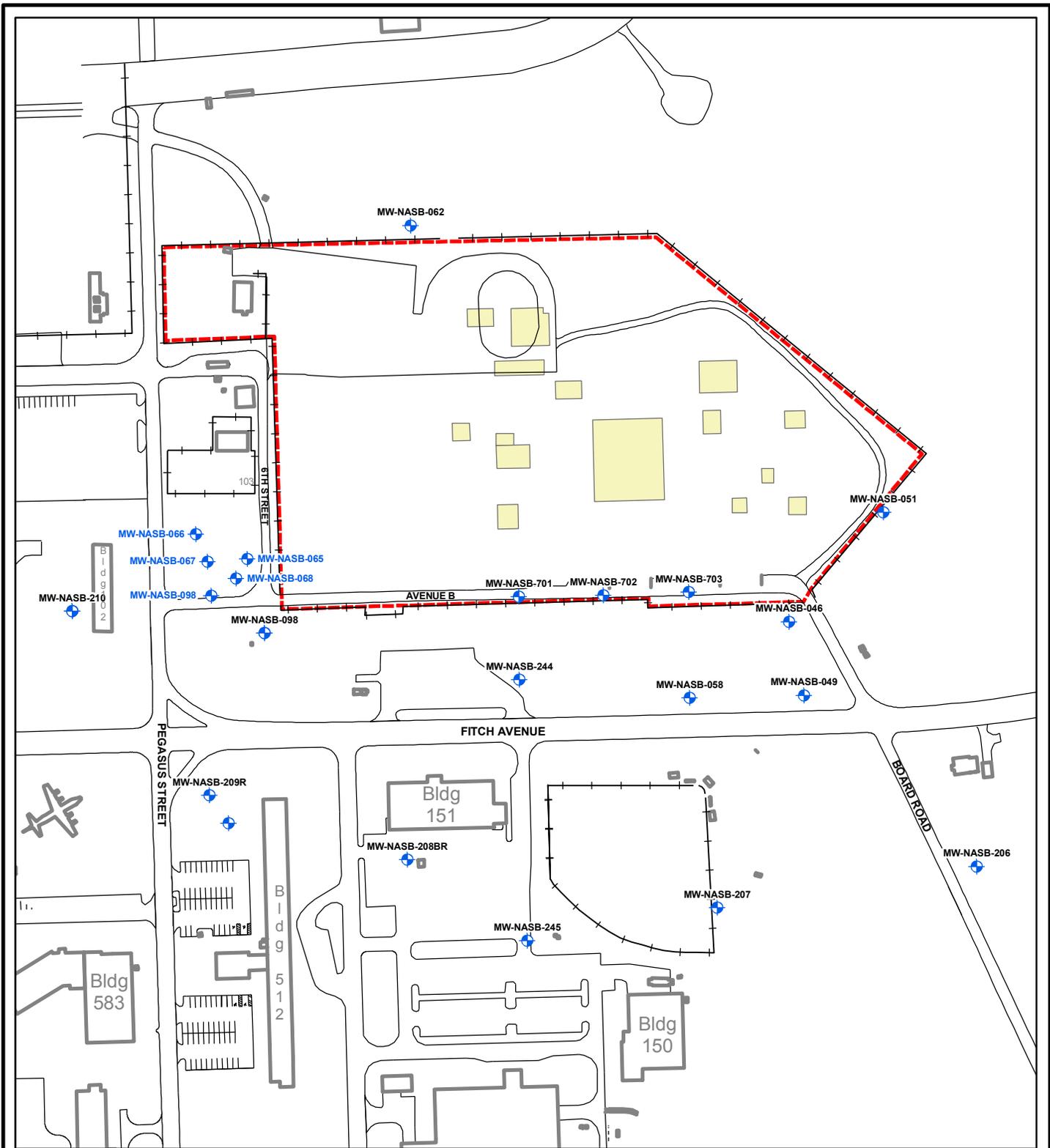
#### **3.1.4. RECENT ACTIVITIES**

The Navy is preparing to conduct a focused direct push investigation at the Old Navy Fuel Farm (ONFF). The purpose of this investigation is to evaluate present day soil and groundwater conditions at the source areas discussed above. It is proposed that separate direct-push investigations be conducted near the former location of the Building 206 fueling islands and near the former location of monitoring well MW-211 between historic USTs T-202 and T-203. At each of these locations, several Geoprobe borings would be advanced to the top of the marine clay layer at approximately 10 feet below ground surface (bgs). A licensed surveyor would be utilized to locate the initial

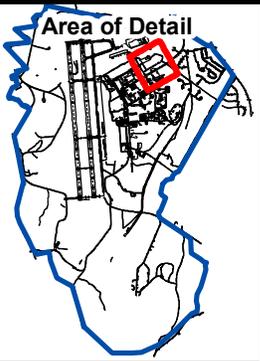
Geoprobe boring areas based on historic drawing files and existing site features. The final Geoprobe boring locations would be surveyed relative to existing monitoring wells.

#### **3.1.5 NEXT STEPS**

- Navy will work with the MEDEP to determine what additional actions, if any, are required, after the results of the direct push investigation are available.
- Evaluate data from periodic sampling of groundwater to determine the effects of the soil removal.
- Develop consensus statement and institutional controls for soil.
- Continue Long-Term Monitoring Program.



Contract No.	N62472-02-D-0810			
Description	NASB Brunswick, ME			
Coordinate system	NAD 1983, UTM, Zone 19 N			
Sources	Naval Base Boundary provided by Navy.			
Date	16-MAY-2008	Rev.	Date	App. By
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- Monitoring Well
- Building
- Road
- Fence
- Extent of Excavation
- Site Boundary

**Figure 3-2**

**Site Plan  
Underground Storage  
Tank 001  
Old Navy Fuel Farm  
Naval Air Station  
Brunswick, Maine**

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0 50 100 200 Feet





## POL/UST 002 – NAVY EXCHANGE SERVICE STATION

### 3.2 POL/UST 002 – NAVY EXCHANGE SERVICE STATION

#### 3.2.1. INTRODUCTION

UST 002 – Navy Exchange Service Station is an area bounded approximately by Building 538 to the north and by the northwestern corner of Building 27 to the south (Figure 3-3). Burbank Avenue lies in the center of the site, separating Buildings 538 and 27.

#### 3.2.2. BACKGROUND

As a result of past releases of gasoline from corroded fuel line and from the bulk storage of petroleum products associated with the NEX Service Station, soil and groundwater underlying the area spanned by the NEX Service Station and Building 27 were contaminated by petroleum hydrocarbons, specifically the gasoline range organics (GROs).

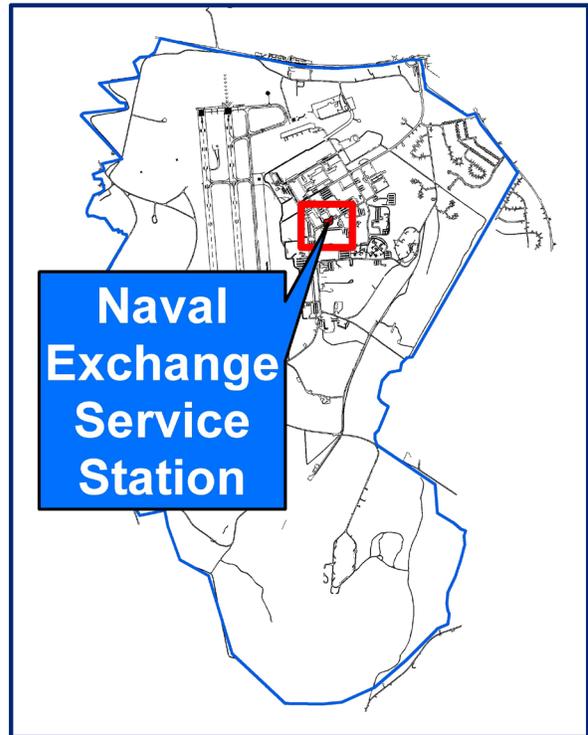
#### 3.2.3. PREVIOUS STUDIES

In 1992, excavation and removal of 440 tons of petroleum product-contaminated soil were completed. Soil vapor extraction/air sparging (SVE/AS) treatment was implemented from 1993 through 2003. In 2000, a direct-push soil and ground water investigation was performed.

A limited in-situ chemical oxidation (ISCO) pilot test was performed during 2002. This resulted in the unwanted partial mobilization of sorbed-phase GRO and did not appear to decrease the petroleum hydrocarbons in the saturated soil.

As presented in a 2003 Corrective Action Plan, two areas of residual GRO contamination remain in subsurface soil (sorbed phase) along with two plumes of contaminated groundwater (dissolved phase).

A limited baseline biodegradation evaluation was performed in 2003 and found conditions favored the anaerobic degradation of the



Naval Exchange Service Station

petroleum hydrocarbons through denitrification. This process was evaluated in a 2004 Feasibility Study and accepted as a remedial action in a 2004 Corrective Action Plan. Subsequently, a pilot test program for denitrification based biodegradation (DBB) was designed and implemented. The site was found to be conducive for bioremediation due to its abundant microbial community capable of denitrification and degradation of aromatic hydrocarbons. This pilot test program was found, however, not to be effective in removing the remaining petroleum hydrocarbons in the saturated soils to acceptable levels.

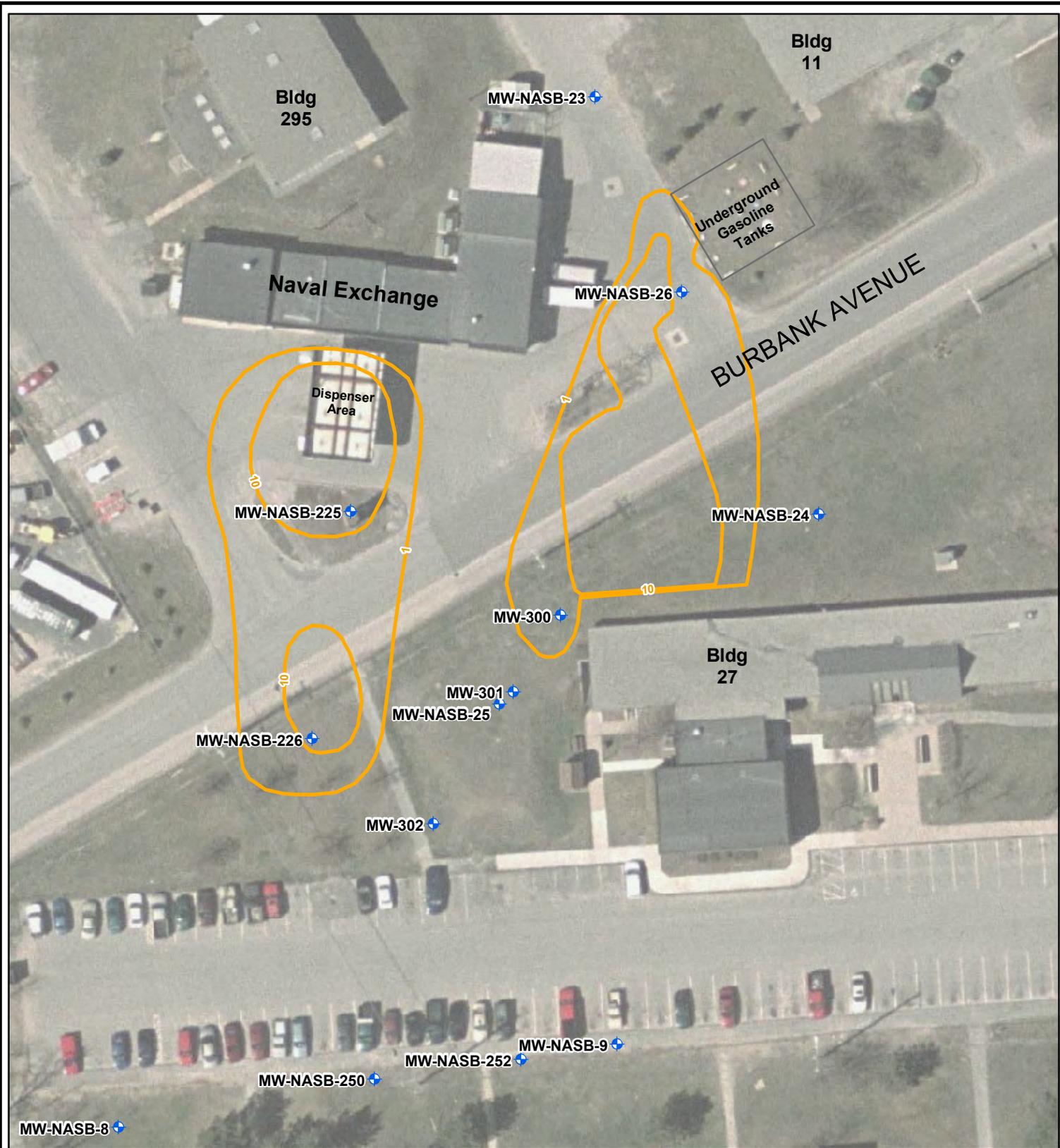


#### **3.2.4. RECENT ACTIVITIES**

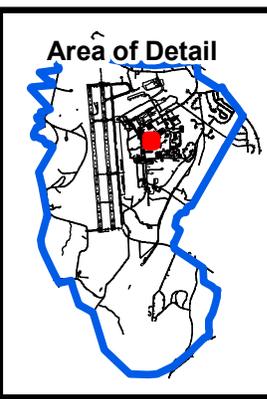
The Navy has determined the best course of action for the NEX is source delineation, soil removal and groundwater monitoring. The Navy and MEDEP are currently evaluating cleanup goals for this site. A pre-design Sampling Work Plan was submitted to the MEDEP in early October 2008 and approved in late October 2008. Pre-design fieldwork was initiated in November 2008.

#### **3.2.5 NEXT STEPS**

- The Navy and MEDEP will review the results of the pre-design fieldwork to determine the cleanup approach work plan in the winter 2009.
- Assess institutional controls for groundwater and soil.
- Continue Long-Term Monitoring.
- Re-evaluate site remedy.



<b>Contract No.</b> N62472-02-D-0810				
<b>Description</b> NASB Brunswick, ME				
<b>Coordinate system</b> NAD 1983, UTM, Zone 19N				
<b>Sources</b> Naval Base Boundary provided by Navy. Digital orthophoto from 2001.				
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- ◆ Monitoring Well
- Gasoline Range Organics in Water-2003 (mg/l)

**Figure 3-3**

**Site Plan  
Underground Storage  
Tank 002  
Naval Exchange  
Service Station  
Naval Air Station  
Brunswick, Maine**

ECC Marlborough, MA, C:\NAVY\_GIS\TO07\_Brunswick\NEX1  
MapDocuments\NEX\_SMP.mxd

0 12.5 25 50 Feet





## UNDERGROUND STORAGE TANK (UST 003) – TOPSHAM ANNEX

### 3.3 UNDERGROUND STORAGE TANK (UST 003) – TOPSHAM ANNEX

#### 3.3.1. INTRODUCTION

The Topsham Annex is situated in the neighboring town of Topsham approximately four miles north of the Main Station (Figure 3-4). It is situated north of the Androscoggin River and east of I-95.

#### 3.3.2. BACKGROUND

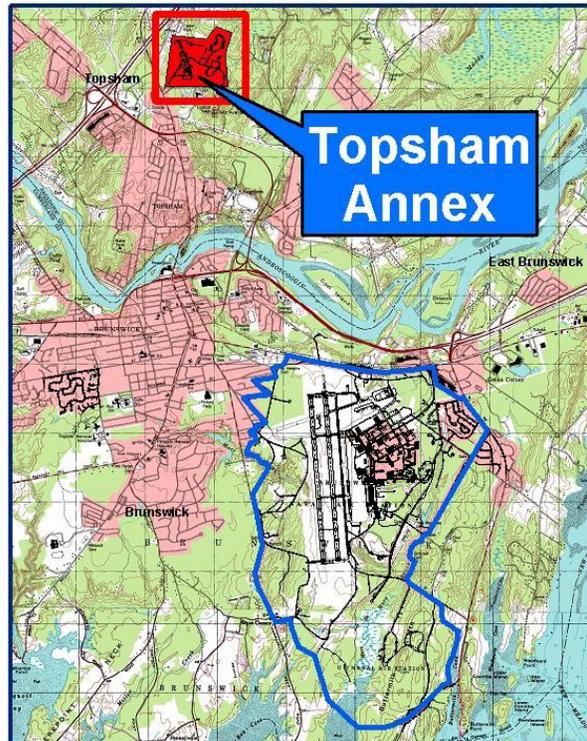
The Annex was initially developed by the U.S. Air Force in 1956 as an airspace surveillance and communications facility. In the early 1970s, the Navy acquired the Annex from the Air Force. Since that time, the Annex was primarily used as a military housing complex and support facility for personnel stationed at NAS Brunswick.

In addition to housing units and associated recreational facilities, the Annex contains operations and training activities. The Annex was formerly an Air Force radar station, and several abandoned structures from that era are located along a narrow arm of the property that climbs to the top of Mount Ararat.

In the mid-1990s, the Navy began the process of property transfer of certain areas, referred to as Parcels 1 through 4, to the Maine School Administrative District-75 (MSAD 75). Portions of the property were transferred to the MSAD 75 in 1999 (approximately 45 acres) and to Central Topsham Associates in 2003 (approximately 7 acres).

#### 3.3.3. PREVIOUS STUDIES

In 1996, an Environmental Baseline Survey (EBS) of Topsham Annex was completed which identified 14 potential areas of environmental concern (PAOECs) on or near Parcel 1 and further



Underground Storage Tank (UST) Topsham Annex

investigation of these areas was recommended. In 1997, decontamination of the former small arms pistol range at Building 382, and a soil removal action was completed. In 1999, a Phase II Environmental Site Assessment (ESA) and Remedial Action Report for Parcel 1 was completed and it was concluded that groundwater and surface water impacts appeared to be minimal and did not require further action.

In 2000, an ESA for Parcel 2 was completed which included direct-push borings as well as installation and sampling of groundwater wells. There was also excavation of petroleum-impacted soil removed.



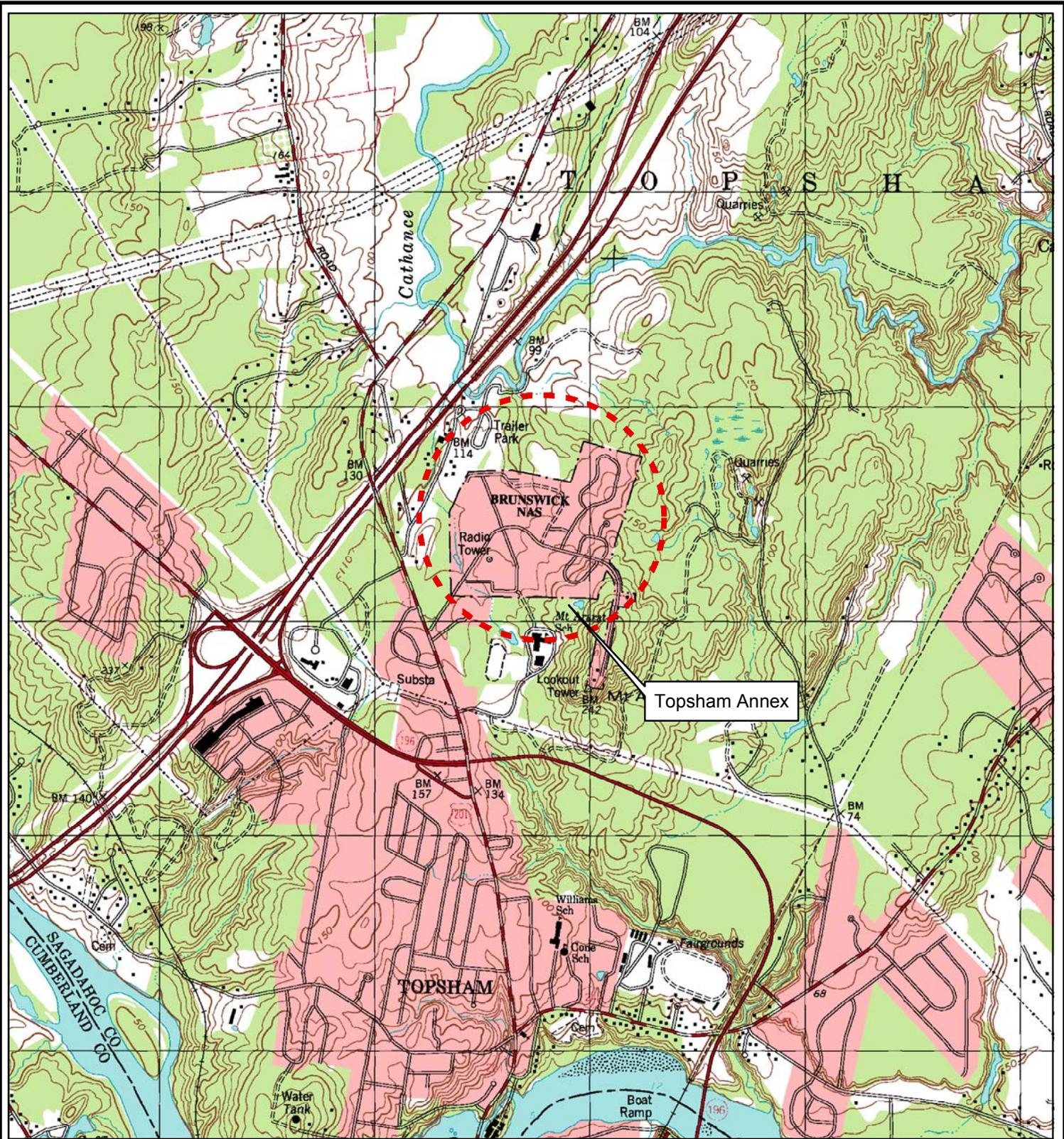
A 2001 assessment, recommended additional action be taken at three of eight PAOECs identified in the 1996 EBS.

#### **3.3.4. RECENT ACTIVITIES**

PCB (polychlorinated biphenyl) removal occurred at the Commissary in 2002. In early 2006 a 2004, and Investigation Report for Topsham Annex was finalized. In 2006, a final work plan for TPH soil remediation and investigation activities implemented to include soil removals from several areas. A Project Close-out Report for this removal action is currently in Review.

#### **3.3.5 NEXT STEPS**

- Assess further actions required after soil remediation and investigation activities.
- Further investigation of the Skeet Range.
- Develop an agreement with MEDEP in regards to the remaining contaminants in the soil.
- Develop institutional controls for soil and groundwater.



Contract No.	N62472-02-D-0810			
Description	Topsham Annex, Topsham, ME			
Coordinate system	NAD 1983, State Plane, Connecticut, in feet			
Sources	Naval Base Boundary provided by Navy.			



**Legend**

 Approximate Site Area

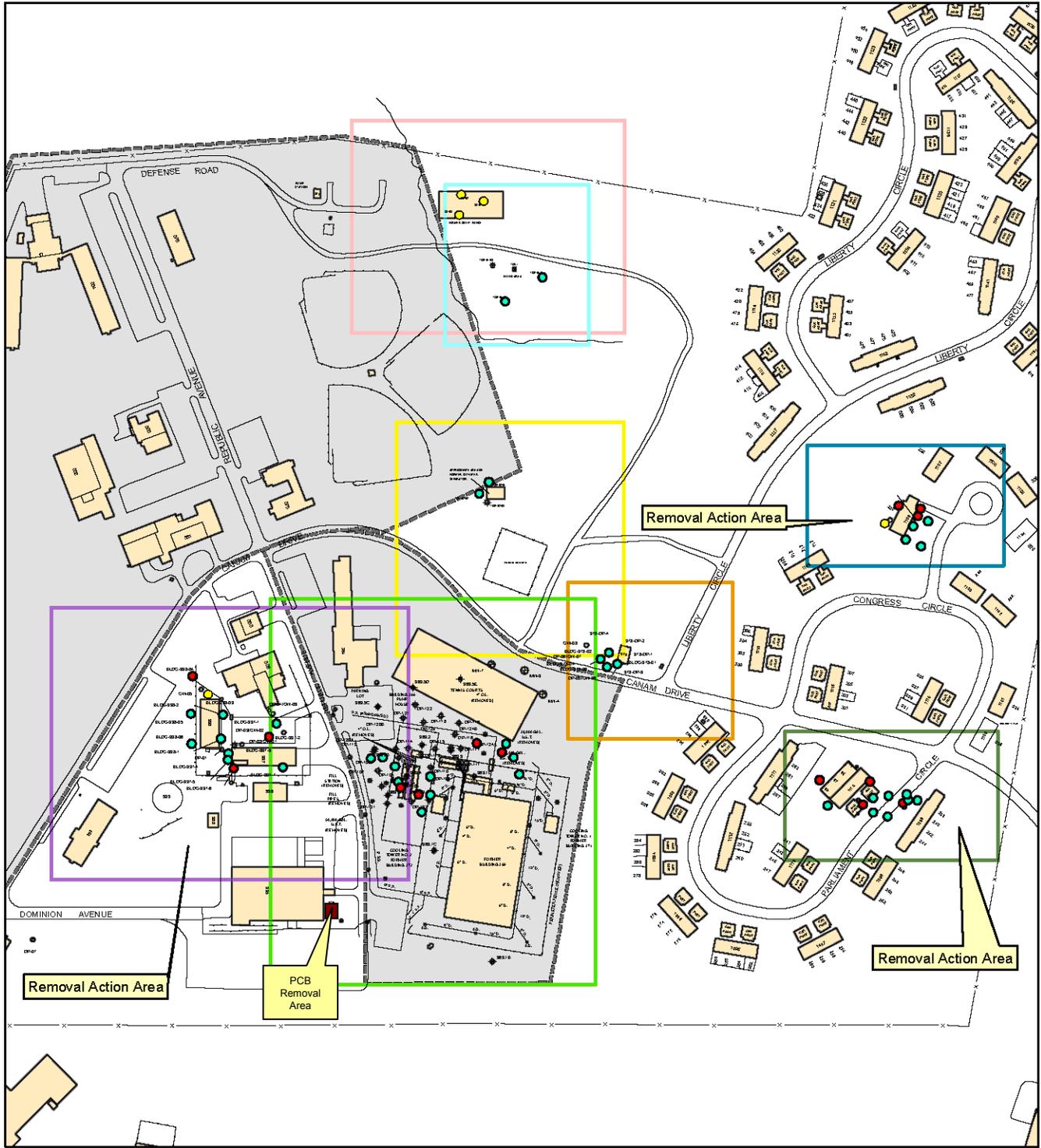
**Figure 3-4**

**Location Map  
Topsham Annex  
Topsham, Maine**

ECC Marlborough, MA  
C:\NAVY\_GIS\TO07\_Brunswick\GISdata\MapDocuments\LocMapTopshamAnnex\_SMP.mxd

0 550 1,100 2,200 Feet 

Date	16-MAY-2008	Rev.	Date	App. By
DB	C. Guido			
CB	A. Easterday			
AB				



Contract No.	N62472-02-D-0810			
Description	Topsham Annex Topsham, ME			
Coordinate system	NAD 1983, UTM Zone 19N			
Sources	1) Naval Base Boundary provided by Navy 2) Data from 2004 Investigation Report, Topsham Annex (EA/ECC, Feb 2006).			
Date	29-DEC-2006	Rev.	Date	App. By
DB	C. Guido			
CB	A. Easterday			
AB				



### Legend

#### Location of Exceedance

- Soil
- Water
- Water & Soil
- Transferred Parcel

- 1) Parcel boundaries are approximate.
- 2) Location of exceedance denotes exceedance of MEG, MCL, ME PRG, or ME RAGS.

#### Area of Investigation

- Area A
- Area B
- Area C
- Area D
- Area E
- Former Skeet Range Area
- Top. 1 Area
- Top. 2 Area

Figure 3-5

## Site Plan Underground Storage Tank 003 Topsham Annex Areas of Concern Topsham, Maine

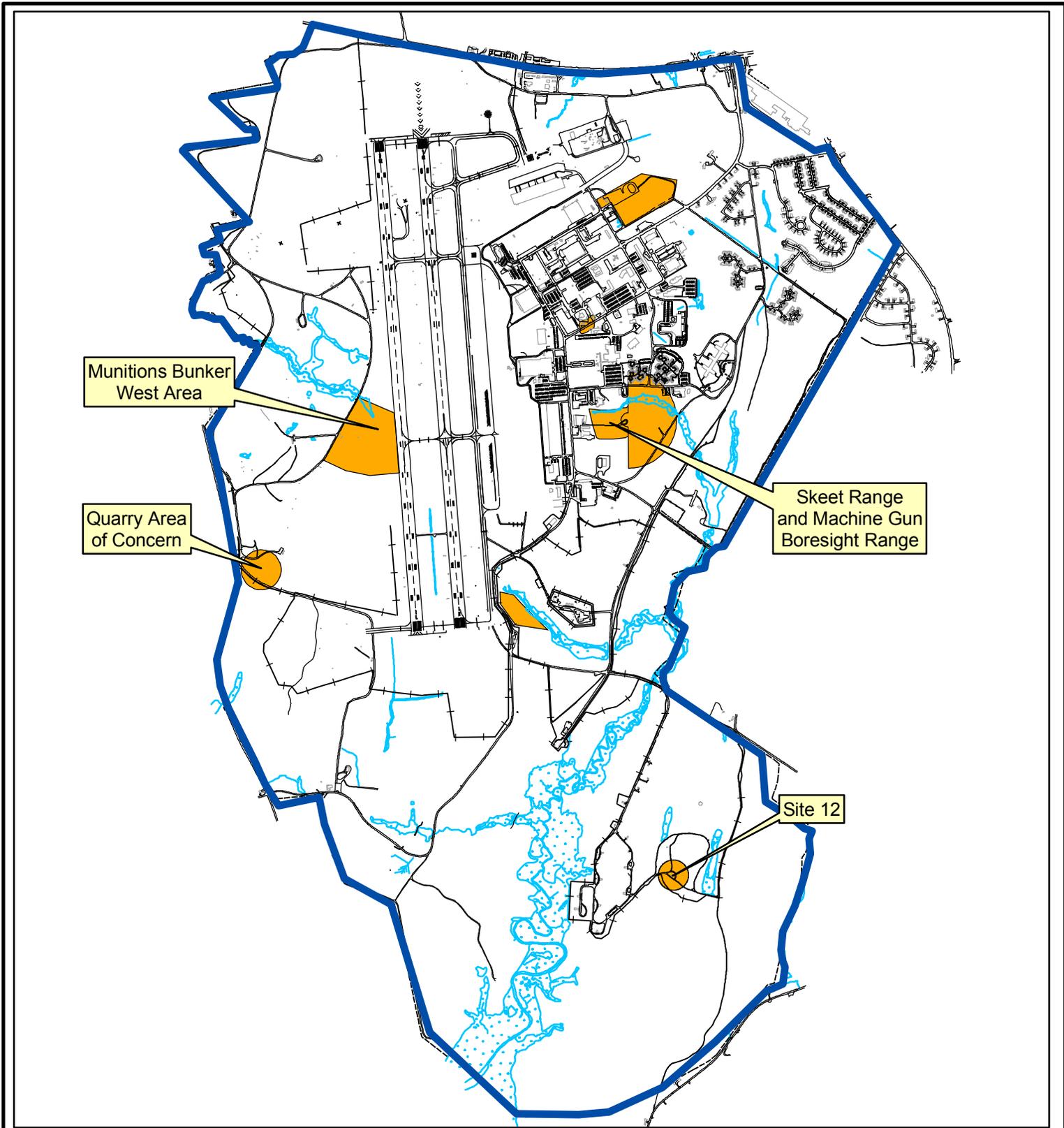
ECC Marlborough, M.A.C.:NAVY\_GISIT007\_Brunswick  
Topsham Annex\MapDocuments\Topsham Annex\_SMP.mxd  
0 287.5 575 1,150 Feet



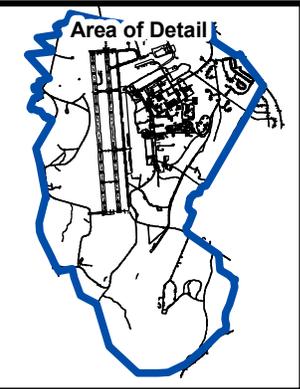


## 4.0 MILITARY MUNITIONS RESPONSE PROGRAM

The areas of concern presented in this Section are currently being, or have been investigated under the Navy's Military Munitions Response Program (MMRP). The Department of Defense established the Military Response Program under the Defense Environmental Restoration Program (DERP) to address munitions and explosive of concern including unexploded ordnance (UXO) and discarded military munitions and munitions constituents at other than operational military ranges and other site. These sites are non-operational ranges and sites located at NAS Brunswick, and the Topsham Annex. A fact sheet for each site is provided in this Section. The on-site MMRP sites discussed in this SMP are located in Figure 4.1.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM Zone 19N			
<b>Sources</b>	Naval Base Boundary provided by Navy.			
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- Road
- Building
- Base Boundary
- Stream & Wetland

**Figure 4-1**

**Location Map  
Former Munitions Areas  
Naval Air Station  
Brunswick, Maine**

ECC Marlborough, MA, C:\NAVY\_GIS\TO07\_Brunswick\GISdata  
MapDocuments\BasewideAOC\_SMP.mxd  
 0 550 1,100 2,200  
 Feet





## UNEXPLODED ORDNANCE (UXO 001) – 3 MAIN BASE AOCs

### 4.1 UNEXPLODED ORDNANCE (UXO 001) – 3 MAIN BASE AOCs

#### 4.1.1. INTRODUCTION

Under the Department of Defense MMRP (Military Munitions Response Program), three unexploded ordnance sites were investigated on Naval Air Station (NAS) Brunswick and are reference to as UXO 001– 3 Main Base AOCs (Areas of Concern). The areas are located on aerial photos Figures 4-2B, 4-2B and 4-2C. These UXO AOCs were originally evaluated in the Preliminary Assessment Report, NAS Brunswick, prepared by Malcolm Pirnie, dated February 2006. A follow up 2008 Draft Final Site Inspection Work Plan, prepared by Tetra-Tech NUS, Inc. on behalf of the Navy, is currently under review. These 3 UXO AOCs are as follows:

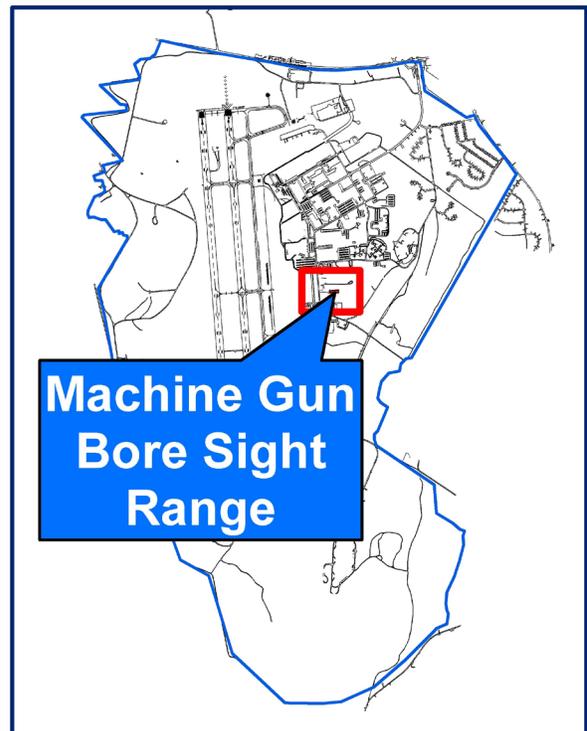
- **The Former Munitions Bunker West Area (Figure 4-2A)**
- **The Machine Gun Bore Sight Range (Figure 4-2B)**
- **The Skeet Range (Figure 4-2C)**

#### 4.1.2. BACKGROUND

The former Munitions Bunker West Areas occupied approximately 29 acres and was located west of the runways at NAS Brunswick. The undeveloped and relatively open area that serves as a buffer for the runways was used sporadically in the 1980s and 2000 for munitions-related security training. Blank small arms ammunitions, practice grenades and limited pyrotechnics were used during the training. The entire former Munitions Bunker West Areas is a suspected munitions and explosives of concern.

The former Machine Gun Bore Sight Range was located in the southeast portion of the

facility where the current Building 55 (former Recycling Facility) is situated and extends to a partly open, partly wooded undeveloped area behind the building. The total area used to test the accuracy of fixed aircraft guns is approximately 0.3 acres. Part of the range is



**Machine Gun Bore Site Range**

now covered with a paved road, a paved parking lot, Building 55 and fenced-in storage areas. Expended machine gun and pistol ammunitions are not considered munitions and explosives of concern; however there is the potential for munitions constituents. The primary constituent of concern is lead. The amount of lead fired into the berm over the period of operation is estimated to be 43 tons. It is unknown if NAS Brunswick had any procedures in place to remove the dispose of



lead during its active phase or when the range area was abandoned. The ultimate disposition of the berm is unknown. No sampling data is available to determine if lead is present at the site.

The former Skeet Range occupies approximately 73.2 acres and was once located in an open field, approximately 75 meters north and 100 meters east of Building 55. The Skeet Range layout was changed and is now located over the unnamed streams and floodplains in the vicinity of where the impoundments ponds at Site 9 are now situated. Lead shot from expended shot gun ammunition is not considered munitions and explosives of concern; however there is the potential for munitions constituents at the site. The primary constituent of concern is antimony, arsenic, nickel and lead azide. No sampling data for these metals is available to determine if these metals are present at the site.

#### **4.1.3. PREVIOUS STUDIES**

The Final Preliminary Assessment (Malcolm Pirnie, February 2006) summarizes each of these three MMRP areas on the main parcel of NAS Brunswick.

The data evaluated in the Former Munitions Bunker West Area indicated that the exposure pathways through surface water, sediment, or surface soil may be of potential concern. However, due to the depth of groundwater in the area, generally between 10 to 20 feet below ground surface (bgs), the impact to groundwater is not expected. The conclusion of the Preliminary Investigation at the Former Munitions Bunker West Area indicated that the potential for munitions and explosives of concern are considered extremely low.

The former Machine Gun Bore Sight Range is not suspected to contain munitions and explosives of concern. Initial field surveys

were conducted in 2008 in an attempt to locate this site but were unable to locate it since the berms which comprised the site were reportedly removed years ago to an undisclosed location.

The lead shot from the shot gun ammunition at the Former Skeet Range is not considered a munitions and explosives of concern; however there is a potential for munitions constituents, primarily lead at the site. The Preliminary Investigation at the Former Skeet Range indicated potential pathways exist for exposure of lead through the surface soils, subsurface soils, surface water, and sediment.

#### **4.1.4. RECENT ACTIVITIES**

A detector-aided sweep was conducted at the Former Munitions Bunker West Site during the summer of 2008. Extensive brush cutting was required before the detector-aided sweep and geophysical survey could be conducted. No MEC was found at the ground surface. Numerous subsurface anomalies were discovered during the sweep but they were all of low intensity and may be indicative of natural conditions but could possibly be MEC. For the Machine Gun Boresight Range and Skeet Range, no MEC was suspected; the Final Preliminary Assessment is the most recent activity at these sites although planning is underway for sampling of media for munitions constituents (MC).

#### **4.1.5 NEXT STEPS**

The Navy will need to clear the Former Munitions Bunker Site prior to conducting sampling activities. This is slated to occur during FY 2010.



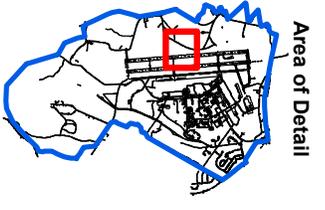
**Former Munitions  
Bunker West Area**

<b>Contract No.</b>	NS2472-02-D-0810		
<b>Description</b>	NASB Brunswick, ME		
<b>Coordinate System</b>	NAD 1983, UTM, Zone 19N In meters		
<b>Sources</b>	2001 digital orthophotographs provided by ME GIS. Base boundary provided by Navy.		
<b>Date</b>	16-MAY-2008	Rev.	Date
<b>Drawn</b>	J. Kim		Approved
<b>CB</b>	A. Easterday		
<b>App.</b>			

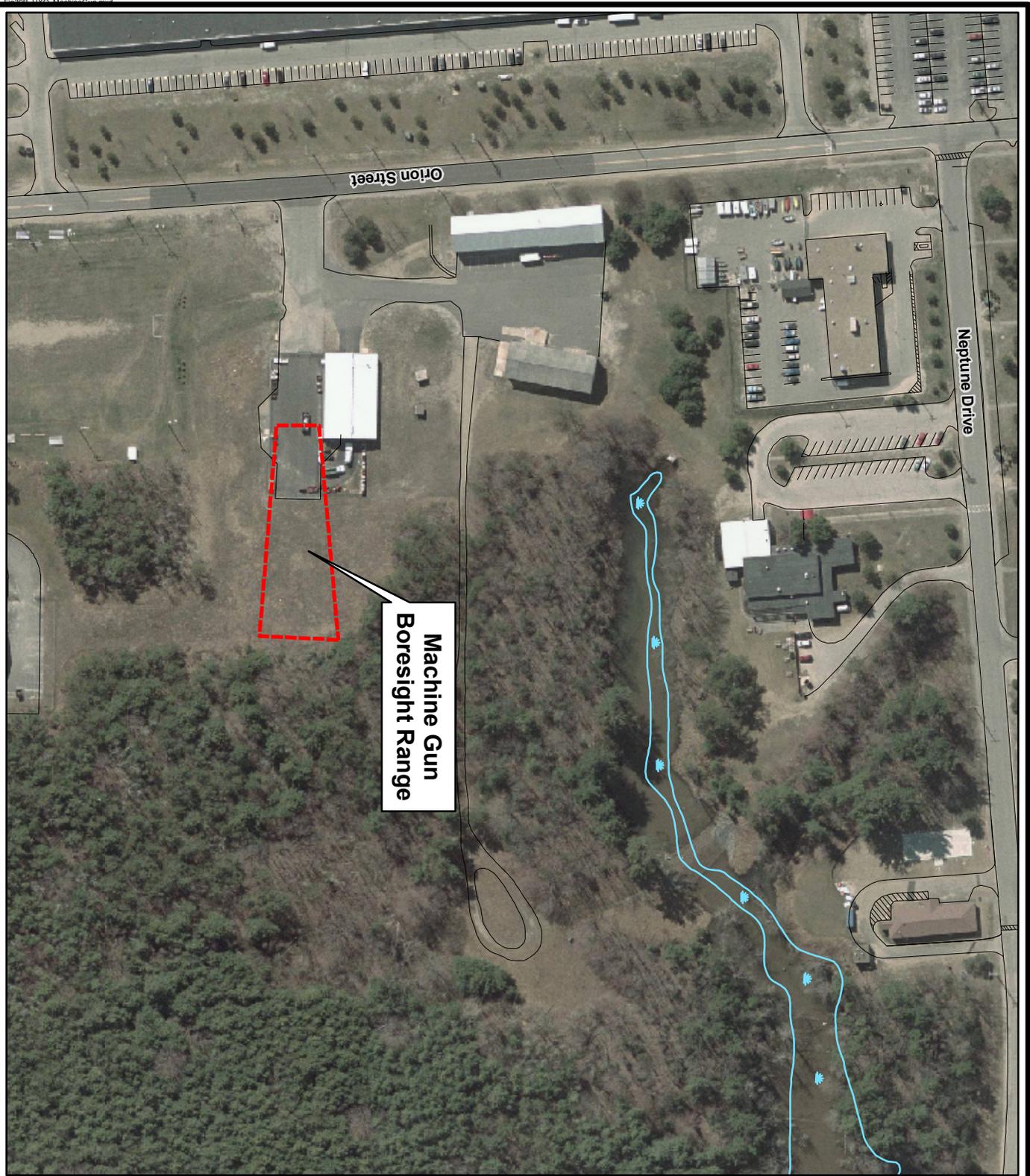
- Legend**
- Road
  - NAS Brunswick Boundary
  - Stream and Wetland
  - Approx. Extent of Area of Concern



**Figure 4-2A**



**Site Plan**  
 Unexploded Ordnance 001  
 3 Main Base Areas of Concern  
 Former Munitions  
 Bunker West Area  
 Naval Air Station  
 Brunswick, Maine



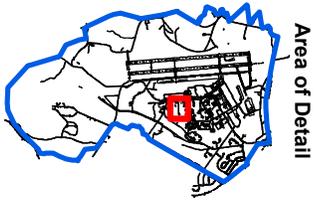
<b>Contract No.</b>	N62472-02-D-0810		
<b>Description</b>	NASB Brunswick, ME		
<b>Coordinate System</b>	NAD 1983, UTM, Zone 19N in meters		
<b>Sources</b>	2001 digital orthophotographs provided by ME GIS, Base boundary provided by Navy.		
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>
<b>Drawn</b>	J Kim		<b>Approved</b>
<b>CB</b>	A. Easterley		
<b>App.</b>			

**Legend**

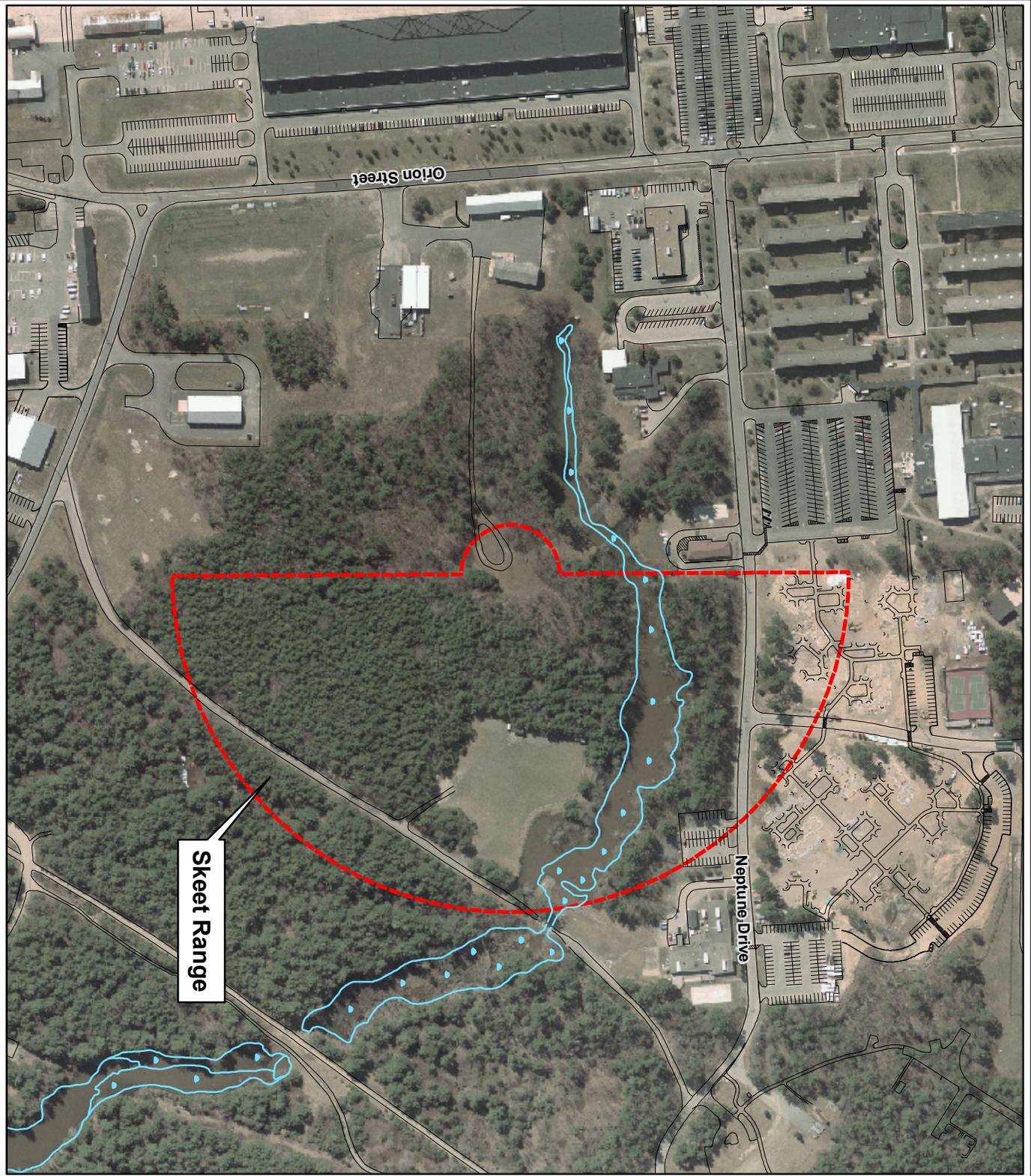
- Road
- NAS Brunswick Boundary
- Stream and Wetland
- Approx. Extent of Area of Concern



**Figure 4-2B**



**Site Plan**  
**Unexploded Ordnance 001**  
**3 Main Base Areas of Concern**  
**Machine Gun Boresight Range**  
**Naval Air Station Brunswick, Maine**

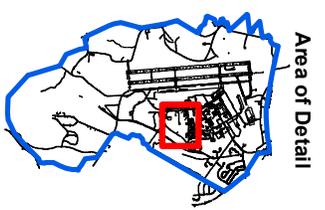


<b>Contract No.</b>	N62472-02-D-0810		
<b>Description</b>	NAS Brunswick, ME		
<b>Coordinate System</b>	NAD 1983, UTM, Zone 19N In meters		
<b>Sources</b>	2001 digital orthophotographs provided by ME GIS. Base boundary provided by Navy.		
<b>Date</b>	16-MAY-2008	Rev.	Date
<b>Drawn</b>	J. Kim		Approved
<b>CB</b>	A. Esterday		
<b>App.</b>			

- Legend**
- Road
  - NAS Brunswick Boundary
  - Stream and Wetland
  - Approx. Extent of Area of Concern



**Figure 4-2C**



**Site Plan**  
**Unexploded Ordnance 001**  
**3 Main Base Areas of Concern**  
**Skeet Range**  
**Naval Air Station**  
**Brunswick, Maine**





## UNEXPLODED ORDNANCE (UXO 002) – SKEET RANGE – TOPSHAM ANNEX

### 4.2 UNEXPLODED ORDNANCE (UXO 002) – SKEET RANGE – TOPSHAM ANNEX

#### 4.2.1. INTRODUCTION

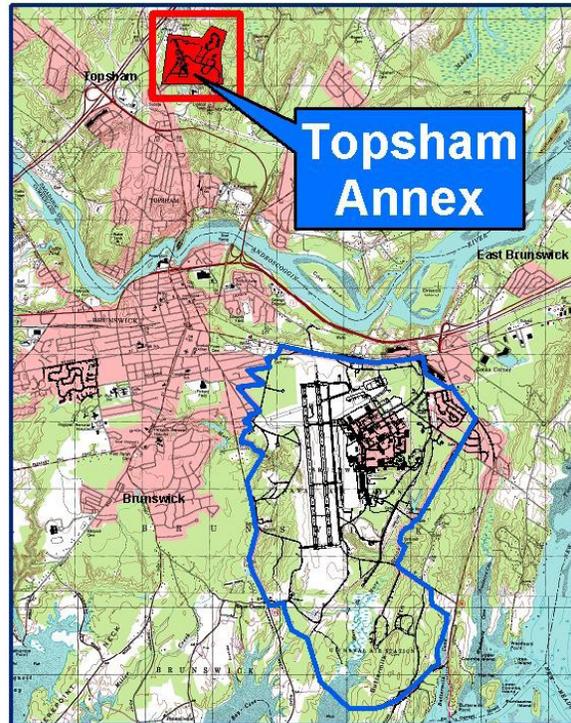
The Former Skeet Range located at the Naval Air Station Brunswick, Topsham Annex, Maine is shown in Figure 4-3. The Former Skeet Range is located in the northern portion of the Topsham Annex along the Navy property line and east of the Mt. Ararat Middle School athletic field.

#### 4.2.2. BACKGROUND

The 29 acres of the former Topsham Annex Skeet Range was reportedly used during the Air Force's occupation of Topsham Annex. Based on the range layout it appears that the direction of fire was toward the north. The majority of the surface danger zone extends off-base onto private property. Signs of the range such as clay targets, wooden posts, concrete pads still remain at the site. Lead shot from expended shot gun ammunition is not considered to be munitions and explosives of concern; however there is the potential for munitions constituents remaining at the Topsham Annex Skeet Range. The primary constituent of concern at the site is lead. Other associated constituents of concern may include: antimony, copper, zinc, arsenic and polycyclic aromatic hydrocarbons from the bullets and related bullet materials. Sampling data is not available on this Site.

#### 4.2.3. PREVIOUS STUDIES

No work was performed at the Skeet Range during the past year although a 2008 Draft Final SI Work Plan is currently under review. The Skeet Range at Topsham Annex was investigated as part of the Final Preliminary Investigation prepared by Malcolm Pirnie, Inc., issued in September 2005.



UXO 2 – Skeet Range – Topsham Annex

#### 4.2.4 NEXT STEPS

The Navy is in the process of determining the appropriate next step for further evaluation of this site but based on the 2008 Draft Final SI Workplan, sampling and evaluation of results will be required.



**Topsham Annex  
Skeet Range**

<b>Contract No.</b>	NS2472-02-D-0810		
<b>Description</b>	NASB Brunswick, ME		
<b>Coordinate System</b>	NAD 1983, UTM, Zone 19N in meters		
<b>Sources</b>	2001 digital orthophotos provided by ME GIS. Base boundary provided by Navy.		
<b>Date</b>	16-MAY-2008	Rev.	Date
<b>Drawn</b>	J. Kim		Approved
<b>CB</b>	A. Easterday		
<b>App.</b>			



- Legend**
- Road
  - NAS Brunswick Boundary
  - Waterbodies
  - Streams
  - Approx. Extent of Area of Concern



**Figure 4-3**



**Site Plan**  
**Unexploded Ordinance 002**  
**Topsham Annex**  
**Topsham, Maine**



## SITE 12 – EXPLOSIVE ORDNANCE DISPOSAL AREA

### 4.3 SITE 12 – EXPLOSIVE ORDNANCE DISPOSAL AREA

#### 4.3.1. INTRODUCTION

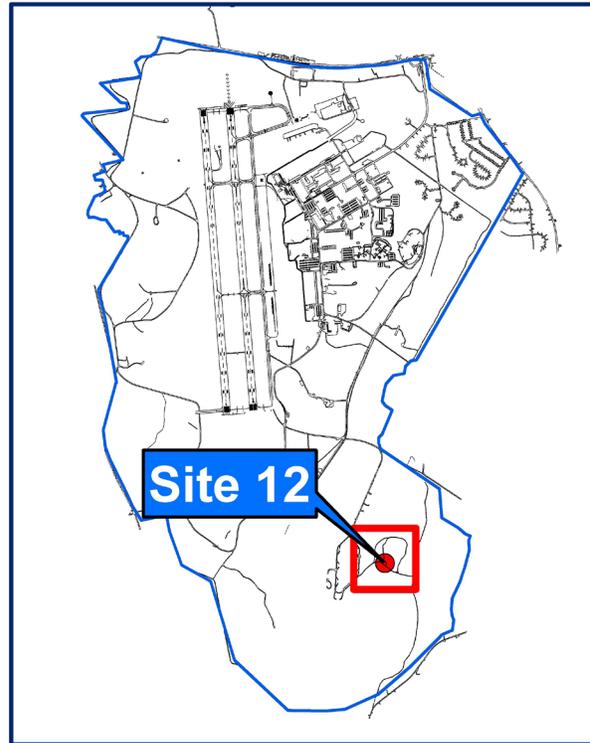
Site 12 is located in the southeast portion of the Base (Figure 4-4). The Explosive Ordnance Disposal (EOD) area occupies most of a former sand/gravel pit located on Buttermilk Mountain, approximately 4,307 ft southeast of Building 5390 in the Weapons Compound. The EOD consists of a bermed area, approximately 60 X 100 ft, with 5 to 6-ft berms. The EOD area occupies approximately 50 percent of the area suspected of being a former sand/gravel pit. This site is under the Navy's IRP and is concurrently being investigated under the Navy's Military Munitions Response Program (MMRP).

#### 4.3.2. BACKGROUND

Prior to its deactivation in 2004, Site 12 was used for disposal of small quantities of ordnance, pyrotechnics, privately manufactured explosive devices, and war souvenirs. In 1989, two small demolition craters and a dumpster were located within the bermed area at the site. The dumpster was reportedly used for flashing small quantities of explosives and/or propellants, such as grenade fuses. One control bunker is approximately 100 ft from the pit. Military personnel occupied the bunker during detonation of charges (ECC and EA 2005).

#### 4.3.3. PREVIOUS STUDIES

The Initial Assessment Study (IAS) completed in June 1983, identified the EOD area as a range or impact zone (Weston 1983).



Explosive Ordnance Disposal Area

Test pits, soil samples, and interviews with the EOD detachment were conducted during the supplemental remedial investigation on 2 March 1989.

Based on the quantities of involved, low level contamination of unburned explosive residues and elevated concentrations of lead, cadmium, chromium, and mercury may be present in the surface soils at the Site. Elevated levels of aluminum (from aluminum perchlorate) may also be present on the basis of the former activities at the Site (E.C. Jordan 1991a). As described in the July 1991 Draft Final Supplemental Feasibility Study, field investigations at this site were conducted between August and November



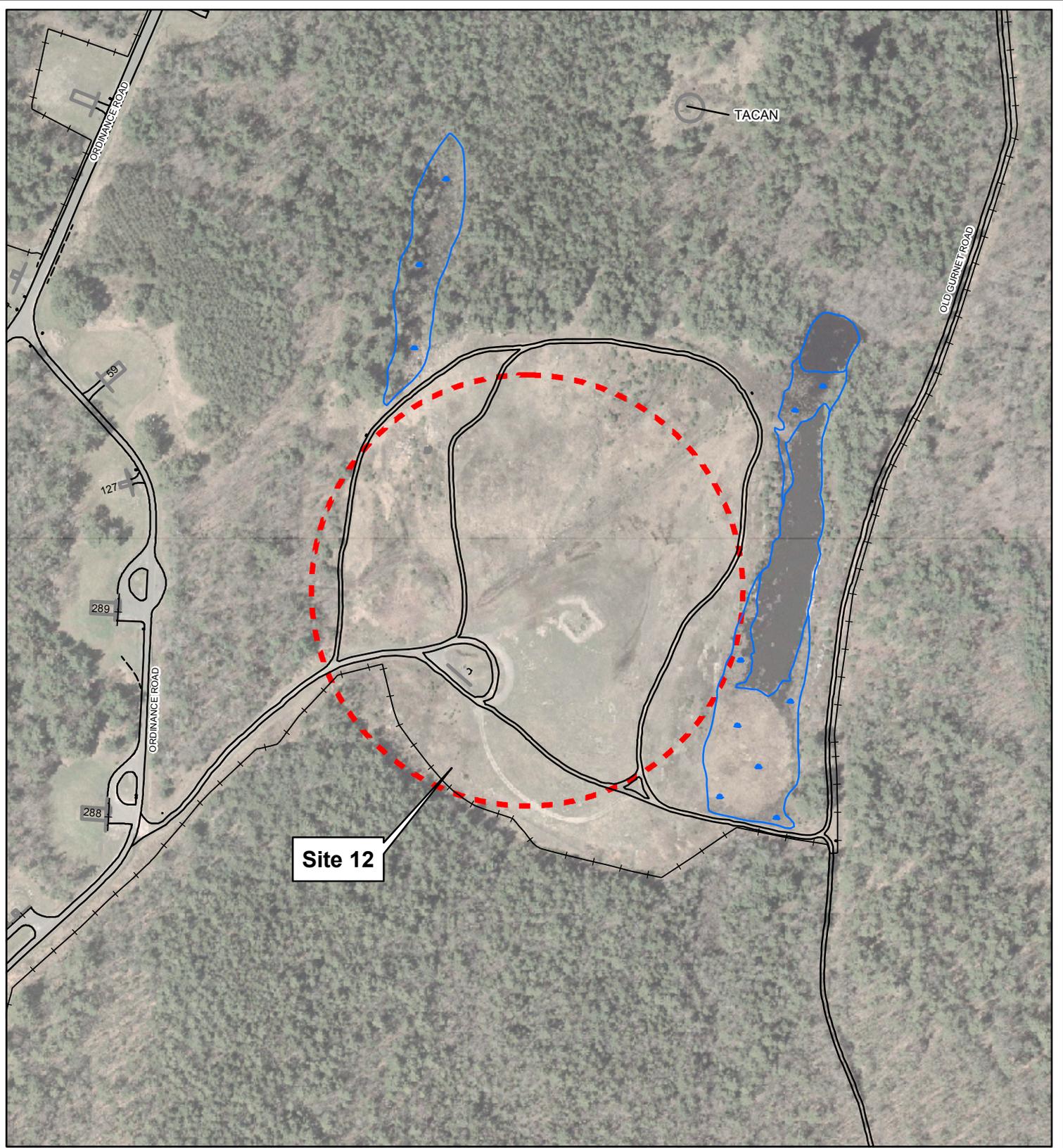
1990 consisting of geophysical surveys, test pitting and soil and groundwater sampling and analysis. No explosives or explosive by-products were found in the soil. Low concentrations of inorganics were found but these concentrations fell within background levels. This site is currently under further investigation. The Navy is currently in the process of conducting a Remedial Investigation at Site 12. Further historic information on Site 12 is provided in the Draft Final Supplemental Remedial Investigation Report, Naval Air Station Brunswick, Maine (E.C. Jordan. 1991. August)

#### **4.3.4. RECENT ACTIVITIES**

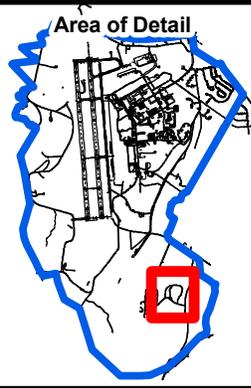
The MEC work plan was finalized in June 2008. During the summer of 2008, the field work commenced with a detector-aided sweep of the existing and historical bermed areas at the Site 12 EOD Area. MEC items were encountered as expected and numerous subsurface anomalies were indicated during the subsequent geophysical survey. Beyond the bermed areas, a detector-aided sweep was conducted along transects spaced over the site to aid in refining site boundaries; one MEC item was found at the ground surface. Extensive brush clearing was required prior to the sweep beyond the bermed areas. As of 1 June 2004, EOD activities at NAS Brunswick were officially deactivated.

#### **4.3.5 NEXT STEPS**

- The Navy will need to clear the EOD Site prior to conducting sampling activities. This is slated to occur during FY 2010.
- Further investigate the soil and groundwater at Site 12 to confirm the 1991 RI/FS findings, to look for perchlorate.
- Update/revise institutional control boundary, as necessary.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983 UTM Zone 19N			
<b>Sources</b>	Naval Base Boundary provided by Navy.			
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



- Legend**
- Fence
  - Building
  - Road
  - Stream & Wetland
  - Approximate Site Area

**Figure 4-4**

**Site Plan  
Site 12  
Explosive Ordnance  
Disposal Area  
Naval Air Station  
Brunswick, Maine**

ECC Marlborough, MA  
C:\NAVY\_GIS\TO07\_Brunswick\Site12\  
MapDocuments\Site12\_SMP.mxd

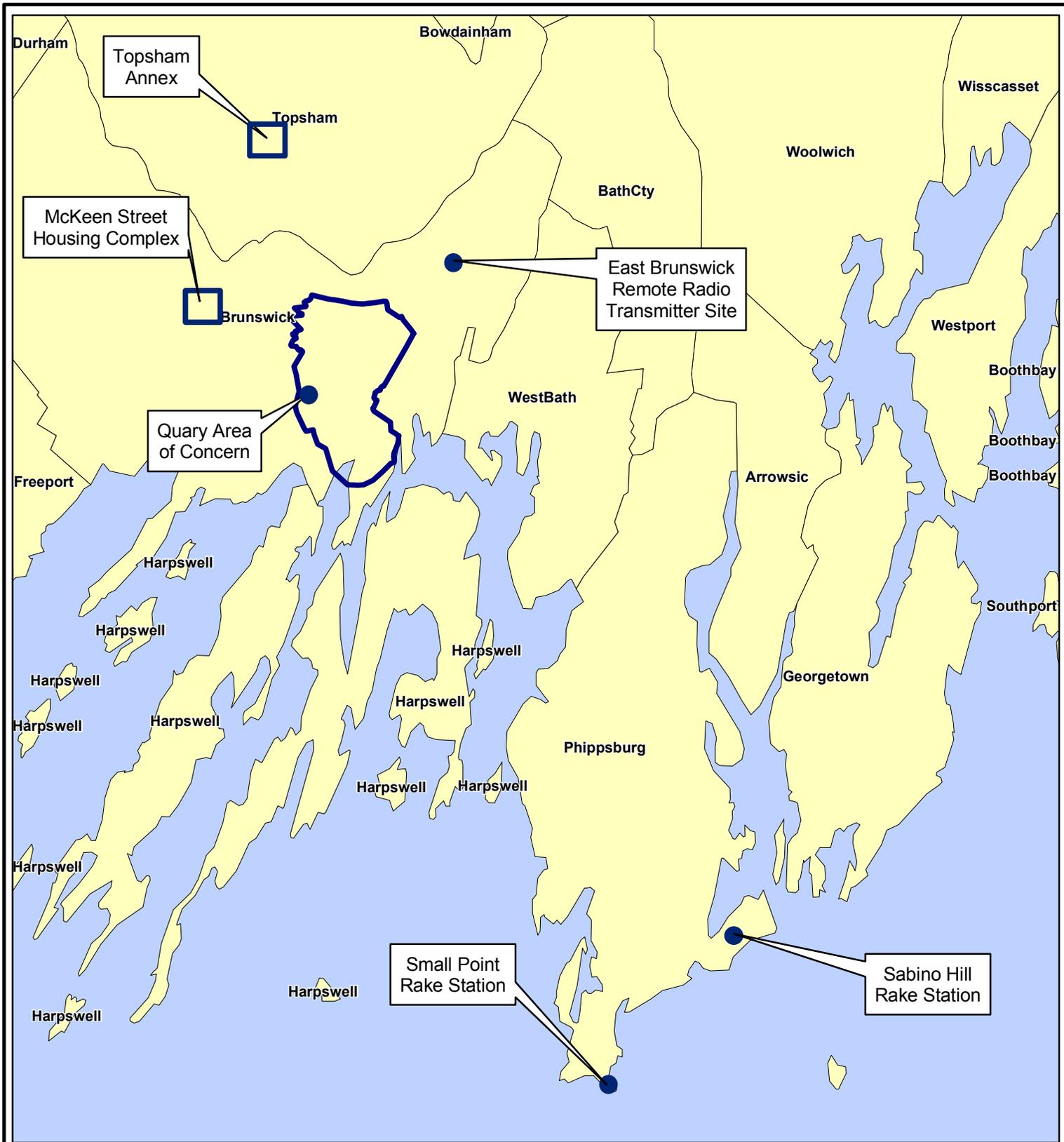
0 90 180 360 Feet





## 5.0 AREAS OF CONCERN

The areas of concern outlined in this Section have been identified by the Project Stakeholders as potential Areas of Concern either within the property boundary of Naval Air Station Brunswick and within the surrounding area. The Areas of Concern discussed in this SMP are located in Figure 5.1.



Contract No.	N62472-02-D-0810			
Description	NASB Brunswick, ME			
Coordinate system	NAD 1983 UTM Zone 19N			
Sources	Naval Base Boundary provided by Navy.			

Date	Rev.	Date	App. By
16-MAY-2008			
DB	C. Guido		
CB	A. Easterday		
AB			



**Legend**  
 Approximate Property Area

**Figure 5-1**

**Location Map  
 Areas of Concern  
 Naval Air Station  
 Brunswick, Maine**

ECC Marlborough, MA  
 C:\NAVY\_GIS\TO07\_Brunswick\GISData\MapDocuments\LocOverview\_SMP\_v1.mxd

0 3,050 6,100 12,200 Feet





## EAST BRUNSWICK REMOTE RADIO TRANSMITTER

### 5.1 EAST BRUNSWICK REMOTE RADIO TRANSMITTER

#### 5.1.1. INTRODUCTION

The East Brunswick Remote Radio Transmitter site is located about 4,000 feet from the southeast of the Androscoggin River, between Route 1 and Old Bath Road and about 3.2 miles northeast of the main station (found in EBS) (Figure 5-2)

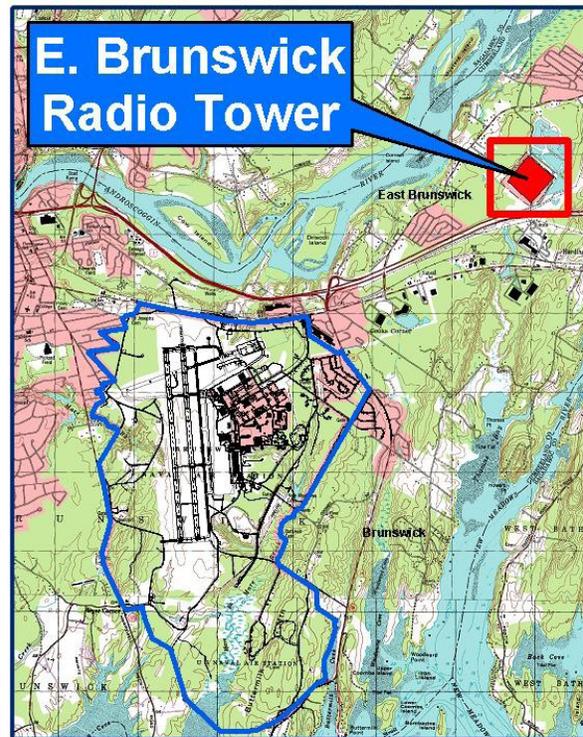
#### 5.1.2. BACKGROUND

The site is situated on a level, sandy terrain. The site is a diamond-shaped tract approximately 66 acres in size and is adjoined by gravel pits, farmland, and woods. The property is largely covered in blueberry heath. The Navy originally developed the site as a radio communications facility consisting of an operations building and an ancillary emergency generator building in 1956. Other buildings were constructed in the early 1960's as evident in historical maps and aerial photographs. Since the use of the site as a communications facility ended, the site has been reportedly used to store building materials by the Naval Weather Office, and also possibly for blueberry farming. Prior to 1956, the site was possibly utilized as pastureland (found in EBS). The transmitter and the antenna array have been dismantled. Buildings 523 and 524 were demolished in 1998 (found in ECP).

#### 5.1.3. PREVIOUS STUDIES

An Environmental Baseline Survey for Transfer (EBS) was published in September 2003. Facility management staff and review of available records indicated that no specific hazardous materials use or storage has been recorded on the East Brunswick Site. No groundwater monitoring was conducted at the property. No soil sampling was conducted at

the property. No sediment and seep sampling was conducted at the property either (found in EBS).



East Brunswick Radio Tower

#### 5.1.4. RECENT ACTIVITIES

In May 2006, the Navy finalized an Environmental Condition of Property Report. The report summarized that the East Brunswick Report Radio Transmitter site was judged to have a low sensitivity for both prehistoric and historic archaeological sites based on a 1999 cultural resources survey (from ECP).

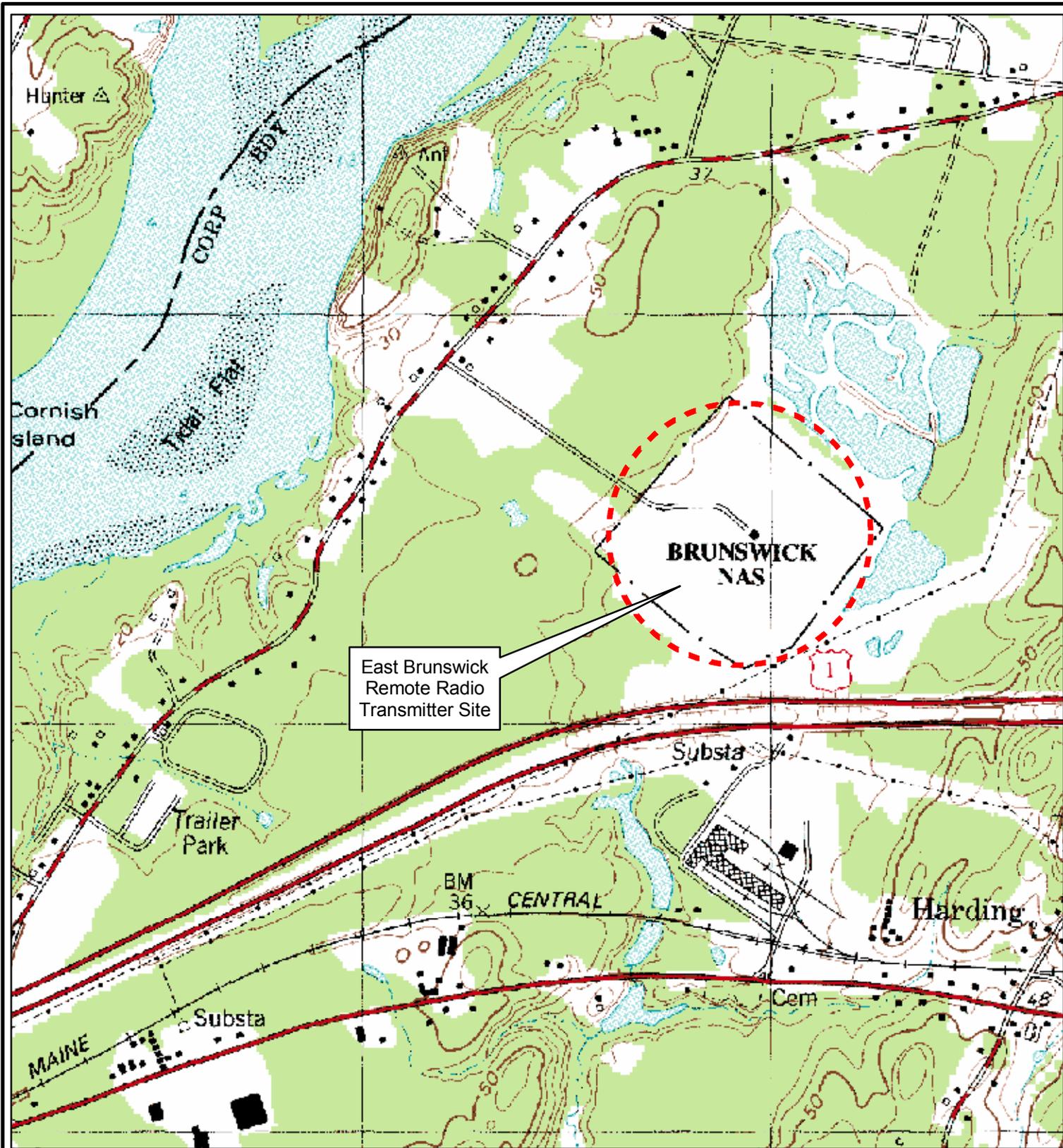
In late 2006, a Draft Community Environmental Response Facilitation Act (CERFA) Identification of Uncontaminated



Property Report was generated by the Navy. The report included information gathered from historical maps and photos, interviews and visual inspections, among other sources. The groundwater flow direction was undetermined. Debris piles and dumping was found on the southwest adjacent property during the visual site inspection. The former antenna towers, due to their age, are suspected as having had lead based paint and therefore a potential contaminant source.

#### **5.1.5 NEXT STEPS**

The East Brunswick site is currently being evaluated as part of the NAS Brunswick Environmental Impact Assessment Process which expected to be completed within 18 months (by 2010).



Contract No.	N62472-02-D-0810			
Description	NASB Brunswick, ME			
Coordinate system	NAD 1983, State Plane, Connecticut, in feet			
Sources	Naval Base Boundary provided by Navy.			
Date	16-MAY-2008	Rev.	Date	App. By
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

 Approx. Extent of Area of Concern

**Figure 5-2**

**Location Map  
East Brunswick  
Remote Radio  
Transmitter  
Brunswick, Maine**

ECC Marlborough, MA  
C:\NAVY\_GIS\TO07\_Brunswick\GISdata\LocMapEBRadioTransmitter\_SMP.mxd  
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## QUARRY SITE – AREA OF CONCERN

### 5.2 QUARRY SITE – AREA OF CONCERN

#### 5.2.1. INTRODUCTION

Area of Concern (AOC) - Quarry Site – is located west of the southern portion of the Naval Air Station Brunswick runways (Figure 5-3).

#### 5.2.2. BACKGROUND

The Quarry Site falls under the Military Munitions Response Program (MMRP). It is believed that the historical use of the quarry had been as an EOD (explosive ordnance disposal) area. It is also believed that the quarry was used before the EOD area known as IR (Installation Restoration) Site 12 was established in the Weapons Compound area.

#### 5.2.3. PREVIOUS STUDIES

The MMRP Preliminary Assessment (PA) was tasked to look at the historical documents related to the area.

#### 5.2.4. RECENT ACTIVITIES

A UXO sweep was conducted at the Quarry during the summer of 2008. Extensive brush cutting was required before the detector-aided sweep and geophysical survey could be conducted. One item of MEC, a rocket motor, was found at the ground surface. Numerous subsurface anomalies of various sizes were discovered during the subsequent geophysical survey that could be indicative of either buried trash/debris or possibly MEC

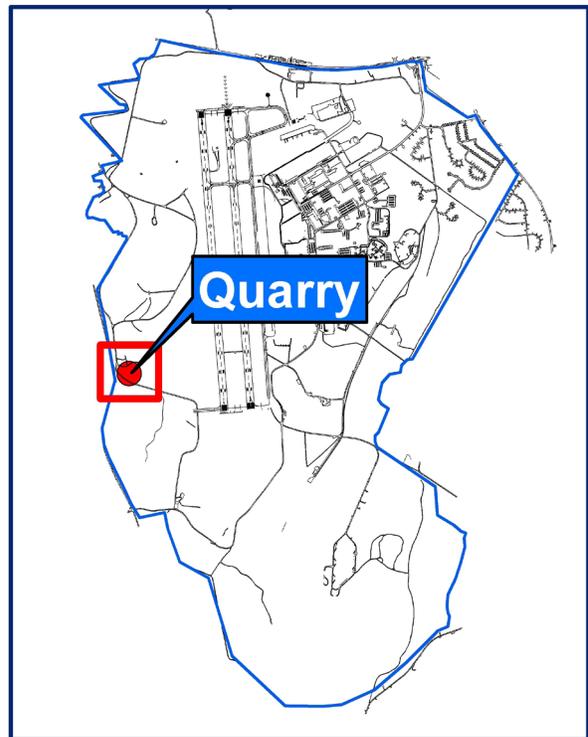
The draft MMRP Preliminary Assessment Addendum for Site 12 and AOC Quarry was submitted by to the Stakeholders in January

2007. It is currently in review.

The schedule for the MMRP Addendum PA and MMRP SI (Site Investigation) Work Plan by Malcolm Pirnie is forthcoming. There is a 45 day regulatory review period.

Comments are due to Navy approximately 03 Jan 07 with a 30 day window to incorporate comments into Draft Final PA addendum.

A rough Draft SI Work Plan on all MMRP AOCs plus Site 12 to is to be delivered to Stakeholders by



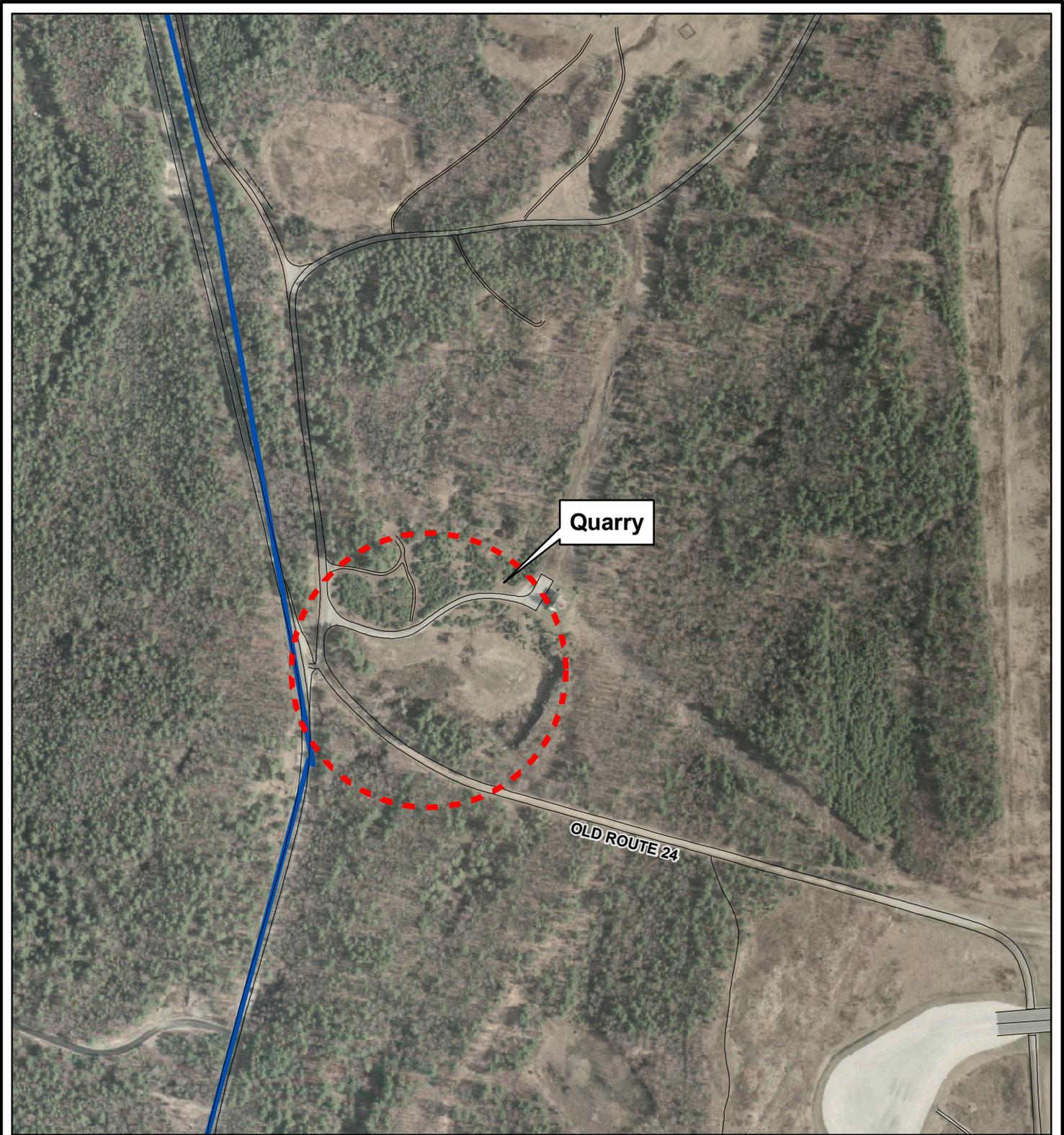
Quarry Site – Area of Concern

approximately 09 January 2007. There is a 45 Day Regulatory review period. Comments are due to Navy approximately 26 Feb 07 with a 30 day window to incorporate comments into Draft Final SI Work Plan.

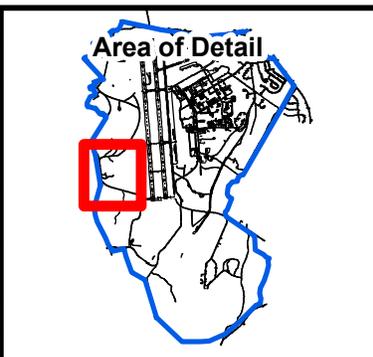


#### **5.2.5. NEXT STEPS**

The Navy will need to clear the Quarry Site prior to conducting sampling activities. This is slated to occur during FY 2010.



<b>Contract No.</b>	N62472-02-D-0810			
<b>Description</b>	NASB Brunswick, ME			
<b>Coordinate system</b>	NAD 1983, UTM, Zone 19N in meters			
<b>Sources</b>	2001 digital orthophotographs provided by ME GIS. Base boundary provided by Navy.			
<b>Date</b>	16-MAY-2008	<b>Rev.</b>	<b>Date</b>	<b>App. By</b>
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

- Road
- NAS Brunswick Boundary
- Approx. Extent of Area of Concern

**Figure 5-3**

**Site Plan  
Quarry  
Area of Concern  
Naval Air Station  
Brunswick, Maine**

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## MCKEEN STREET HOUSING - BRUNSWICK, MAINE

### 5.3 MCKEEN STREET HOUSING – BRUNSWICK, MAINE

#### 5.3.1 INTRODUCTION

The McKean Street housing area is located approximately three miles from the main base on the west side of central Brunswick. This area is a roughly square tract of land 70 acres southwest of the intersection of McKean Street and Baribeau Drive. The site contains 231 units of Capehart housing in a suburban setting. The terrain at McKean Street is sandy and nearly level. (Figure 5-5).

#### 5.3.2 BACKGROUND

The housing was constructed in the early 1960's. Between 1983 and 1995, all heating fuel USTs (underground storage tanks) for housing units were removed from Naval Air Station Brunswick. The USTs at housing units, such as those at McKean Street, were removed and replaced with ASTs (aboveground storage tanks).

#### 5.3.3 PREVIOUS STUDIES

An Environmental Baseline Survey for Transfer (EBS) was published in September 2003. The report found that hazardous materials have neither been used nor stored in the McKean Street housing area in significant quantities. Small quantities (a single week's supply) of household cleansers and paints are kept in the maintenance building that serves the McKean Street housing area. Facility management staff and review of available records indicated that no groundwater monitoring is being conducted at the property. No soil sampling was being conducted at the property and no sediment and seep sampling was conducted at the property (found in EBS). However, 801 gallons of unspecified material

leaked from an underground storage tank at a residence and a leaking supply line was discovered. Soil was removed to DEP's



McKean St. Housing

(Department of Environmental Protection) satisfaction in July 1994 (found in CERFA).

#### 5.3.4 RECENT ACTIVITIES

In May 2006, the Navy finalized an Environmental Condition of Property Report. The report summarized that the

McKean Street housing complex was judged to have a low sensitivity for both prehistoric and historic archaeological sites based on a 1999 cultural resources survey. The report concluded that the housing complex may be CERFA eligible, if hazardous substance

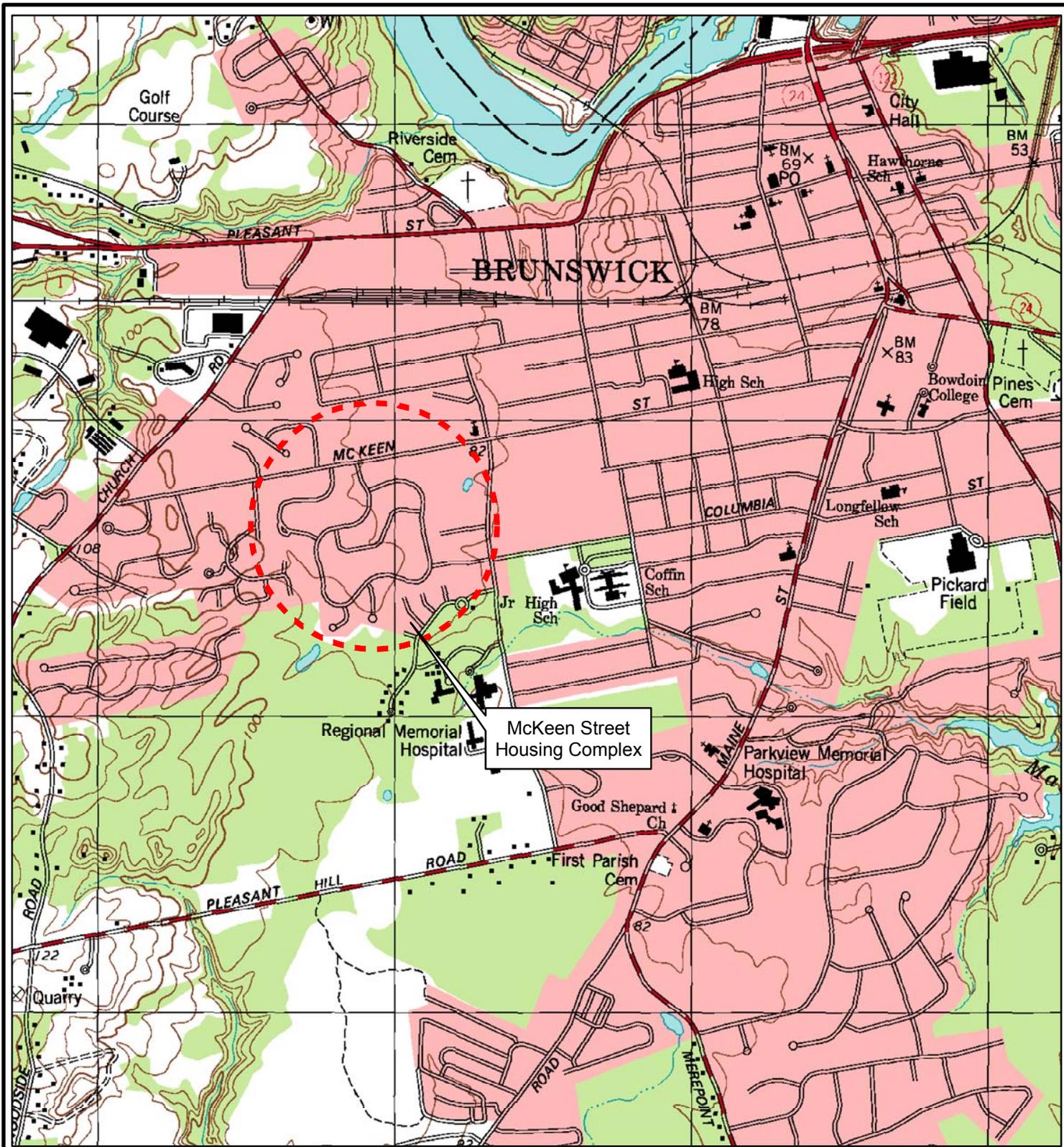


storage has been for less than one year and if there were no releases of the hazardous substance (found in ECP).

In late 2006, a Draft Community Environmental Response Facilitation Act (CERFA) Identification of Uncontaminated Property Report was generated by the Navy. The report included information gathered from historical maps and photos, interviews and visual inspections, among other sources. Since the housing was built in the early 1960's, lead based paint and heating oil were suspected as potential contaminant sources. Currently, the housing is heated with natural gas.

#### **5.3.5. NEXT STEPS**

The McKeen Street Housing complex site is currently being evaluated as part of the NAS Brunswick Environmental Impact Statement Process which expected to be completed within 18 months (by 2010).



Contract No.	N62472-02-D-0810			
Description	NASB Brunswick, ME			
Coordinate system	NAD 1983, State Plane, Connecticut, in feet			
Sources	Naval Base Boundary provided by Navy.			
Date	16-MAY-2008	Rev.	Date	App. By
DB	C. Guido			
CB	A. Easterday			
AB				



**Legend**

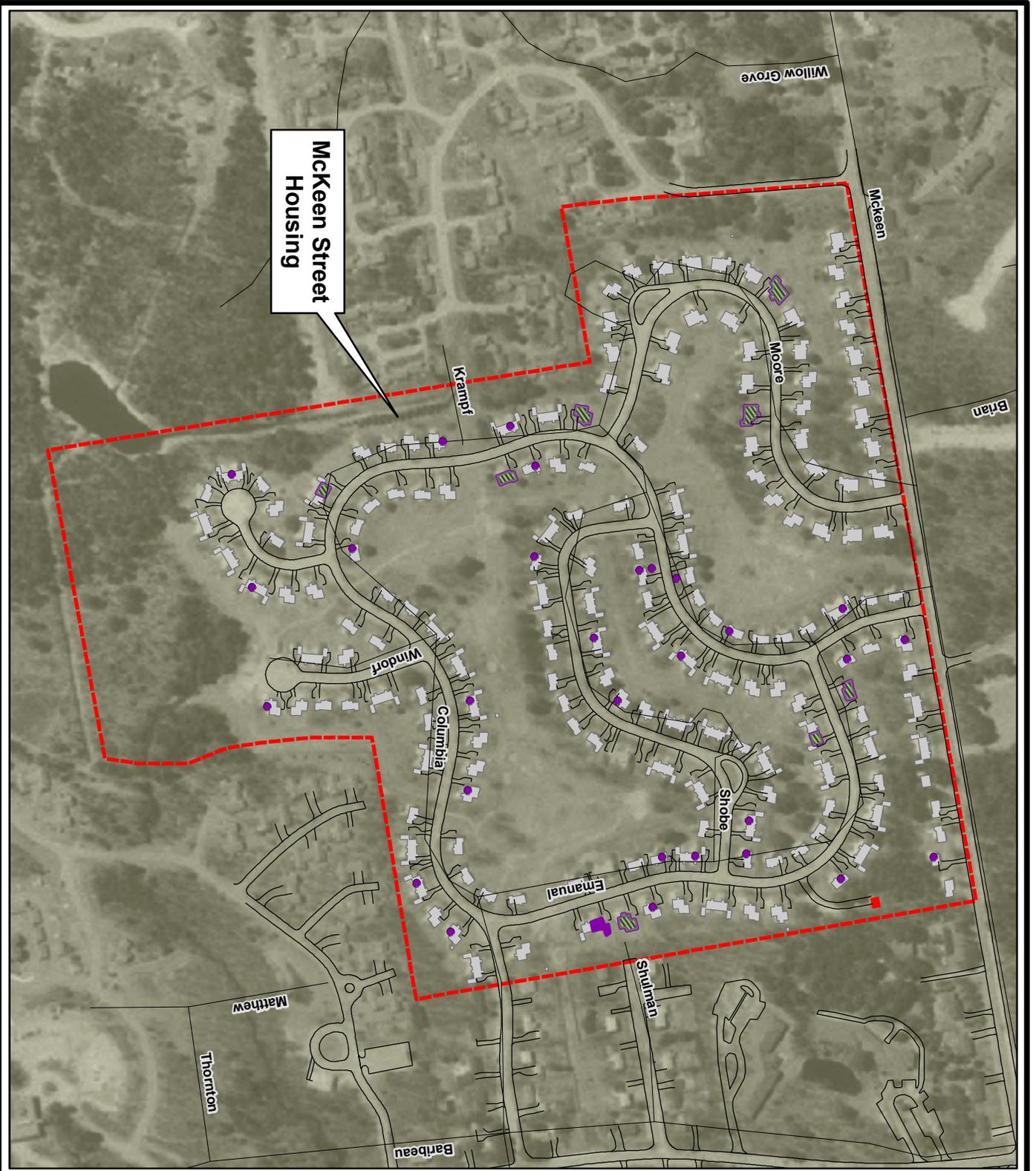
 Approx. Extent of Area of Concern

**Figure 5-4**

**Location Map  
McKean Street  
Housing Complex  
Brunswick, Maine**

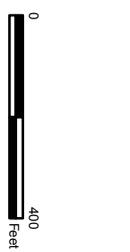
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<b>Contract No.</b>	N62472-02-D-0810		
<b>Description</b>	NASB Brunswick, ME		
<b>Coordinate System</b>	NAD 1983, UTM, Zone 19N in meters		
<b>Sources</b>	Naval Base Boundary provided by Navy; Mckeen Boundary and roads provided by T1 NUS.		
<b>Date</b>	16-MAY-2008	Rev	Date
<b>Drawn</b>	J. Kim		Approved
<b>CB</b>	A. Easterday		
<b>App.</b>			

- Legend**
- Radon - Mckeen & Topsham
  - Road
  - Streams
  - Waterbodies
  - Air Emissions Sources
  - Asbestos
  - Lead-Based Paint
  - McKeen Street Housing Area Boundary



**Figure 5-5**



**Site Plan**  
**McKeen Street Housing**  
**Brunswick, Maine**



## SABINO HILL AND SMALL POINT RAKE STATIONS

### 5.4 SABINO HILL AND SMALL POINT RAKE STATIONS

#### 5.4.1 INTRODUCTION

Sabino Hill Rake Station, also referred to as Station No. 1 or Building 558, is approximately .23 acres in size. Small Point Rake Station, also referred to as Station No. 2 or Building 557 is approximately .23 acres in size. The two Rake Stations are shown in Figure 5-6.

#### 5.4.2 BACKGROUND

Both rake stations are depicted in historical maps as early as 1962 and aerial photos as early as 1975.

Sabino Point (Rake Station No. 1) is a metal tower located approximately 14 miles southeast of the main station in Phippsburg, Maine. Improvements include a tower and small building. The site is an active “Rake Tower” used for aircraft test runs and to observe offshore training exercises.

Small Point (Rake Station No. 2) is a concrete tower also located approximately 14 miles southeast of the main station in Phippsburg, Maine. Improvements include a tower and small building. The site is also an active “Rake Tower” used for aircraft test runs and to observe offshore training exercises.

#### 5.4.3 PREVIOUS STUDIES

Until the recent past, no formal investigations have taken place at either of the two rake stations.

#### 5.4.4 RECENT ACTIVITIES

In late 2006, a Draft Community Environmental Response Facilitation Act (CERFA) Identification of Uncontaminated

Property Report was generated by the Navy. The report included information gathered from historical maps and photos, interviews and visual inspections of the stations, among other sources. During the visual site



**Sabino Hill and Small Point Rake Stations**

inspection, paint was observed peeling from both towers and chips of paint were found on the ground.

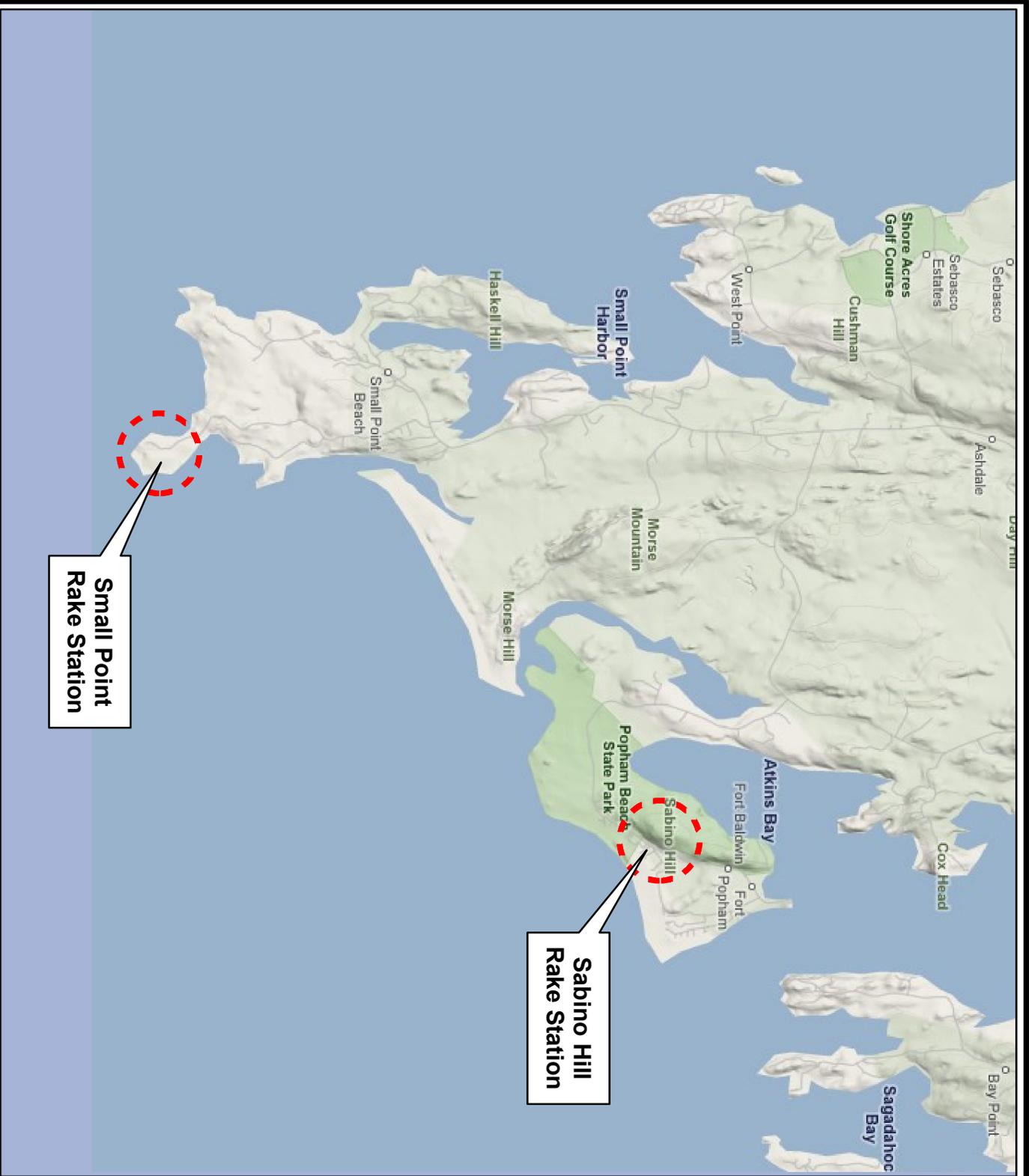
Soil and paint samples were collected for lead and PCB (polychlorinated biphenyls) analyses from the Sabino Hill Rake Station. Based on the limited number of samples and the uncertainty associated with the PCB test results, the sampling results were considered inconclusive (CERFA, TetraTech NUS, 2006).



A soil sample was collected from near the Small Point Rake Station for lead and PCB analyses. Paint samples were not collected because there were very few painted surfaces on the concrete tower. Based on the limited number of samples (one) and the uncertainty associated with the PCB test result, the sampling results were considered inconclusive.

#### **5.4.5 NEXT STEPS**

- The Sabino site is currently being evaluated as part of the NAS Brunswick Environmental Impact Statement Process which expected to be completed within 18 months (by 2010).
- Small Point is private owned property that is currently leased to the Navy. The Navy is currently evaluating requirements to complete the terms of the Lease and return the property to the private landowner.



<b>Contract No.</b>	N6247-02-D-0810		
<b>Description</b>	NASB Brunswick, ME		
<b>Coordinate System</b>	NAD 1983, UTM, Zone 19N in meters		
<b>Sources</b>	Naval Base Boundary provided by ME GIS, Small Point 7.5 minute quadrangles provided by USGS.		
<b>Date</b>	16-MAY-2008	Rev.	Date
<b>Drawn</b>	J. Kim		Approved
<b>CB</b>	A. Easterday		
<b>App.</b>			



**Legend**  
 Rake Stations



**Figure 5-6**



**Location Map**  
 Sabino Hill & Small Point  
 Naval Air Station  
 Brunswick, Maine





## 6.0 ADMINISTRATIVE PROGRAMS

These items outlined in this Section are presented to provide general information regarding various basewide program management tasks, such as technical meetings, Restoration Advisory Board (RAB) meetings, Community Relations Plan, and the Navy newsletter.

**6.1 Technical Meetings** – The Navy periodically schedules technical meetings in the Brunswick/Portland Area based on program requirements. During these meeting and conference calls, the Project Stakeholders discuss technical aspects of the sites, progress towards remediation of sites (or areas of concern), and tracking program status such as reviewing five-year milestones.

**6.2 Restoration Advisory Board (RAB) Meetings** – During 2008, the Navy, MEDEP, and EPA have scheduled 4 Restoration Advisory Board Meetings. The Restoration Advisory Board Meetings are held in Brunswick, Maine at different locations within the town from 7:00 PM to 9:00 PM in the evenings. During these meetings, the Navy, in conjunction with the EPA and MEDEP, inform RAB Members and other interested citizens of remediation status of various sites, review site data, and present new site information as it becomes available. The RAB Co-Chairs set the meeting agendas. The 2009 schedule for NAS Brunswick RAB Meetings will be discussed at the December 2008 RAB Meeting

**6.3 Community Relations Plan** – During 2008, the Navy updated and revised the Community Relations Plan that was originally issued in September 1988. The Final Community Relations Plan was issued to Project Stakeholders on 15 April 2008. This document will guide the Navy's community relations activities for NAS Brunswick.

**6.4 Newsletter** – During 2009, the Navy plans to issue one or more newsletters when sufficient new information becomes available to distribute to the environmental stakeholders and members of the community.





## 7.0 SCHEDULE

The proposed schedule for this SMP document is provided in Appendix B. It should be noted that schedules provided for this SMP may regularly change based on numerous factors such as funding availability, challenges experienced during execution of fieldwork, resolution of complex technical issues, etc. As a result, it is anticipated that SMP schedules will be updated periodically.





## 8.0 NAS BRUNSWICK KEY PROJECT TEAM CONTACT INFORMATION

### KEY PROJECT CONTACTS

#### UNITED STATES NAVY

**Todd Bober**

Remedial Project Manager  
United States Navy  
BRAC Program Management Office Northeast  
Building 679, Naval Business Center  
4911 South Broad Street  
Philadelphia, Pennsylvania 19112-1303  
Phone: (215) 897-4911  
Email: [todd.bober@navy.mil](mailto:todd.bober@navy.mil)

**Paul F. Burgio**

BRAC Environmental Coordinator (BEC)  
United States Navy  
BRAC Program Management Office Northeast  
Building 679, Naval Business Center  
4911 South Broad Street  
Philadelphia, Pennsylvania 19112-1303  
Phone: (215) 897-4915  
Email: [paul.burgio@navy.mil](mailto:paul.burgio@navy.mil)

#### MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

**Claudia Sait**

Project Manager – Federal Facilities  
State of Maine  
Department of Environmental Protection  
Bureau of Remediation & Waste Management  
17 State House Station  
Augusta, Maine 04333-0017  
Phone: (207) 287-7713  
Email: [claudia.b.sait@state.me.us](mailto:claudia.b.sait@state.me.us)

#### UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

**Michael Daly**

Remedial Project Manager



United States Environmental Protection Agency  
New England Region 1  
Federal Facility Superfund Section  
Suite 1100 (HBT)  
1 Congress Street  
Boston, Massachusetts 02114  
Phone: (617) 918-1386  
Email: [Daly.Mike@epamail.epa.gov](mailto:Daly.Mike@epamail.epa.gov)

## **NAVAL AIR STATION BRUNSWICK**

### **Lisa Joy**

Environmental Director  
United States Navy  
Naval Air Station Environmental Office  
437 Huey Drive, Bldg 53  
Brunswick, Maine 04011-5008  
Phone: (207) 921-1720  
Email: [lisa.joy@navy.mil](mailto:lisa.joy@navy.mil)

### **John James**

Public Affairs Officer  
United States Navy  
Naval Air Station  
1251 Orion Street, Bldg 250, 3<sup>rd</sup> Floor  
Brunswick, Maine 04011-5008  
Phone: (207) 921-2000  
Email: [john.james@navy.mil](mailto:john.james@navy.mil)

## **ENVIRONMENTAL AND ACTIVE CITIZENS GROUPS CONTACTS**

### **Restoration Advisory Board (RAB) Co-Chairman**

#### **Captain Will A. Fitzgerald – Navy Co-Chair**

United States Navy  
NAS Brunswick Commanding Officer  
1251 Orion Street  
Brunswick, Maine 04011  
Email: [william.a.fitzgerald@navy.mil](mailto:william.a.fitzgerald@navy.mil)

#### **Suzanne Johnson, Esq. – Citizen Co-Chair**

Town of Brunswick Representative  
McTeague Higbee Case Cohen Whitney & Toker, PA  
Four Union Park P.O. Box 5000  
Topsham, Maine 04086  
Email: [suzanne.jhnsn@gmail.com](mailto:suzanne.jhnsn@gmail.com)



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**Brunswick Area Citizens for a Safe Environment (BACSE)**

**BACSE**

P. O. Box 245  
Brunswick, Maine 04011  
Ed Benedikt - President  
Email: [rbenedik@gwi.net](mailto:rbenedik@gwi.net)  
Website: <http://community.curtislibrary.com/BACSE/index.html>

**Technical Advisor to BACSE**

Carolyn Lepage, C.G.  
Lepage Environmental Services, Inc.  
P.O. Box 1195  
Auburn, Maine 04211-1195  
Phone: (207) 777-1049  
Email: [calepage@adelphia.net](mailto:calepage@adelphia.net)

**Midcoast Regional Redevelopment Authority (MRRA)**

**Victoria Boundy**

MRRA  
5450 Fitch Avenue, Bldg 37  
Brunswick, Maine 04011  
Phone: (207) 798-6512  
Email: [victoriab@mrra.us](mailto:victoriab@mrra.us)  
Website: <http://www.mrra.us/>





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## WEBSITE REFERENCES

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<http://www.globalsecurity.org/military/facility/brunswick.htm>

Naval Air Station Brunswick Web Page

<http://nasbrunswick.navy-env.com>

## **APPENDIX A**

- A1. RESPONSES TO REGULATOR COMMENTS**
- A2. CONCURRENCE LETTERS**



**A1. RESPONSES TO REGULATOR COMMENTS**



**RESPONSE TO COMMENTS FROM THE  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
ON THE PRELIMINARY DRAFT SITE MANAGEMENT PLAN  
NAVAL AIR STATION BRUNSWICK, BRUNSWICK, MAINE**

<b>Commenter: Christine A.P. Williams, Project Manager, EPA</b>	
<b>Comment Issue Date: 13 February 2007</b>	<b>Navy Response Date: 21 May 2007</b>

The United States Department of Environmental Protection (USEPA) has reviewed the “Preliminary Draft Site Management Plan” dated January 2007, prepared by ECC. Pursuant to § 6 of the Naval Air Station, Brunswick, Maine Federal Facility Agreement (FFA) dated October 19, 1990, as amended, USEPA has the following comments and issues.

**GENERAL COMMENTS:**

1. Table of contents, Page 3 of 5. Please add site 12 with a brief explanation of history and current status with a pointer to the MMRP text for near term milestones.

**Navy Response: Agreed.**

2. Page 1, §1, last paragraph; please capitalize Stakeholders. Please add commas and colons in the rest of the run-on sentence to break it up such as: “...closure and transfer timelines; establishes a Baseline and tracks progress of the environmental cleanup issues associated with the NASB property; maintains a schedule for conducting Remedial Investigations (RI), Feasibility studies (FS), and Remedial Actions (RA); Community Environmental Response Facilitation Act (CERFA), and other actions...”

**Navy Response: Agreed.**

3. Page 1, §1.1, last paragraph; please revise to something similar to: “...institutional controls are noted in the Navy Base Instructions (currently under revision) where the boundaries for the geographic institutional controls and specific restrictions are included ...”

**Navy Response: Agreed.**

4. Page 2, §1.2 first paragraph; remove “areas” after “forested”.

**Navy Response: Agreed.**

5. Page 2, §1.2 second paragraph; consider replacing undulating and incised with rolling and recessed as appropriate.

**Navy Response: Agreed.**

6. Page 2, §1.2 Physical setting; please add information on the distance to the drinking water well field and number of people on town water. Also add information on the number of people on individual drinking water wells within 1mile from the Base.

**Navy Response:** Agreed. Information which is readily available regarding these statistics will be included in this section.

7. Page 3, last paragraph; spell out POL and UST the first time these acronyms are used.

**Navy Response: Agreed.**

8. Page 5, §2.1.1; typo? Remove the s from “areas” in the third sentence.

**Navy Response: Agreed.**

9. Page 5, §2.1.3, fourth sentence; the LTM should be updated to “reflect” current conditions

**Navy Response: Agreed.**

10. Page 7, §2.2.5; consider revising the 6<sup>th</sup> bullet to “Continue well sampling and report results to...”

**Navy Response: Agreed.**

11. Page 8, §2.3.5; revise the ROD to add ICs for action if building is demolished.

**Navy Response: Agreed.**

12. Page 9, §2.4.3; was the asbestos removed? Was a ROD signed?

**Navy Response:** According to the NASB Administrative Record (February 2007), a ROD was signed on 30 August 1993 by the acting Commanding Officer of NASB. According to the ROD, the asbestos was left intact and is currently covered with soil and marked with signs designating it as an asbestos disposal area.

13. Page 10, §2.5.1 and §2.5.2; please clarify if the ROD was for the combination of sites 5&6 or just or site 6.

**Navy Response:** The ROD was a combination of Sites 5 and 6 and will be clarified in the text.

14. Page 11, §2.6.2; please define the term “lay down areas”

**Navy Response:** A “lay down area” is an area designated for the staging and storing of construction related equipment and/or material. This definition will be added to the text.

15. Page 11, §2.6.3; was a ROD signed? Please describe the remedy.

**Navy Response:** According to the NASB Administrative Record (February 2007), a

ROD was signed on 26 September 2002 by the acting Commanding Officer of NASB. The selected remedy is institutional controls with groundwater monitoring. This information will be included in the text.

16. Page 12, §2.6.5; add an investigation of the piles in the woods between the monitoring wells and the main road.

**Navy Response:** The Navy plans to assess these piles in 2007. Once the preliminary results of the assessment are received, they will be forwarded to the EPA and MEDEP for further discussion.

17. Page 12, §2.7.2; consider revising the third sentence, to "...eventually flows 1800 feet off-base and discharges into the..."

**Navy Response: Agreed.**

18. Page 15, §2.8.4; add a description of the hazardous waste found during the excavation of the ash landfill.

**Navy Response: Agreed.**

19. Page 15, §2.8.5; add ROD amendment to add soils to the ROD and change the schedule in the appendix from an ESD to a ROD amendment (to include an FS, PP, hearing, and ROD amendment).

**Navy Response: Agreed.**

20. Page 16, §2.9.5; add an ESD to include ICs to the site so that the infiltration galley is not disturbed.

**Navy Response:** Agreed. A bullet will be added to this section indicating that the land use institutional controls boundary will be inclusive of the Infiltration Gallery and the associated underground piping for the GWETS.

21. Page 19[sic], §2.10.5; add an ESD to include ICs to the site so that the pavement is not disturbed.

**Navy Response: Agreed.**

22. Page 21, §2.12.5; add an additional investigation because during the CERFA walkover additional debris was found.

**Navy Response:** Since Site 15 has a Consensus Statement in place, this request should be discussed at an upcoming Technical Meeting.

23. Page 22, §2.13.5; add an additional investigation because during the CERFA walkover

additional debris was found.

**Navy Response:** Since Site 16 has a Consensus Statement in place, this request should be discussed at an upcoming Technical Meeting.

24. Page 23, §2.14.5; remove the consensus statement, now that the BNAS NPL Site has been listed on BRAC V, the site 17 needs a ROD.

**Navy Response: Agreed.**

25. Page 23, §2.14.5; remove the removal action report and add develop an RI/FS and ROD.

**Navy Response: Agreed.**

26. Page 31[sic], §4.1.2; typo; “Part o the range” add an “f”.

**Navy Response: Agreed.**

27. Page 31[sic], §4.1.3; typo? is the water table really 100 feet deep at this area?

**Navy Response:** This is a typo. The depth to groundwater in these areas is generally between 10 to 20 feet bgs.

28. Page 31[sic], §4.3.1; typo? “once control bunker” remove the “c”.

**Navy Response: Agreed.**

29. Page 31[sic], §4.3.3; please add a brief discussion and a pointer to the IRP text for out year term milestones.

**Navy Response:** Additional information from the RI/FS will be included in this section.

30. Page 31[sic], §4.3.3; provide a brief explanation of the soil and groundwater (or lack of) investigations performed under the RI for this site.

**Navy Response: Agreed.**

31. Page 31[sic], §4.3.3; typo? “In July 1991, the Draft Final Supplemental Feasibility Study recommended...” please finish this thought.

**Navy Response: Agreed.**

32. Page 18[sic] §5.2.5; please revise this date for the draft PA addendum for site 12 from 17 Nov 2006 to the end of January 2007.

**Navy Response: Agreed.**

**RESPONSE TO COMMENTS FROM THE  
MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION ON THE  
DRAFT SITE MANAGEMENT PLAN, A ROADMAP FOR ENVIRONMENTAL  
CLEANUP  
NAVAL AIR STATION BRUNSWICK, BRUNSWICK, MAINE**

<b>Commentor: Claudia Sait, Project Manager, MEDEP</b>	
<b>Comment Issue Date: 26 February 2007</b>	<b>Navy Response Date: 21 May 2007</b>

The Maine Department of Environmental Protection (MEDEP) has reviewed the “Preliminary Draft Site Management Plan” dated January 2007, prepared by ECC. Pursuant to § 6 of the Naval Air Station, Brunswick, Maine Federal Facility Agreement (FFA) dated October 19, 1990, as amended, MEDEP has the following comments and issues.

**GENERAL COMMENTS:**

1. Page 2, §1.2, para 2, 2<sup>nd</sup> sentence: Please change “that” to “than”.

**Navy Response: Agreed.**

2. Page 3, §1.3, Military Munitions Response Program: Please list the three areas of concern under UXO 001.

**Navy Response: Agreed.**

3. Page 3, §1.3, Areas of Concern associated...: It would be clearer if UST-3 and UXO-002 were listed under Topsham Annex as separate sub items and designate them both as active.

**Navy Response: Agreed.**

4. Page 3, §1.3, Areas of Concern associated...: Of the three POL sites, one (UST 001-Old Navy Fuel Farm) has been categorized as RC/RIP since 2004. MEDEP and the Navy still need to determine if institutional controls are going to be needed for this site.

**Navy Response: Comment noted.**

5. Page 3, §1.3, para 2: Please add a brief description of the Topsham Annex Skeet Range, and the Machine Gun Boresight Range, Munitions Bunker-West Area and Skeet Range at Main Base.

**Navy Response: Agreed.**

6. Page 5, §2.1.3, para 2: Please note that water elevations within the landfills are measured quarterly.

**Navy Response: Agreed.** Text will be added in accordance with the comment.

7. Page 6, §2.1.5, new bullets: The bullets primarily reflect what was in the Second Five-Year Review. MEDEP recommends adding: *Development of an IC boundary for the site*; and *Reduce time needed to produce the monitoring reports*.

**Navy Response:** The Navy agrees with the recommendation of adding a bullet item reflecting the development of an IC boundary for Sites 1 and 3.

8. Page 7, §2.2.5: The QAPP has been finalized. Please remove this from the list of next steps. Please revise the last bullet to what is written in the Second Five Year Review: “Evaluate institutional control boundary.” MEDEP has already stated that the boundary, as shown, in the latest base instruction is not protective.

**Navy Response:** Agreed. The QAPP will be removed from the list of next steps. The last bullet, “Update/revise institutional control boundary as part of base instructions” will be revised to read “Evaluate institutional control boundary”, in accordance with this comment.

9. Section 2.4: Please revise page number. Please include the remedy.

**Navy Response: Agreed.**

10. Page 12, §2.6.5: The QAPP has been finalized. Please remove this from the list of next steps. Please revise the last bullet to what is written in the Second Five Year Review: “Evaluate institutional control boundary.” MEDEP has already stated that the boundary, as shown, in the latest base instruction is not protective.

**Navy Response:** The QAPP will be removed from the list of next steps. Please note the last bullet is associated with ARARs, not the IC boundary. The second to last bullet, “Update/revise institutional control boundary as part of base instructions” will be revised to read “Evaluate institutional control boundary”, in accordance with this comment.

11. Page 15, §2.8.4: Please note that DRO has been found in one of the monitoring wells.

**Navy Response: Agreed.**

12. Page 15, §2.8.5: Please revise the last bullet to what is written in the Second Five Year Review: “Evaluate institutional control boundary.” MEDEP has already stated that the boundary, as shown, in the latest base instruction is not protective. Also please make update ARAR tables a separate item.

**Navy Response: Agreed.** A new bullet will be added as follows:

- *Finish the excavation of the ash land fill; investigate the source of DRO near Building 201; perform direct push south of Neptune Drive to determine the southern extent of the ash land fill; and re-establish monitoring well network disturbed by the removal of the ash landfill.*

13. Page 13, §2.14.3: Please add that soil contaminated with pesticides was buried south of Avenue B.

**Navy Response: Agreed.** Please note that Section 2.14.3 is on page 23, not page 13.

14. Page 13, §2.14.5, Bullet 2: This has already been done in the early 1990's. MEDEP found a letter from the Navy to MEDEP and EPA requesting that the site be remediated under CERCLA. MEDEP found their letter of agreement. Please delete the bullet.

**Navy Response: Agreed.** Please note that Section 2.14.5 is on page 23, not page 13.

15. Page 13, §2.14.5, Bullet 3: Please add "locate" to this statement.

**Navy Response: Agreed.** Please note that Section 2.14.5 is on page 23, not page 13.

16. Page 27, §2.16.5, Bullet 7: This bullet has been done and should be deleted or revised to reflect the investigation in the vicinity of the confluence of Mere Brook and Merriconeag Stream.

**Navy Response:** The bullet will be deleted.

17. Page 27, §2.16.5, Bullet 12: As stated, the bullet does not reflect what was written in the Second Five-Year Review, please replace with "*refine institutional control boundary*".

**Navy Response: Agreed.**

18. Page 27, §2.16.5, New Bullet: Please add a bullet regarding putting institutional controls on the infiltration gallery and the piping for the GWETS.

**Navy Response:** Agreed. A bullet will be added to this section indicating that the land use institutional controls boundary will be inclusive of the Infiltration Gallery and the associated underground piping for the GWETS.

19. Page 28, §3.13: MEDEP checked its records regarding this site and originally the interim remedial action goal was 2500 ppm TPH due to funding constraints. In the Interim Removal Action Summary of Site Investigation Activities (Sept 2000) the Navy changes the remedial action goal to 870 ppm TPH in soil. This information should be included in this section.

**Navy Response: Agreed.**

20. Page 28, §3.15: The removal of the contaminated soil was a success in that the groundwater contamination has decreased and is at or close to achieving the MEG. However there needs to be Institutional Controls on the soils and future use of this site. MEDEP and the Navy were to have developed a consensus statement regarding this site, but unfortunately this has never been done and the project manager has changed with the Base being selected for closure. Therefore some type of agreement must be developed to ensure that adequate institutional controls are placed on the soil and limits the use of the land. Please add that a consensus statement or some other agreement and development of institutional controls to the list of next steps.

**Navy Response: Agreed.**

21. Page 29, §3.2.5: When MEDEP agreed to the DBB pilot study it was as an interim measure, since at that time the Navy was planning to relocate the Naval Exchange and then a soil removal action would have been performed. However, that will not be happening now, so the Navy and MEDEP must develop a strategy on how to proceed with the remediation of the NEX and establish institutional control on groundwater and soils.

**Navy Response: Agreed.**

22. Page 30, §3.3.2: For fluency, MEDEP suggests switching the second and third paragraphs.

**Navy Response: Agreed.**

23. Page 30, §3.3.4: Please include the PCB removal at the Commissary in 2002.

**Navy Response: Agreed.**

24. Page 30, §3.3.5: Please add the investigation of the Skeet Range, develop an agreement with MEDEP in regards to the remaining contamination in soils, and develop institutional controls for soil and groundwater to this section.

**Navy Response: Agreed.**

25. Page 31 [sic], §4.1-References: Please correct page numbers.

**Navy Response: Agreed.**

26. Page 31 [sic], §4.1.2: Please note that the skeet range layout was changed and that it was over the unnamed streams and floodplains in the vicinity of where the impoundment ponds at Site 9 are now located.

**Navy Response: Agreed.**

27. Page 31 [sic], §4.2.2: first sentence: Please change “area” to “acres”.

**Navy Response: Agreed.**

28. Page 31 [sic], §4.3: The title is Site 12B; is the B a typo?

**Navy Response:** This is a typo. The title will be changed to Site 12.

29. Page 31 [sic], §4.3.5, bullet 1: The additional investigation will not be just to confirm the RI/FS but to expand the investigation and to look for perchlorate.

**Navy Response: Agreed.**

30. Page 31 [sic], §4.3.5, bullet 3: Please revise to: Update/revise institutional control boundary, as necessary.

**Navy Response: Agreed.**

31. Figure 2-10: It is not clear from the figure that the light area is Site 11. Please clearly designate the site boundary by either labeling it or putting it in the legend. Also the figure shows four monitoring well on the infiltration gallery. Please differentiate between the wells that are still existing or abandoned.

**Navy Response:** The gray area will be delineated with a dashed line and identified in the legend as the Site boundary. The infiltration gallery itself is outlined with at red dashed line and is identified in the legend as such. The wells will be differentiated in accordance with this comment.

32. Figure 2-11: Please clearly designate the site boundary by either labeling it or putting it in the legend.

**Navy Response: Agreed.**

33. Figures 2-12, 2-13, and 2-14: The designation of these sites is difficult to distinguish. Please try to highlight the sites better.

**Navy Response: Agreed.**

34. Figure 2-15: The color of approximate area of the buried contaminated soil and what is shown in the legend is different. Please reconcile.

**Navy Response: Agreed.**

35. Figure 3-3: Please label the Naval Exchange rather than using the building number and add the known plume boundary to the figure.

**Navy Response: Agreed.**

36. Figure 3-5: Please add the area of the PCB removal.

**Navy Response: Agreed.** The area of the PCB removal actions associated with Building 335, Transformer Pad completed by Foster Wheeler in 2002 at Topsham Annex will be shown on Figure 3-5.

37. Figures 4-2A,B,C, and 4-3: The designation of these sites is difficult to distinguish. Please highlight the sites better, if possible.

**Navy Response: Agreed.**

38. Figures 3.5 & 5.5: The designation of these sites is difficult to distinguish. Please try a lighter color to highlight the sites better.

**Navy Response: Agreed.**

**RESPONSE TO COMMENTS FROM THE  
BRUNSWICK AREA CITIZENS FOR A SAFE ENVIRONMENT (BACSE )  
DRAFT SITE MANAGEMENT PLAN, A ROADMAP FOR ENVIRONMENTAL  
CLEANUP  
NAVAL AIR STATION BRUNSWICK, BRUNSWICK, MAINE**

<b>Commentor: Carolyn A. LePage</b>	
<b>Comment Issue Date: 12 March 2007</b>	<b>Navy Response Date: 21 May 2007</b>

BACSE has reviewed the ““Preliminary Draft Site Management Plan” dated January 2007, prepared by ECC. Pursuant to § 6 of the Naval Air Station, Brunswick, Maine Federal Facility Agreement (FFA) dated October 19, 1990, as amended, BACSE has the following comments and issues.

**GENERAL COMMENTS:**

The following comments regarding the January 2007 Preliminary Draft *Site Management Plan* (SMP) (prepared by ECC) are submitted on behalf of the Brunswick Area Citizens for a Safe Environment (BACSE).

1. BACSE concurs with the Environmental Protection Agency’s (EPA’s) and Maine Department of Environmental Protection’s (MEDEP) comments on the SMP dated February 13, 2007, and February 26, 2007, respectively.
2. Please add a list of acronyms in the next draft of the SMP so reviewers will have the opportunity to check it.

**Navy Response: Agreed.**

3. Please replace the word “cleanup” with “remediation” throughout the document.

**Navy Response:** Text will be revised where appropriate in order to convey to the general public a clearer understanding of what is being discussed.

4. The document must include information on Site 10 in both the text and figures.

**Navy Response: Agreed.**

5. There is no mention of dioxin testing or results in the SMP, which is a particular concern at sites where incineration and/or the disposal of incinerated material reportedly took place (Sites 1 and 3, 2, and 9 in particular). Was dioxin testing performed at some or all sites, and if so, what were the results? If not, when does the Navy intend to conduct testing?

**Navy Response:** Based on historical information, dioxin has not been sampled for at NASB. At the request of the MEDEP and EPA, dioxin and furan are proposed to be sampled for during the upcoming Area North of Site 2 Investigation.

6. Please address the potential for contamination of the bedrock underlying and near the base property.

**Navy Response:** Based on historical and current data (results from the RI/FS and subsequent LTM results), the Navy does not feel the issue of bedrock contamination need be discussed in the SMP.

7. There are a number of typographical errors in the Contents section. Please check the titles for Sections 2.0; 3.0; 4.1.1; 4.2; 4.3; 5.1; 5.4; and 5.5.

**Navy Response: Agreed.**

8. **Page 1, Section 1.0.** This section should state that the SMP “amplifies” the information in the May 2006 *Condition of Property Report for the Naval Air Station Brunswick, Maine*.

**Navy Response:** Agreed. Text will be inserted in Section 1.0 in accordance with the comment.

#### **SPECIFIC COMMENTS:**

9. **Page 1, Section 1.1.** The number of site (18) reported in the second paragraph is confusing. Elsewhere, the SMP refers to 19 sites, and there are other documents that cite 24 sites. Please clarify which number is correct, and where appropriate in the SMP, add information regarding the additional sites.

**Navy Response:** The total number of Sites and AOCs will be clarified in Section 1.1, and will remain consistent throughout the document.

10. **Page 1, Section 1.1.** Section 1.1 should mention and extract significant information from the May 2005 Public *Health Assessment for NASB* as appropriate.

**Navy Response: Agreed.**

11. **Page 2, Section 1.2.** In addition to the information requested in EPA comment number 6, Section 1.2 should also note that the northern area is a focus of community concerns due to the soil being a recharge area for a sand and gravel aquifer, as well as having rare vegetation.

**Navy Response:** Background information from the RI/FS and other appropriate reports will be reviewed and additional text will be added where appropriate. The Navy recognizes the communities concern with regards to the northern area of the Base.

12. **Pages 2 and 3, Section 1.3.** Please define “Rake”, “POL”, and “UST”. The last paragraph on page 3 should include Site 18, and should also include a statement regarding the possible additional investigation should the building covering Site 4 be removed in the future.

**Navy Response: Agreed.**

**13. Page 5, Section 2.1.2.** This Background section includes information regarding what was disposed at Site 1. What was disposed at Site 3?

**Navy Response:** According to the Draft Final Remedial Investigation Report (E.C. Jordan, August 1990), wastes reportedly deposited at Site 3 include solvents, paints, isopropyl alcohol, and DANC, a non-corrosive decontaminating agent composed primarily of tetrachloroethane. This additional information will be added to the text.

**14. Page 7, Section 2.2.5.** The fourth bullet needs to be revised. Consensus was reached during technical meetings in 2006 regarding the need for a second round of fish tissue sampling in Mere Brook. The details of the sampling, such as a work plan and a QAPP, are now being discussed, and the target sampling timeframe is May/June.

**Navy Response: Agreed.**

**15. Page 8, Section 2.3.3.** Please clarify that the 1998 Record of Decision (ROD) stated there was no further action for soils at Sites 4, 11, and 13, and that the groundwater contamination associated with the three sites would continue to be addressed as part of the on-going remedial action of the Eastern Plume.

**Navy Response: Agreed.**

**16. Page 1, Section 2.4.3.** Please revise this section to state that, in accordance with the August 1993 ROD for Sites 5 and 6, that the asbestos-containing material at Site 5 was excavated and used as sub-grade fill prior to the placement of the low-permeability cap at Sites 1 and 3. After confirmatory sampling, Site 5 was graded to prevent erosion and seeded to establish vegetation.

**Navy Response: Agreed.**

**17. Page 11, Section 2.6.2.** What is the significance of the description “laydown”? This section should also mention that PCBs were a contaminant of concern, but that testing has resulted in ‘non detect’.

**Navy Response:** A “lay down area” is an area designated for the staging and storing of construction related equipment and/or material. Text will be inserted in accordance with the comment.

**18. Page 11 Section 2.6.5.** Testing for PCBs should be conducted to confirm the earlier findings of ‘non detect’. Please also include investigation of the “piles in the woods” as described in EPA’s comments.

**Navy Response:** Based on historical sampling data and site use, the Navy does not believe PCBs are a contaminant of concern at Site 7, and therefore does not agree with the need for additional testing for PCBs. This topic could be further discussed at an upcoming Technical Meeting. Regarding the “piles in the woods”, the Navy plans to assess these piles in 2007. Once the preliminary results of the assessment are received, they will be forwarded to the EPA and MEDEP for further discussion.

**19. Page 16, Section 2.9.3.** Please see comment number 15, above, and make appropriate corrections for Site 11.

**Navy Response: Agreed.**

**20. Page 19, Section 2.9.3.** Please see comment number 15, above, and make appropriate corrections for Site 13.

**Navy Response: Agreed.**

**21. Page 28, Section 3.0.** Is there a potential new site associated with the DRO (diesel-range organics) detections in the vicinity of Building 201? While that location is within the current Site 9 boundary, would the petroleum exclusion under CERCLA apply?

**Navy Response:** The results from the upcoming investigation at the Building 201 AOC will help determine whether this area will be designated as a new site, or stay incorporated within the current Site 9 boundary. The question of the CERCLA petroleum exclusion will be better answered when this decision is made.

**22. Page 28, Section 3.1.1.** This section should mention that Site 17 is located at the southeastern corner of the Old Navy Fuel Farm, and that Site 7 is located several hundred feet to the west.

**Navy Response:** The text will be edited to mention that Site 17 is to the west of Old Navy Fuel Farm and Site 7 is to the east.

**23. Page 28, Section 3.1.4.** What are the results of the groundwater monitoring?

**Navy Response:** Samples were collected during May and October 2006 for VOCs and TPH. In May, GRO was detected in one sample in exceedance of its respective MEG. In October, DRO was detected in 4 samples in exceedance of its respective MEG.

**24. Page 31, Section 4.3.3.** Please complete the sentence at the end of the second paragraph.

**Navy Response: Agreed.**

**25. Page 18, Section 5.0.** BACSE is concerned with several additional areas: the former Navy Housing on Hawthorn Street, the sewage plant on the Androscoggin River, the current base operational facilities, and the former radio tower site at the Topsham Annex.

**Navy Response:** These areas will be addressed and tracked as part of the CERFA outstanding issue tracking system (ITS). See letter from the Navy dated May 16, 2007, paragraph. 4.

**26. Page 31, Section 6.0.** The title of this section, Basewide Programs, does not reflect what follows in the text, which is more of an administrative and public outreach focus. Please revise.

**Navy Response: Agreed.** The title will be changed to “Administrative Programs”.

**27. Page 31, Section 6.3.** Please add the target date for releasing the Community Relations Plan.

**Navy Response: Agreed.**

**28. Page 31, Section 8.0.** BACSE suggests that the name of the group be changed to “NASB Ground Contamination Remediation Team” to more accurately reflect the focus of the group. Please correct the zip code for Carolyn Lepage to 04211-1195. Please add Suzanne Johnson, Esq., as the Town of Brunswick’s designated representative, and David W. Chipman as the Town of Harpswell’s designated representative.

**Navy Response:** As the group title will be carried forward following completion of the SMP, the MEDEP and EPA should have input regarding this change. The remaining changes will be made in accordance with the comment.

**29. Figure 2-7.** What is the “Pit Area” label on the figure? Shouldn’t it be a site boundary of some kind instead?

**Navy Response:** The “Pit Area” label is a typo, the circle is actually the delineation of the IC Boundary. The figure will be edited to reflect the correct information.

**RESPONSE TO COMMENTS FROM THE  
BRUNSWICK AREA CITIZENS FOR A SAFE ENVIRONMENT (BACSE )  
DRAFT SITE MANAGEMENT PLAN, A ROADMAP FOR ENVIRONMENTAL  
CLEANUP  
NAVAL AIR STATION BRUNSWICK, BRUNSWICK, MAINE**

<b>Commentor: Carolyn A. LePage, BACSE Consultant</b>	
<b>Comment Issue Date: 18 March 2007</b>	<b>Navy Response Date: 21 May 2007</b>

The following comments are intended to supplement comments regarding the January 2007 Preliminary Draft *Site Management Plan* (SMP) (prepared by ECC) that were submitted on March 12, 2007 on behalf of the Brunswick Area Citizens for a Safe Environment (BACSE).

**GENERAL COMMENTS:**

The following comments regarding the January 2007 Preliminary Draft *Site Management Plan* (SMP) (prepared by ECC) are submitted on behalf of the Brunswick Area Citizens for a Safe Environment (BACSE).

**1. Site 8.** Construction debris and contaminated soil were removed from Site 8 and used as sub-grade fill during the construction of the low permeability cap at Sites 1 and 3 in the 1990s. Given that Site 8 is relatively close to the Jordan Avenue well field that serves as a municipal water supply, and that contaminants such as PCBs and DDT were reported at Site 8 prior to the removal action, BACSE believes it would be prudent to conduct environmental testing to ensure that these contaminants are no longer present at the site, and have not migrated from the site.

**Navy Response:** Confirmatory samples were collected subsequent to the removal action. In addition, the Site 8 monitoring wells were decommissioned in 2000 with regulatory approval. Further, due to the proximity (distance) of Site 8 to the Jordan Avenue wells, and the hydrogeologic characteristics of the site, groundwater from Site 8 was not determined to impact the Jordan Street wells. .

**2. Possible New Dump Site.** BACSE has received information regarding a possible new dumpsite the Navy should know about. In 1974 or early 1975, two truckloads of mattresses and bots that were supposed to go to Vietnam were buried on base. The material was dumped in a long shallow hole off Route 123 on the right as you come into the golf course. Pine trees were then planted over them.

**Navy Response:** These areas will be addressed and tracked as part of the CERFA outstanding issue tracking system (ITS). See letter from the Navy dated May 16, 2007, paragraph number 4.

**COMMENT LETTER FROM HIGH SCHOOL STUDENT TO NAVY  
REGARDING SITE MANAGEMENT PLAN  
NAVAL AIR STATION BRUNSWICK, MAINE**

From: Victoria Boundy <[vboundy@brunswickme.org](mailto:vboundy@brunswickme.org)>  
Sent: Wednesday, March 28, 2007 12:34 PM  
To: Catherine Guido  
Subject: Re: FW: Site Management Plan Fact Sheet for HS Review

Catherine,

These were the scant comments I got back from one of the students; hope that's at all helpful.

Thanks,

Victoria Boundy

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From: Darren [<mailto:coolbear512@yahoo.com>]  
Sent: Friday, March 23, 2007 6:25 PM  
To: Victoria Boundy  
Subject: Re: FW: Site Management Plan Fact Sheet for HS Review

Hi Vicky

The document is pretty easy to read and comprehend. There were only a couple of things I would suggest revising. I would suggest maybe explaining what things like impoundment ponds and leachate are. And there were some phrasings with high levels of vocabulary towards the end that may be tough to understand to some people, depending on the audience such as "macroinvertebrate community" and "terrestrial organisms". Talk to you later

Darren

## **A2. CONCURRENCE LETTERS**



**COMMENT LETTER FROM US ENVIRONMENTAL PROTECTION AGENCY TO  
NAVY REGARDING SITE MANAGEMENT PLAN  
NAVAL AIR STATION BRUNSWICK, MAINE**

**From:** <williams.christine@epamail.epa.gov>  
**To:** <orlando.monaco@navy.mil>, <Harting-Barrat.Pamela@epamail.epa.gov>  
**Date:** 5/21/2007 5:14:32 PM  
**Subject:** Re: Completed Response to Comments on Draft Site Management Plan

**CC:** "Al Easterday" <AEasterday@ecc.net>, "Carol Warren" <carol@wacubu.com>, "Catherine Guido" <CGuido@ecc.net>, "claudia sait" <Claudia.B.Sait@maine.gov>, "Dale CIV NAS BRUNSWICK Mosher" <dale.mosher@navy.mil>, "Dan Waddill" <dan.waddill@navy.mil>, "Dawn Kincaid" <dawn.kincaid@navy.mil>, <"chris evaans"@mintra02.rtp.epa.gov>, <\_\_@mintra02.rtp.epa.gov>, <"Evans@epamail.epa.gov, Chris <Gordon.C.Evans@maine.gov/"@epamail.epa.gov>, "Jeff Donovan" <JDonovan@ecc.net>, "Jennifer Wright" <jennifer.h.wright@navy.mil>, "Lisa M CIV NAS Brunswick N45 Joy" <lisa.joy@navy.mil>, "gannett fleming" <pgolonka@gfnet.com>

Lonnie- please forward to Gina as I don't seem to have her ECC address here. EPA has no further comments on the SMP as long as the appropriate/agreed to language is added and the issues noted are discussed at a technical meeting.

Christine A.P. Williams  
Federal Facility Superfund Section  
US EPA New England  
Suite 1100 (HBT)  
1 Congress Street  
Boston, MA 02114-2023

phone - (617) 918-1384  
fax - (617) 918- 0384  
e-mail - williams.christine@epa.gov

May 21, 2007

Mr. Orlando Monaco  
Department of Navy  
Base Realignment and Closure  
Program Management Office-Northeast  
4911 South Broad Street  
Philadelphia, PA 19112-1303

Re: Site Management Plan-Response to Comments  
Naval Air Station, Brunswick, Maine

Dear Mr. Monaco:

MEDEP has reviewed the Navy's responses dated May 21, 2007, to the Maine Department of Environmental Protection (MEDEP) comments, dated February 26, 2007, for the preliminary draft Site Management Plan (January 2007). Based on that review MEDEP finds the responses satisfactory and has no further comments provided that the proposed revisions and additions are incorporated into the final report along with regulator comments, responses and this letter.

Please contact me at (207) 287-7713 or [claudia.b.sait@maine.gov](mailto:claudia.b.sait@maine.gov), if you have any questions or comments.

Respectfully,

Claudia Sait  
Project Manager-Federal Facilities  
Bureau of Remediation & Waste Management

Cf: File  
Dale Mosher-BNAS  
Carolyn Lepage-Lepage Environmental  
Ed Benedikt  
Carol Warren-(email only)  
Gina Calderone-EA (email only)

Chris Evans-MEDEP  
Christine Williams-EPA  
Al Easterday-ECC  
Jeff Donovan-ECC (email only)  
Catherine Guido-ECC (email only)  
David Chipman (email only)

# Lepage Environmental Services, Inc.

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P. O. Box 1195 ! Auburn, Maine 04211-1195 ! 207-777-1049 ! Fax: 207-777-1370

May 25, 2007

Mr. Orlando Monaco  
Department of Navy  
Base Realignment and Closure PMO-Northeast  
4911 South Broad Street  
Philadelphia, PA 19112-1303

Subject: Response to Comments on the January 2007 Preliminary Draft *Site Management Plan*

Dear Mr. Monaco:

The following comments regarding the Navy's May 21, 2007 responses to comments on the January 2007 Preliminary Draft *Site Management Plan* (SMP) (prepared by ECC) are submitted on behalf of the Brunswick Area Citizens for a Safe Environment (BACSE). The responses to comments were received via email on May 22, 2007, and were discussed with Gina Calderone of ECC earlier today. The Navy's responses are acceptable (except as noted below) provided the revisions and additions agreed to in all the responses are incorporated into the final SMP, along with copies of all stakeholder comment letters. If the Navy agrees with BACSE's additional comments below and includes this letter and the Navy's responses in the final SMP, BACSE does not need to receive separate written responses before the SMP becomes final.

## **BACSE Comments Dated March 18, 2007**

**Original Comment 1. Site 8.** Construction debris and contaminated soil were removed from Site 8 and used as sub-grade fill during the construction of the low permeability cap at Sites 1 and 3 in the 1990s. Given that Site 8 is relatively close to the Jordan Avenue well field that serves as a municipal water supply, and that contaminants such as PCBs and DDT were reported at Site 8 prior to the removal action, BACSE believes it would be prudent to conduct environmental testing to ensure that these contaminants are no longer present at the site, and have not migrated from the site.

**Navy Response:** Confirmatory samples were collected subsequent to the removal action. In addition, the Site 8 monitoring wells were decommissioned in 2000 with regulatory approval. Further, due to the proximity (distance) of Site 8 to the Jordan Avenue wells, and the hydrogeologic characteristics of the site, groundwater from Site 8 was not determined to impact the Jordan Street [Avenue] wells.

**Additional Comment.** Please add the information about confirmatory samples, including reference citation, to Section 2.7.3.

**Follow-up Response: The Navy will insert this citation into the text.**

**Original Comment 2. Possible New Dump Site.** BACSE has received information regarding a possible new dumpsite the Navy should know about. In 1974 or early 1975, two truckloads of mattresses and boots that were supposed to go to Vietnam were buried on base. The material was dumped in a long shallow hole off Route 123 on the right as you come into the golf course. Pine trees were then planted over them.

**Navy Response:** These areas will be addressed and tracked as part of the CERFA outstanding issue tracking system (ITS). See letter from the Navy dated May 16, 2007.

**Additional Comment.** We do not recall receiving a letter dated May 16, 2007, from the Navy. Please (re)send a copy.

**Follow-up Response: The Navy will re-send the 16 May 2007 to BASCE.**

#### **BACSE Comments Dated March 12, 2007**

**Original Comment 5. General Comment.** There is no mention of dioxin testing or results in the SMP, which is a particular concern at sites where incineration and/or the disposal of incinerated material reportedly took place (Sites 1 and 3, 2, and 9 in particular). Was dioxin testing performed at some or all sites, and if so, what were the results? If not, when does the Navy intend to conduct testing?

**Navy Response:** Based on historical information, dioxin has not been sampled for at NASB. At the request of MEDEP and EPA, dioxin and furan are proposed to be sampled for during the upcoming Area North of Site 2 Investigation.

**Additional Comment.** BACSE suggests that a sentence noting that testing for dioxin was not conducted be added to Section 2.1.3 (Sites 1 and 3), Section 2.2.3 (Site 2), and Section 2.8.3 (Site 9). The sentence could be inserted where other sampling results and/or contaminants of concern are mentioned.

**Follow-up Response: A sentence will be inserted to document whether dioxin sampling was conducted during the 1990 RI at these sites.**

**Original Comment 6. General Comment.** Please address the potential for contamination of the bedrock underlying and near the base property.

**Navy Response:** Based on historical and current data results (results from the RI/FS and subsequent LTM results), the Navy does not feel the issue of bedrock contamination need be discussed in the SMP.

**Additional Comment.** BACSE believes that a sentence or two should be added to Section 2.16.3 (Eastern Plume Operable Unit, Previous Studies) that notes that recent limited geophysical and subsurface investigations conducted downgradient of Site 11 have revealed that fractured bedrock is present and it may not be protected from contaminated groundwater by a veneer of overlying clay.

**Follow-up Response: Comment noted. A statement will be added to the text to document the bedrock investigations conducted to date at Site 11.**

**Original Comment 18. Page 11 Section 2.6.5.** Testing for PCBs should be conducted to confirm the earlier findings of ‘non detect’. Please also include investigation of the “piles in the woods” as described in EPA’s comments.

**Navy Response:** Based on historical sampling data and site use, the Navy does not believe PCBs are a contaminant of concern at Site 7, and therefore does not agree with the need for additional testing for PCBs. This topic should be further discussed at an upcoming Technical Meeting. Regarding the “piles in the woods”, the Navy plans to assess these piles in 2007. Once the preliminary results of the assessment are received, they will be forwarded to the EPA and MEDEP for further discussion.

**Additional Comment.** BACSE requests that the topic of sampling for PCBs at Site 7 be added to an upcoming Technical Meeting agenda.

**Follow-up Response: Comment noted.**

**Original Comment 25. Page 18, Section 5.0** BACSE is concerned with several additional areas: the former Navy Housing on Hawthorn Street, the sewage plant on the Androscoggin River, the current base operational facilities, and the former radio tower site at the Topsham Annex.

**Navy Response:** These areas will be addressed and tracked as part of the CERFA outstanding issue tracking system (ITS). See letter from the Navy dated May 16, 2007.

**Additional Comment.** We do not recall receiving a letter dated May 16, 2007, from the Navy. Please (re)send a copy.

**Follow-up Response: The Navy will re-send the 16 May 2007 to BASCE.**

Please do not hesitate to call if you have any questions.

Sincerely,

Carolyn A. Lepage, C.G.  
President

cc: Loukie Lofchie, BACSE  
Ed Benedikt, BACSE (email only)  
Dale Mosher, NASB  
Christine Williams, EPA  
Al Easterday, ECC  
Gina Calderone, ECC (email only)  
Dave Chipman, RAB (email only)

Tom Fusco, BACSE (email only)  
Suzanne Johnson, BACSE (email only)  
Claudia Sait, MEDEP  
Carol Warren, LRA (email only)  
Catherine Guido, ECC (email only)  
Jeff Donovan, ECC (email only)

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## **APPENDIX B**

### **SITE MANAGEMENT PLAN SCHEDULE**

















