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NSB NEW LONDON, CT  
SSIC 5000-33a

**FINAL SITE MANAGEMENT PLAN REVISION 1 NSB NEW LONDON CT**  
11/01/2020  
TETRA TECH

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Naval Facilities Engineering Command Mid-Atlantic  
Norfolk, Virginia

**Final  
Site Management Plan  
Revision 1**

Naval Submarine Base – New London  
Groton, Connecticut

November 2020

Approved for public release: distribution unlimited

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**FINAL  
SITE MANAGEMENT PLAN  
REVISION 1**

**NAVAL SUBMARINE BASE – NEW LONDON  
GROTON, CONNECTICUT**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:  
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**CONTRACT NUMBER N6247016D9008  
CONTRACT TASK ORDER N4008518F5112**

**NOVEMBER 2020**

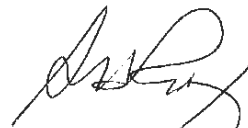
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## Acronyms and Abbreviations

AOC	Area of Concern
AS	Air sparging
AST	Aboveground storage tank
CBU	Construction Battalion Unit
CCR	Construction Completion Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	Chemical of concern
CTDEP	Connecticut Department of Environmental Protection
CT DEEP	Connecticut Department of Energy and Environmental Protection
CTO	Contract Task Order
DEC	Direct Exposure Criteria
DGI	Data gap investigation
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
ELUR	Environmental Land Use Restriction
EPA	United States Environmental Protection Agency
ERP	Environmental Restoration Program
ESD	Explanation of Significant Differences
ESQD	Explosive Safety Quantity Distance
ETPH	Extractable total petroleum hydrocarbons
FFA	Federal Facility Agreement
FS	Feasibility Study

FWEC	Foster Wheeler Environmental Corporation
GMP	Groundwater Monitoring Plan
GWPC	Groundwater Protection Criteria
IAG	Interagency Agreement
I/C	Industrial/Commercial
iSOC	In-Situ Submerged Oxygen curtain
LTM	Long-term monitoring
LTMgt	Long-term management
LUC	Land use control
NAPL	Non-aqueous-phase liquid
NAVFAC	Naval Facilities Engineering Command
NFA	No Further Action
NPL	National Priorities List
NSA	New Source Area
NSB NLON	Naval Submarine Base New London
NTCRA	Non-Time-Critical Removal Action
O&M	Operations and maintenance
OBDA	Overbank Disposal Area
OBDA NE	Overbank Disposal Area Northeast
OU	Operable Unit
PA	Preliminary Assessment
PAH	Polynuclear aromatic hydrocarbon
PAL	Project Action Limit
PCB	Polychlorinated biphenyl
PDI	Pre-Design Investigation

PFAS	Per- and polyfluoroalkyl substances
PMC	Pollutant Mobility Criteria
POL	Petroleum-based fuels, oils, or lubricants
RA	Remedial Action
RACR	Remedial Action Completion Report
RAO	Remedial Action Objective
RAP	Remedial Action Plan
RAWP	Remedial Action Work Plan
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RCSA	Regulations of Connecticut State Agencies
RD	Remedial Design
RG	Remedial goal
RI	Remedial Investigation
RIP	Remedy in Place
RSR	Remediation Standard Regulation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SASDA	Spent Acid Storage and Disposal Area
SC	Site Closeout
SGI	Supplemental Groundwater Investigation
SI	Site Inspection
SMP	Site Management Plan
SVOC	Semivolatile organic compound
SWPC	Surface Water Protection Criteria

TEC	Threshold Effects Concentration
TPH	Total petroleum hydrocarbons
UST	Underground storage tank
UU/UE	Unlimited use/unrestricted exposure
VC	Volatilization Criteria
VOC	Volatile organic compound

## 1.0 Introduction

This Site Management Plan (SMP) for Naval Submarine Base New London (NSB NLON), Groton, Connecticut, was prepared for the United States Department of the Navy, Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic by Tetra Tech under Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract, Contract Number N6247016D9008, Contract Task Order (CTO) N4008518F5112. The SMP serves as a management tool for planning, reviewing, and setting priorities for environmental investigative and remedial response activities to be conducted at NSB NLON under the Navy's Environmental Restoration Program (ERP). The Navy's ERP parallels the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.

This SMP provides site-specific history, status, and schedule information for implementation of ERP activities at NSB NLON sites. The SMP is updated annually to revise priorities and schedules of activities as sites progress through the CERCLA and non-CERCLA process and additional information (including funding) becomes available. This version of the SMP for Fiscal Year 2020 presents rationales for the sequence of future investigation and remediation activities and the estimated schedule for completion of those activities and is an update to the 2012 SMP (Resolution, 2012)

The benefit of an SMP is that it allows for adjustment of scheduled activities for reasons such as federal budgetary constraints, changes in scope of investigation/remediation activities, or other unanticipated events. These changes are governed by the Federal Facility Agreement (FFA) for NSB NLON (EPA, 1995). The FFA establishes the roles and responsibilities of the Navy, United States Environmental Protection Agency (EPA), and State of Connecticut Department of Energy and Environmental Protection (CT DEEP) and serves as an Interagency Agreement (IAG) for the completion of all necessary investigation and remedial actions (RAs) at NSB NLON. Prior to July 1, 2011, CT DEEP was known as the Connecticut Department of Environmental Protection (CTDEP) and therefore was referenced as such in previous site documents. The FFA provides durations for specific process activities. The FFA durations are presented in Table 1-1, and a description of the information contained in Table 1-1 is presented in Section 3.0.

### 1.1 Facility Location and Mission

NSB NLON is located in southern Connecticut in the Towns of Ledyard and Groton (Figure 1-1, Appendix A) and is situated on the eastern bank of the Thames River,

approximately 6 miles north of Long Island Sound. It is bordered to the east by Connecticut Route 12, to the south by Crystal Lake Road, and to the west by the Thames River. The northern border is a low ridge that trends approximately east-southeast from the Thames River to Baldwin Hill. NSB NLON encompasses over 200 buildings located on approximately 687 acres of land (Figure 1-2).

NSB NLON was placed on the National Priorities List (NPL) on 30 August 1990 by EPA pursuant to CERCLA. The EPA's Superfund Enterprise Management System for NSB NLON is CTD980906515. Per the FFA, the Navy is the lead agency for the site investigation and cleanup, with formal oversight provided by EPA and CT DEEP.

## 1.2 Site Management Plan Sites

Although various site designation numbers have been used in the past, an updated site designation list has been established for NSB NLON. These designations were originally defined during the Phase II Remedial Investigation (RI) (1997) and have been used during subsequent activities, including this SMP. The following sites are addressed in this SMP (Figure 1-2):

- Site 1 - Former Construction Battalion Unit (CBU) Drum Storage Area
- Site 2A - Area A Landfill
- Site 2B - Area A Wetland
- Site 3 - Area A Downstream Watercourses/Overbank Disposal Area (OBDA) Pond
- Site 4 - Former Rubble Fill Area at Bunker A-86
- Site 6 - Former Defense Reutilization and Marketing Office (DRMO)
- Site 7 - Torpedo Shops
- Site 8 - Goss Cove Landfill
- Site 9 - Former Oily Wastewater Tank (OT-5)
- Site 10 - Lower Subbase - Fuel Storage Tanks and Tank 54-H
- Site 11 - Lower Subbase - Power Plant Oil Tanks
- Site 13 - Lower Subbase - Building 79 Former Waste Oil Pit
- Site 14 - Overbank Disposal Area Northeast (OBDANE)
- Site 15 - Former Spent Acid Storage and Disposal Area (SASDA)
- Site 16 - Former Hospital Incinerators
- Site 17 - Lower Subbase - Former Hazardous Materials/Solvent Storage Area (Former Building 31)
- Site 18 - Solvent Storage Area (Building 33)
- Site 19 - Lower Subbase - Former Solvent Storage Area (Former Building 316)

- Site 20 - Area A Weapons Center
- Site 21 - Lower Subbase - Berth 16
- Site 22 - Lower Subbase - Pier 33
- Site 23 - Former Fuel Farm
- Site 24 - Lower Subbase - Central Paint Accumulation Area (Building 174)
- Site 25 - Lower Subbase - Former Classified Materials Incinerator

Site 5 (Hazardous Waste Storage Facility at Bunker A-85) is not addressed in this SMP because activities at the site were conducted under the Resource Conservation and Recovery Act (RCRA) Part A Permit for NSB NLON.

### **1.3 CERCLA Process**

Under the ERP, the investigation and remedial activities to be completed at NSB NLON follow the guidelines established by EPA and the Navy as part of the CERCLA process. The major phases of the CERCLA process are summarized in Appendix B.

Additional investigations are currently being planned for emerging contaminants per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane at NSB NLON. There are known sources of these contaminants at NSB NLON, and releases of PFAS have been documented. A final PFAS Preliminary Assessment (PA) prepared for the Navy by Resolution Consultants evaluated the presence of PFAS in soil and groundwater at NSB NLON, identified potential sources of PFAS, and recommended further PFAS assessment (Resolution, 2020a). A Sampling and Analysis Plan (SAP) for a PFAS Site Inspection was prepared for the Navy by Tetra Tech to cover the investigative activities required to determine the presence or absence of PFAS in soil and groundwater (Tetra Tech, 2020). Depending on the results of the Site Inspection (SI), further PFAS investigations under CERCLA may be required. A 2019 Technical Memorandum presented 1,4-dioxane-related site history and the results of data evaluation that identified sites with the potential for 1,4-dioxane to be present (MSE, 2019), and a SAP for was prepared for the Navy to determine the presence or former presence of 1,4-dioxane indicator analytes (MSE, 2020).

### **1.4 Non-CERCLA Process**

Contaminants present in media at NSB NLON that are not regulated by CERCLA are addressed by the Navy under other regulatory programs. During the investigation of ERP sites for CERCLA contaminants, non-CERCLA contaminants were identified. Further investigation and remediation of the non-CERCLA contaminants is being addressed via the Navy's petroleum, oil and lubricants (POL) program in accordance



with CT DEEP Remediation Standard Regulations (RSRs). The Regulations of Connecticut State Agencies (RCSA) Sections 22a-133k-1 through 22a-133k-3, inclusive, comprise the RSRs. These are supported by RCSA 22a-133kq-1, which provides regulations governing the implementation of Environmental Land Use Restrictions (ELURs). The RSRs contain numerical criteria used to determine the need for remediation of soil associated with a release area that are based on the potential for human health impacts from direct exposure to contaminants in soil, referred to as Direct Exposure Criteria (DECs), and based on the potential for contaminants in soil to have an adverse impact on groundwater, Pollutant Mobility Criteria (PMCs). Likewise, the RSRs include numerical default criteria for contaminated groundwater associated with a release area. Criteria are established to protect surface water resources, referred to as Surface Water Protection Criteria (SWPCs), and to protect human health from contaminants that may volatilize from contaminated groundwater, Volatilization Criteria (VCs). Criteria are also established for some site settings to protect groundwater as a drinking water supply, referred to as Groundwater Protection Criteria (GWPCs). The RSRs are also used as part of the selection of remedial goals (RGs) that are protective of human health and the environment.

## **1.5 Organization of the SMP**

The SMP is organized as follows:

- Section 1.0 consists of this introduction.
- Section 2.0 describes the history and status of sites at NSB NLON, included planned actions for the next 2 to 4 years.
- Section 3.0 presents the sequence of activities and target dates for primary and secondary documents along with discussions of their development.
- Section 4.0 provides references for in-text citations.
- Appendix A presents the figures.
- Appendix B presents the major phases of the CERCLA process.
- Appendix C presents the site schedules.
- Appendix D presents a chronology of significant basewide environmental activities.

**Table 1-1: Preparation and Review Schedule for Primary, Secondary, and Other Documents per the Federal Facility Agreement**

Deliverable Document	Schedule					
	Draft			Draft Final		Final
	Navy Preparation	EPA/ State Review	Navy Responses to Comments	Navy Preparation	EPA/State Review	Navy Preparation
<b>Primary<sup>(1)</sup></b>						
Preliminary Assessment Report	NR					60 days after submittal of draft final document
Site Inspection Report	NR					
RI Scope of Work, Work Plan, and Report	Submit draft report for each site/OU within 540 days of final work plan.	60 days	45 days	45 days	30 days to issue concurrence letter or initiate dispute resolution	45 days after dispute resolution
FS Scope of Work, Work Plan, and Report	Submit draft report for each site/OU within 540 days of final work plan.					
Proposed Plan	Submit draft report for each site/OU within 30 days of draft final RI/FS.					
ROD and Responsiveness Summary	Submit draft report for each site/OU within 45 days of conclusion of public comment period on Proposed Plan					
Remedial Design Scope of Work, Work Plan, 60% and 100% Design	NR					Propose deadlines for these reports within 21 days of issuance of ROD. Remedial Action shall begin within 450 days of EPA signing the ROD.
Remedial Action Scope of Work	NR					
Project Closeout Report	NR					Propose deadline for this report within 21 days of issuance of ROD.
Five-Year Review Report	NR	15 days		15 days	15 days	
<b>Secondary<sup>(1)</sup></b>						
Initial Screening of Alternatives	NR	60 days	45 days	45 days	43	NR
Detailed Analysis of Alternatives						
Treatability Study Work Plan and Report						
Pilot Study Work Plan and Report						
Sampling and Data Results						
Remedial Action Work Plan						
Pre-Final Remedial Design (85%)						
<b>Other<sup>(2)</sup></b>						
Site Management Plan	NR	60 days	30 days		NR	NR
Engineering Evaluation/Cost Analysis						
Removal Action Work Plan						
Construction Completion Report (Remedial and Removal)						
Land Use Control Remedial Designs						
Remedial Action Completion Reports						

1 - EPA, 1995. Federal Facility Agreement under CERCLA 120, In the Matter of the US Department of the Navy, Naval Submarine Base - New London, Groton, Connecticut. January.

2 - Not referenced in the 1995 Federal Facility Agreement.

NR - No Federal Facility Agreement requirements.

RI - Remedial Investigation.

OU - Operable Unit.

FS - Feasibility Study.

ROD - Record of Decision.

EPA - United States Environmental Protection Agency.

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## **2.0 Site Groupings, Work in Progress, and Forthcoming Actions**

This section presents a brief status summary for each site addressed in this SMP with forthcoming actions in the next 2 to 4 years. Additional historical details for the sites are provided in the 2012 SMP (Resolution, 2012). Site maps are provided as Figures 2-1 through 2-21 in Appendix A. Table 2-1, Site Closeout Status of ERP Sites, shows the current status of each medium-specific Operable Unit (OU) on the base. Detailed schedules are attached as Appendix C.

Because of the various schedules for investigations and RAs completed at NSB NLON under the ERP, the sites are in various phases of the Site Closeout process (e.g., No Further Action [NFA], Remedy in Place [RIP], Response Complete [RC], or Site Closeout [SC]).

An RC designation signifies that cleanup goals have been met. Sites classified as RC are those for which a Department of Defense (DoD) component deems that NFA is required, with the possible exception of long-term management (LTMgt). An RC determination requires that one of the following apply: (1) there is no evidence that contaminants were released at the site, (2) no contaminants were detected at the site other than at background concentrations, (3) contaminants attributable to the site are less than action levels used for risk screening, (4) the results of a baseline risk assessment demonstrate that cumulative risks posed by the site are less than established thresholds, or (5) removal and/or Remedial Action Objectives (RAOs) at a site have been selected. Activities for LTMgt include operations, maintenance, and monitoring. An SC determination signifies that the remedy is protective of human health and the environment, no restrictions on future land use are needed, and no additional funds are expected to be expended.

### **2.1 Site Groupings**

Several sites are located in the area of NSB NLON referred to as the Lower Subbase, also known as OU 4. The Lower Subbase is bounded on the west by the Thames River and to the east by the Providence and Worcester Railroad and extends from Pier 1 in the south to Pier 33 in the north. The Lower Subbase is the original Subbase, and the history of its use dates back to 1867. Most of the construction at the Lower Subbase took place in the early 1900s, with a major expansion from 1935 to 1945. Over the last 10 years, many changes have occurred on site, including the demolition of unused buildings and installation of parking areas. Sites in the Lower Subbase have been

grouped together to facilitate additional investigation. The following sites are included in the Lower Subbase:

- Site 10 – Fuel Storage Tanks and Tank 54-H
- Site 11 – Power Plant Oil Tanks
- Site 13 – Building 79 Waste Oil Pit
- Site 17 – Former Hazardous Materials/Solvent Storage Area (Building 31)
- Site 19 – Former Solvent Storage Area (Building 316)
- Site 21 – Berth 16
- Site 22 – Pier 33
- Site 24 – Central Paint Accumulation Area (Building 174)
- Site 25 – Former Classified Materials Incinerator

In the Lower Subbase RI and Feasibility Study (FS) documents, the Lower Subbase is divided into seven Zones. Sites are included in the Lower Subbase Zones as follows:

- Zone 1 – Sites 10 and 11
- Zone 2 – Former fuel distribution lines
- Zone 3 – Site 17
- Zone 4 – Sites 13 and 19, Quay Wall Study Area, and Thames River sediment adjacent to Zone 4 and the outermost area of Pier 1
- Zone 5 – Site 22
- Zone 6 – Site 24
- Zone 7 – Sites 21 and 25

## **2.2 Works in Progress and Forthcoming Actions**

This section presents a brief status summary for each site addressed in this SMP with forthcoming actions in the next 2 to 4 years.

### **2.2.1 Site 2A – Area A Landfill**

The Area A Landfill was closed and capped with a low-permeability engineered cap that included a paved surface. The cap surface is flat, and uses of the top of the landfill include crane test operations, equipment and vehicle storage, and automobile parking. The site is approximately 13 acres in size and is a relatively flat area bordered by a steep wooded hillside that rises to the south, a steep wooded ravine to the west, and the Area A Wetland (Site 2B) and Area A Downstream Watercourses/OBDA (Site 3) to the north. A site plan is provided as Figure 2-2 in Appendix A.

Most of Site 2A is located within designated Explosive Safety Quantity Distance (ESQD) arcs of the Area A Weapons Center (Site 20); therefore, further development in this area is under strict control. Navy regulations prohibit construction of inhabited buildings or structures within these arcs and, although existing buildings operate under a waiver of these regulations, no further construction is planned. Site 2A is 1 of 25 sites currently included in the NSB NLON ERP. Due to site complexities, Site 2A has been separated into two OUs, OU 1 and OU 9. OU 1 includes soil and sediment at Site 2A, and OU 9 includes the Basewide Groundwater associated with the upper-base portion of NSB NLON, including the groundwater at Site 3 as well as Sites 2 (Sites 2A and 2B, collectively), 7, 9, 14, 15, 18, 20, and 23.

The OU 1 Record of Decision (ROD) for the Area A Landfill was signed by the Navy on 15 September 1995 and by EPA Region 1 on 26 September 1995 (Atlantic, 1995). The OU 9 ROD, which included groundwater at Sites 2A and 2B, was signed by the Navy on 24 September 2008 and by EPA Region 1 on 30 September 2008 (NAVFAC, 2008). The selected remedy for the Area A Landfill, as documented in the OU 1 ROD, included the following components: capping of the site with a RCRA Subtitle C multi-layer cap, landfill gas controls to manage landfill gas migration, surface controls to minimize erosion and manage runoff, and use of fencing and institutional controls to control site access and future site use. A Final Land Use Control (LUC) Remedial Design (RD) was completed in February 2017 (Resolution, 2017a).

A Final Remedial Action Completion Report (RACR) for OU 1 was completed in May 2019 (Resolution, 2019d). In accordance with the institutional controls and monitoring components of the OU 1 remedy, the following ongoing activities are required at Site 2A:

- Follow LUC-related procedures pertaining to ground-disturbing activity, access restrictions, signage, and changes in land use, per the LUC RD (Resolution, 2017a) and annually certify LUCs.
- Perform annual inspections of the site, in accordance with Volume III of the Operations and Maintenance (O&M) Manual, as amended (Tetra Tech, 2011b) and perform maintenance on an as-needed basis.
- Perform groundwater and surface water monitoring in accordance with Volume II of the O&M Manual, as amended (Resolution, 2018a).
- Perform five-year reviews. The Fourth Five-Year Review, finalized in December 2016, concluded that the remedy at Site 2A remains protective of human health and the environment (Resolution, 2016).

The RACR for OU 9, Basewide Groundwater was completed in June 2010 (Tetra Tech, 2010b). As documented in the OU 9 ROD signed in September 2008, groundwater

monitoring at Site 2A will continue as required by the Area A Landfill, OU 1 ROD and the O&M Manual (Resolution, 2020b). Surface water at Site 2A is currently monitored under the Area A Landfill long-term monitoring (LTM) program (OU 1) and O&M Manual. Groundwater and surface water are currently monitored annually, and Year 19 (Round 33) of groundwater and surface water monitoring was performed in April 2020. Monitored chemicals of concern (COCs) for groundwater and surface water include selected semivolatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), and metals. The primary monitoring criteria for groundwater are based on the aquatic life criteria in Table 3 of the CT DEEP Water Quality Standards (2013). The primary monitoring criteria for surface water are based on CT DEEP SWPCs. Monitoring criteria were established in the Basewide Groundwater OU RI (Tetra Tech, 2002). Based on monitoring results, the 2019 LTM report recommended a reduction in sampling frequency to biennial. This recommendation follows the decision diagram presented in the O&M Manual, and was accepted by EPA and CT DEEP. Round 34 of groundwater and surface water monitoring will be performed in FY22.

As presented in Table 2-1, the most recent milestone completed for Area A Landfill soil and groundwater was RC and the current phase is LTMgt.

### **2.2.2 Site 2B – Area A Wetland**

The Site 2B - Area A Wetland is a relatively flat-lying, swampy, vegetated area with areas of open water (generally shallow) scattered across the wetland. A site plan is provided as Figure 2-3 in Appendix A.

The soft organic sediments that characterize these wetlands support a monoculture of the reed *Phragmites communis*, which dominates all other vegetative forms. However, the Navy is in the process of removing the reed from the area under their Natural Resources Program by mowing the plants and treating them with a herbicide.

Groundwater at Site 2B was addressed as part of OU 9. The groundwater is only being monitored under the Site 2A LTM to evaluate the performance of the cover system. Information on OU 9 operations can be found in Section 2.2.1. Surface water at Site 2B was evaluated during multiple investigations and the Site 2A long-term monitoring program. Based on these investigations, surface water was not considered a medium of concern for ecological or human receptors in the OU12 ROD (NAVFAC, 2010). Site 2B groundwater and surface water are not carried forward as media of concern under CERCLA.

Wetland sediment at Site 2B was addressed in the OU 12 Area A Wetland ROD (NAVFAC, 2010). COCs for wetland sediments at Site 2B included PAHs,

polychlorinated biphenyls (PCBs) (by Aroclor), 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and select metals (arsenic, cadmium, chromium, copper, lead, nickel, and zinc). The analytical COCs were chosen based on the preliminary remediation goal(s) developed in the RI Update/FS Report (Tetra Tech, 2010a). Analytical data are compared to project action limits as provided in the Field SAP, Pre-Design Investigation (PDI) for Sediment for Area A Wetland (Tetra Tech, 2011a). The project action limits were set at the Threshold Effects Concentrations (TECs) or other similar screening levels (Tetra Tech, 2011a). As reported in the ROD (NAVFAC, 2010), PAHs, pesticides, PCBs, and metals were detected in several sediment samples at concentrations that exceed ecological project action limits. The selected remedy documented in the ROD (NAVFAC, 2010) included excavation of soils to meet project action limits, site restoration, LUCs, monitoring, and five-year reviews. In 2013, approximately 3,283 tons of contaminated soil and sediments were removed from six non-contiguous areas of Site 2B. Site 2B was restored and is managed by LUCs and LTM (Resolution, 2017a). The 2015 restoration monitoring inspection indicated that the wetland meets the performance standards. The first O&M inspection, performed in November 2015, determined that the monitoring wells are in good condition. As shown in Table 2-1, the most recent Site 2B core documents to be completed were the LUC RD for OU 12 (Tetra Tech, 2012b) and a Final RACR was completed for Area A Wetland Site 2B in June 2015 (CB&I, 2015).

The LUC for groundwater at this site is covered under the OU 9 LUC RD (Tetra Tech, 2009b) and a LUC for sediment is covered under the Site 2B Wetland LUC RD (Tetra Tech, 2012b).

As presented in Table 2-1, recent milestone completed for Area A Wetland sediment is RC and the current phase is LTMgt.

### **2.2.3 Site 3 – Area A Downstream Watercourses/Formal OBDA and OBDA Pond**

Site 3 – Area A Downstream Watercourses/Formal OBDA and OBDA Pond is located in the northern portion of NSB NLON, adjacent to the Area A Landfill (Site 2A) and Area A Wetland (Site 2B). A site plan for Site 3 is provided as Figure 2-4 in Appendix A.

The Area A Downstream Watercourses includes three ponds (Upper Pond, Lower Pond, and OBDA Pond) and six interconnected streams. The Area A Downstream Watercourses receive surface water and groundwater recharge from the Area A Landfill (Site 2A), Area A Wetland (Site 2B), Torpedo Shops (Site 7), OBDA, and OBDA NE (Site 14). The OBDA is located on the slope of a dike (Area A Dike) adjacent to the Area A Landfill (Site 2A) and Area A Wetland (Site 2B). North Lake, used for swimming and



other recreational activities by NSB NLON personnel and their families, is a man-made lake in the central portion of Site 3. A nine-hole golf course occupies most of the western portion of Site 3.

Most of Site 3 is within designated ESQD arcs of Site 20 (Area A Weapons Center); therefore, further development is not planned for this area. Navy Regulations prohibit construction of inhabited buildings or structures within these arcs and, although existing buildings operate under a waiver of these regulations, no further construction is planned. Due to site complexities, Site 3 has been separated into two OUs, OU 3 and OU 9. OU 3 includes soil at Site 3, and OU 9 includes the Basewide Groundwater associated with the upper portion of NSB NLON, including the groundwater at Site 3 as well as Sites 2A), 7, 9, 14, 15, 18, 20, and 23.

A RA for Site 3 was completed in 1999 and 2000, where 18,050 tons of soil and sediment were excavated and disposed off-site (FWEC, 2001). During the remedial action excavation activities, a previously unknown source of petroleum contamination and a small disposal area was discovered, and this site was named the Site 3 New Source Area (NSA). In 2004, the ROD (NAVFAC, 2004) for Site 3 NSA determined NFA was required under CERCLA; however, was further investigated and remediated under CT DEEP regulations.

The ROD for OU 9, Basewide Groundwater, was completed in September 2008 (NAVFAC, 2008). The final selected remedy for groundwater at Site 3 is institutional controls with monitoring. Volume II – Groundwater Monitoring Plan (GMP) of the O&M Manual was revised in 2020 to update information for Site 3 (Resolution, 2020b).

As shown in Table 2-1, the most recent core document completed for Site 3 groundwater is the RACR. LUCs for groundwater at Site 3 are described in the RD for LUCs for OU 9 Basewide Groundwater (Tetra Tech, 2009b). A Supplemental Groundwater Investigation (SGI) for Site 3 was finalized in August 2019 (MSE, 2019). The SGI was intended to determine if LTM of groundwater at Site 3 could be terminated based on 9 years of results less than RGs. Because none of the groundwater samples exceeded RGs/PALs during the SGI, and no groundwater samples have exceeded RGs/PALs since 2009, groundwater monitoring at Site 3 was recommended to be discontinued in the SGI and the recommendation was subsequently accepted by the EPA on July 9, 2019. Based on groundwater monitoring showing that the RGs were met, the current phase for groundwater is LTMgt.

As shown in Table 2-1, the most recent core documents completed for soil and sediment at Site 3 are the RACR and LUC RD. The RACR was completed in May 2019 and documents all work completed at Site 3. LUCs were not required as part of the

original remedy as presented in the ROD (NAVFAC, 1998) because all soil and sediment exceeding RGs were intended to be removed (i.e., allowing unlimited use/unrestricted exposure [UU/UE] at the site). However, because contaminated soil and sediment was left in place and encapsulated in concrete in one area of Site 3, LUCs are required.

As presented in Table 2-1, the most recent milestone completed for Site 3 soil, sediment, and groundwater was RC and the current phase is LTMgt. For Site 3 NSA soil, the most recent milestone completed was RC and NFA is required under CERCLA.

#### **2.2.4 Site 6 – Former DRMO**

Site 6 – Former DRMO is a closed and capped landfill, approximately 3 acres in size, located in the northwestern portion of NSB NLON, adjacent to the Thames River. Site 6 was used as a landfill and waste burning area from 1950 to 1969. In 1995, approximately 4,700 tons of contaminated soil were excavated from the landfill and transported off site for disposal. The soil excavation was advanced to the water table; however, impacted soil beneath the water table was not removed. Currently, the majority of Site 6 is paved and used for storage of boats and by contractors for staging of equipment. A site plan is provided as Figure 2-6 in Appendix A. Site 6 is managed by LUCs and LTM (NAVFAC, 2017a).

A RACR was prepared to document implementation of the soil and groundwater remedies at the site (Resolution, 2019e). The selected remedy in the OU 2 ROD was institutional controls and monitoring. Specifically, the remedy included LUCs consisting of maintenance of the existing asphalt and geosynthetic layer cover, limiting site access, groundwater monitoring, and five-year reviews.

In accordance with the institutional controls and monitoring components of the OU 2 remedy, a LUC RD was finalized in February 2017, and annual inspections and groundwater monitoring are conducted in accordance with the O&M manuals and five-year reviews. The overall objective of groundwater monitoring is to evaluate the effectiveness of the cap and to confirm that contamination is not migrating through the soil, into the groundwater, and ultimately discharging to the Thames River. Since 2002, sampling activities at the site have been completed in accordance with the GMP in Volume II of the O&M Manual; groundwater monitoring is currently performed in accordance with the latest O&M Manual (Resolution, 2020b). Because the RA did not achieve UU/UE for the site, five-year reviews are required for Site 6. The Fourth Five-Year was finalized in December 2016 (Resolution, 2016).

As shown in Table 2-1, the most recent milestone completed for Site 6 soil and groundwater is RC, and the current phase is LTMgt.

### **2.2.5 Site 7 – Torpedo Shops**

Site 7 – Torpedo Shops includes Buildings 325, 450 (demolished), 477, and 528 and is located in the northern portion of NSB NLON, adjacent to and north of Site 3. The Navy conducts maintenance activities on torpedoes at Site 7. A site plan for Site 7 is provided as Figure 2-7 in Appendix A. The Navy currently manages the use, storage, and disposal of hazardous material and waste at Site 7 in accordance with RCRA regulations.

The RD for LUCs on Basewide Groundwater OU 9 documented NFA for Site 7 (Tetra Tech, 2009b), and the RACR for OU 9 documented that the RA is complete and that monitoring, LUCs, and five-year reviews have been discontinued (Tetra Tech, 2009a). Completion of the groundwater RA at Site 7 was documented in the RACR for OU 9 that was completed in 2010 (Tetra Tech, 2010b) and in the Third Five-Year Review Report that was completed in 2011 (Tetra Tech, 2011c). The ROD required the following response actions to be completed by the Navy: delineation, soil remediation (excavation, disposal, and verification) of soil containing COCs in excess of cleanup goals, and restoration. A RACR for OU 8 Site 7 was finalized in August 2016. In accordance with the ROD, the selected remedy resulted in the removal of contamination above medium-specific cleanup levels from Site 7. Therefore, no five-year reviews or ongoing activities are required.

As presented in Table 2-1, the SC milestone has been achieved for Site 7 soil and groundwater and NFA is required under CERCLA..

### **2.2.6 Site 8 – Goss Cove Landfill**

Site 8 – Goss Cove Landfill is a closed and capped landfill, approximately 3.5 acres in size, located in the southwestern portion of NSB NLON, adjacent to the Thames River. Site 8 was used as a landfill from 1946 to 1957, and during that time, incinerator ash and rubble was disposed of there. In 1986, the U.S.S. Nautilus Submarine Monument and Submarine Force Library and Museum were constructed over the landfill. Installation of an engineering cap over the landfill was completed in 2001, and the majority of Site 8 is currently paved and used for the museum and associated parking. A site plan is provided as Figure 2-8 in Appendix A. Site 8 is managed by LUCs and LTM (NAVFAC, 2017b).

The selected presumptive remedy for soil and waste/fill material at the site included the following components: containment with an engineered control cap, NFA for sediment within Goss Cove, institutional controls, LTM, and five-year reviews.

Groundwater monitoring has been conducted to evaluate whether the engineered cap has been effective in minimizing contaminant migration from the landfill to downgradient locations. Monitored groundwater COCs include selected volatile organic compounds (VOCs), SVOCs including PAHs, and metals. As reported in GMP in Volume II of the O&M Manual (Tetra Tech, 2006), two types of monitoring criteria (primary and secondary) are applied to groundwater at Site 8. Primary monitoring criteria include CT DEEP SWPCs, site-specific SWPCs, and CT DEEP VCs. The 2011 annual site inspection found that an aboveground storage tank (AST), its foundation (concrete pad), and associated piping were installed on the cap without prior knowledge or approval from the ERP Manager. An investigation was conducted confirming that installation of the AST did not impact the Site 8 engineered cap system (Tetra Tech, 2012c).

A RACR for OU 5 Site 8 was finalized in May 2019. The selected remedy in the OU 5 ROD was containment (via an engineered cap), institutional controls, monitoring (long-term groundwater and O&M), and five-year reviews. The OU 5 ROD stated that NFA was required for surface water and sediment at Site 8. In accordance with the institutional controls and monitoring components of the OU 5 remedy, the following ongoing activities are required at Site 8: LUCs, annual inspections (maintenance on an as-needed basis), groundwater monitoring, and five-year reviews. The February 2017 LUC RD is the primary LUC document at Site 8 to document and ensure proper implementation of LUCs (Resolution, 2017a).

As presented in Table 2-1, the most recent milestone achieved for Site 8 soil and groundwater is RC, and the current phase is LTMgt, while the status of Site 8 sediment is SC.

## **2.2.7 Zone 1 – Lower Subbase – Site 10 and Site 11**

Zone 1 extends from Darter Road south of Building 89 to the southern side of Corvina Road. The Providence and Worcester Railroad runs along the eastern border of the zone, and the Thames River forms the western border of the zone. Approximately 90 to 95 percent of Zone 1 is paved or covered with buildings, and the land surface slopes gently toward the Thames River. Zone 1 is covered primarily by buildings, concrete, or paving, although some small sections are covered by grass. Zone 1 includes Site 10 – Fuel Storage Tanks and Tank 54-H, Site 11 – Power Plant Oil Tanks, Building 89 Underground Storage Tank (UST), and PFAS sites. A majority of Zone 1 is paved with concrete or an asphalt layer, and site features include buildings, driveways, and parking

areas. The main building in Zone 1 is the Power Plant Building (Building 29). A site plan is provided as Figure 2-11 in Appendix A.

Historical fuel lines were previously used to distribute fuel oil from the Former Fuel Farm (Site 23) to Zones 1 and 2. These fuel lines have been decommissioned, and fuel is currently delivered to Zone 1 by tanker truck. Other utilities that run throughout Zone 1 include steam/condensate, water, sanitary sewer, storm sewer, natural gas, and electric.

Soil samples collected in Zone 1 during the FS and 2012 Data Gap Investigation (DGI) had extractable total petroleum hydrocarbons (ETPH) concentrations that exceeded Industrial/Commercial (I/C) DEC's in saturated soils at depths ranging from 8 to 12 feet below ground surface (Tetra Tech, 2013b). Non-aqueous-phase liquid (NAPL) was found in one well during previous gauging events in Zone 1. An estimated volume of 1,100 gallons of ETPH was calculated based on locations where NAPL was observed and where total petroleum hydrocarbon (TPH) soil concentrations exceeded 25,000 milligrams per kilogram (Tetra Tech, 2013b).

The Fourth Five-Year Review was published in December 2016. The remedy for CERCLA contaminants includes the following components: LUCs, LTM, and five-year reviews. The LUCs include CERCLA risk-based engineering controls, regular inspections and maintenance of building foundations and pavement, and restrictions on residential use of Zone 1.

An FS was completed in January 2010 (Tetra Tech, 2010c), and a ROD was signed in August 2012 (NAVFAC, 2012). The non-CERCLA remedy for Zone 1 was placed in the Navy's POL program to be investigated and remediated in accordance with CT DEEP RSRs. A Remedial Action Plan (RAP) for non-CERCLA contaminants in Zone 1 was completed in 2013 (Tetra Tech, 2013b). The Final RAP identified targeted "ozone/air sparging (AS)" as the most appropriate remedial alternative for Zone 1 soil and groundwater; however, based on additional considerations, ozone was not included as part of the selected remedy for Zone 1. A full description of the selected remedy for Zone 1 soil and groundwater can be found in the Final 100 Percent Design Report for Non-CERCLA Soil and Groundwater (APTIM, 2018). The selected remedy for Zone 1 soil and groundwater included biosparge injections, monitored natural attenuation, and LUCs for soil contamination and LTM for groundwater. Thirty biosparge wells and six additional monitoring wells were installed between August 7, 2018, and January 11, 2019. Following startup testing, the system went through a 1-month optimization process that included close monitoring and adjustments to the system. The optimization took place from the start of full-scale operation on January 2, 2019, until

the last reading of the month collected on January 30, 2019 (APTIM, 2020). Operation of the system was ongoing as of July 2020.

As presented in Table 2-1, the most recent milestone achieved for Zone 1 – Sites 10 and 11 soil is RC and the current phase is LTMgt. The SC milestone was achieved for Zone 1 – Sites 10 and 11 Thames River sediment and NFA is required under CERCLA. NFA is required for groundwater at Zone 1 – Sites 10 and 11.

## **2.2.8 Zone 4 – Lower Subbase – Site 13 and Site 19**

Zone 4 includes two ERP Sites, Site 13 – Building 79 Former Waste Oil Pit and Site 19 – Former Solvent Storage Area (Building 316), both located on Lower Subbase (OU 4) in Zone 4, south of Zone 3. Zone 4 is covered entirely with asphalt pavement, concrete, or buildings, and the ground surface slopes gently toward the Thames River. Site 13 was used to service diesel railroad locomotives during World War II through the 1950s. The locomotive service area included a pit in the northwestern corner of the building into which waste oil and solvents were reportedly drained during cleaning and servicing of locomotives. The service pit is no longer in use and was filled with concrete in the 1980s. Building 79 was demolished after the 2012 OU 4 ROD. A site plan is provided as Figure 2-12 in Appendix A.

Site 19 (Former Solvent Storage Area) includes former Building 316, which was located south of the gate valve building (Building 332). Various solvents were used in this building for equipment cleaning, including 5-gallon pails of methyl ethyl ketone, until approximately 2002. The roof and doors of Building 316 were demolished leaving only the side walls. Subsurface fuel oil distribution lines formerly ran throughout Zone 4; however, they have been abandoned. Former Pier 1 is located in the Thames River, southeast of Pier 2 adjacent to Zone 4. In the western part of Zone 4, a wooden pier and quay wall constructed in the 1940s underlies the paved driveway.

Zone 4 was previously investigated via the CERCLA process. An FS was completed in January 2010 (Tetra Tech, 2010c), and a ROD was signed in August 2012 (NAVFAC, 2012). The non-CERCLA remedy for Zone 4 was placed in the Navy's POL program to be investigated and remediated in accordance with CT DEEP RSRs. A RAP for non-CERCLA contaminants in Zone 4 was completed in 2013 (Tetra Tech, 2013c). The RAP recommended NFA for Zone 4. However, based on results from the 2016 PDI (AGVIQ, 2017) and the 60 Percent Design Report (Resolution, 2018b), a groundwater LTM program and LUCs were recommended to control future subsurface disturbance activities and prohibit residential use. The LUC RD (Resolution, 2020c) is the primary LUC document for source control at Zone 4 to document and ensure proper implementation of LUCs.

### **2.2.8.1 Zone 4 – Soil and Groundwater**

The remedy for Zone 4 – Site 13 soil was selected in the OU 4 ROD (NAVFAC, 2012). As reported in the ROD, PAHs were detected in soil at concentrations that exceed Connecticut Residential DEC's, and lead was detected in soil at concentrations that exceed Connecticut Residential DEC's and Industrial/Commercial Target Action Levels provided in the ROD. The selected remedy was excavation to meet I/C RGs; LUCs including CERCLA risk-based engineering controls, institutional controls, and inspections, and LTM of groundwater. The LUC components include restricting residential land use, restricting disturbance of contaminated soil, and maintaining a 36,000-square-foot protective cover layer that meets CT DEEP RSR standards for I/C use. The remedy for Zone 4 – Site 19 soil and groundwater in the OU4 ROD was no further action.

RA activities for OU 4 Zone 4 soil were completed and a final Construction Completion Report (CCR) was issued in February 2020. Lead- and petroleum-contaminated soil from Zone 4 was excavated from three areas adjacent to the foundation of former Building 79. The RA was completed in accordance with the RD, RA Work Plan (RAWP), and other CERCLA requirements as described in the Final OU 4 ROD (NAVFAC, 2012). Zone 4 fieldwork was completed primarily from May 2014 to January 2015. Remobilization, additional hot spot excavation, and stormwater drainage system abandonment were completed from May to August 2017. Additional details can be found in the CCR (AGVIQ, 2020).

As presented in Table 2-1, the most recent milestone completed for Zone 4 – Site 13 soil, Thames River Sediment, and groundwater is RC and the current phase for these media is LTMgt . For Zone 4 – Site 19, the most recent milestone completed for soil and groundwater is SC and NFA is required for them.

### **2.2.8.2 Zone 4 – Thames River Sediment**

Zone 4 Thames River sediment includes the area along the Quay Wall from Pier 1 (south) to Pier 6 (north), Inner Pier 1, and Outer Pier 1.

A two-phase Non-Time-Critical Removal Action (NTCRA) was conducted to address most of the contaminated sediment in Inner and Outer Pier 1 (Tetra Tech, 2009c). Phase 1 of the NTCRA was conducted from December 2009 to March 2010 and removed a majority of the contaminated sediment from Inner and Outer Pier 1 by mechanical dredging. Phase 1 removed all contaminated sediment from Outer Pier 1 with the exception of a small area of contaminated sediment, but did not remove all contaminated sediment from Inner Pier 1. During Phase 2, which was conducted in

2012 and involved hydraulic dredging, the remaining contaminated sediment from Inner Pier 1 was removed.

The final remedy for Zone 4 sediment was selected in the OU 4 ROD (NAVFAC, 2012). As reported in the ROD, unacceptable ecological risks were estimated for benthic invertebrates and piscivorous birds exposed to metals, PAHs, pesticides, and PCBs in Zone 4 and Outer Pier 1 sediment. The selected remedy documented in the ROD was dredging to meet RGs in the majority of Zone 4 (Pier 2 to Pier 6), LUCs including institutional controls and inspections in Zone 4 and Outer Pier 1, LTM in Zone 4 and Outer Pier 1, and five-year reviews for Zone 4 and Outer Pier 1. Following the ROD, the Navy performed a PDI in 2012 to collect additional data to refine the nature and extent of sediment contamination. After completion of the PDI, the RD was completed, and RA activities (dredging) have been completed. An Explanation of Significant Differences (ESD) to the ROD for Zone 4 sediment was published in August 2017 (NAVFAC, 2017c). The ESD documents the addition of a new dredge area, reduction of depth in Areas 1, 3, 4, and 7, LUCs in Outer Pier 1, and placement of sediment cover material underneath Quay Wall overhang. A CCR is expected by the end of 2020.

As presented in Table 2-1, the latest milestone achieved for Zone 4 Thames River sediment is RC and the current phase for Zone 4 sediment is LTMgt.

### **2.2.9 Zone 3 – Lower Subase – Site 17 Former Hazardous Materials/Solvent Storage Area (Former Building 31)**

Zone 3 extends from Capelin Road along the southern end of Zone 2 to the southern end of Bullhead Road. The Providence and Worcester Railroad borders the eastern edge of Zone 3, and the Thames River forms the western border. The ground surface of Zone 3 slopes gently to the Thames River and is paved or covered with buildings. Surface water runoff in Zone 3 is collected in catch basins and drains through storm sewers to the Thames River. Zone 3 includes Site 17 – Hazardous Materials/Solvent Storage Area (Former Building 31) and former subsurface fuel oil distribution lines, steam, condensate, and electrical ducts. Building 31 was used as a battery overhaul shop until the 1950s and then as a hazardous materials storage area from the 1970s to the 1990s. A site plan is provided as Figure 2-16 in Appendix A.

An FS for Zone 3 was completed in January 2010 (Tetra Tech, 2010c), and a ROD was signed in August 2012 (NAVFAC, 2012). As reported in the ROD, benzo(a)anthracene was detected in soil at concentrations that exceed Connecticut Residential DEC, and lead was detected in soil at concentrations that exceed Residential and Industrial/Commercial DEC. A non-CERCLA remedy was selected for the portion of Zone 3 with only petroleum contamination under the Navy's POL program. Further investigation and



remediation were conducted in accordance with CT DEEP RSRs. A RAP for non-CERCLA contaminants in Zone 3 was completed in 2013 (Tetra Tech, 2013c).

The RAP documented the selection of LUCs for soil and installation of an In-Situ Submerged Oxygen curtain (iSOC) for Zone 3. However, based on results from the 2016 PDI (AGVIQ, 2017) and the 60 Percent Design Report (Resolution, 2018b), the iSOC remedy was not implemented. Instead, the groundwater remedy was modified to include a groundwater LTM program and LUCs to control future subsurface disturbance activities and prevent residential use. The March 2020 LUC RD is the primary LUC document for source control at Zone 3 to document and ensure proper implementation of LUCs.

As presented in Table 2-1, the most recent milestone achieved for Zone 3 – Site 17 soil is RC and the current site closeout phase of soil is LTMgt. The Zone 3 – Site 17 groundwater and Thames River Sediment have achieved SC and require NFA.

### **2.2.10 Site 20 – Area A Weapons Center**

Site 20 – Area A Weapons Center includes Building 524 and weapons storage bunkers and encompasses approximately 23 acres. Site 20 is located in the northeastern portion of NSB NLON, north of, and adjacent to, Site 2B. The Area A Weapons Center is a high-security restricted-access area and consists of three drainage areas (Drainage Areas 1, 2, and 3) located in the Southern Bunker Area. Building 524 was historically used for administration, minor torpedo assembly, and storage of simulator torpedoes. Chemicals, including cleaning and lubricating compounds, paints, adhesives, and liquid fuels, were used and stored in relatively small amounts at the site. Currently, the bunkers are used for storage of live and simulator torpedoes and missiles. A site plan is provided as Figure 2-18 in Appendix A.

Potential risks resulting from exposures to chemicals that have volatilized from groundwater and migrated through building foundations into indoor air were evaluated in a 2008 memorandum by comparing concentrations of volatile chemicals detected in groundwater to EPA and CT DEEP screening criteria for vapor intrusion. Concentrations of trichloroethene exceeded the EPA screening criterion and was further evaluated using the EPA Johnson and Ettinger Vapor Intrusion Model. Modeling results showed that cancer risks were within EPA and CT DEEP acceptable levels, and vapor intrusion is therefore not an issue at Site 20. As a result, NFA was selected for Site 20 groundwater in the Final OU 9 ROD (NAVFAC, 2008). The final remedy of NFA for Site 20 groundwater was also documented in the RACR for OU 9 (Tetra Tech, 2009a).

Based on the requirements of the ROD, a RAWP was prepared for OU7, Site 20 soil and sediment (FWEC, 2001). The major components of the selected remedy, as described in the RAWP included: site preparation; soil and sediment excavation, transportation, and disposal; and additional sampling. A RACR for OU 7 was finalized in 2015 and summarizes the site activities. In accordance with the OU 7 ROD, the selected remedy resulted in the removal of all contamination, resulting in NFA at Site 20.

As presented in Table 2-1, the most recent milestone achieved for Site 20 soil, sediment and groundwater is SC.

### **2.2.11 Zone 7 – Lower Subbase – Site 21 and Site 25**

Site 21 – Berth 16 and Site 25 – Former Classified Materials Incinerator are both located on Lower Subbase (OU 4), within Zone 7, which is north of Zone 1. Zone 7 also encompasses five buildings, including Building 157 (Site 21). Subsurface fuel oil distribution lines were historically located in Zone 7 but have been abandoned. Site 21 includes Building 157, the Optical Shop (formerly the Periscope Shop), which was constructed prior to 1944 and encompasses approximately 6,900 square feet. A majority of Zone 7 is paved with concrete or an asphalt layer, and site features include buildings, driveways, and parking areas. The following structures are present within Site 21: Building 106, currently used for storage; Building 157, currently the Optical Shop; Building 173, currently used for electrical distribution, and Buildings 457 and 478, which were originally and are currently used to house maintenance shops. A site plan is provided as Figure 2-19 in Appendix A.

The final remedy for Zone 7 soil was selected in the OU 4 ROD (NAVFAC, 2012). As reported in the ROD, PAHs and arsenic were detected in soil at concentrations that exceed Connecticut Residential DEC, and lead was detected in soil at concentrations that exceed Residential and I/C DEC. Additionally, antimony, copper, and hexavalent chromium were detected in soil at concentrations that exceed residential Human Health Risk Assessment values provided in the ROD. The selected remedy documented in the ROD is LUCs and monitoring. The LUC components include restricting residential land use, restricting disturbance of contaminated soil, and maintaining a protective cover layer to provide CERCLA risk-based engineering controls and CT DEEP engineered controls. The selected remedy for sediment in the Thames River adjacent to Zone 7 in the OU 4 ROD was no further action.

Selection of the non-CERCLA remedy for the portions of Zone 7 that only included petroleum was completed under the Navy's POL program. Additional investigations and remediation were completed in accordance with CT DEEP RSRs. A RAP for Zone 7

was completed in 2013 (Tetra Tech, 2013a) documenting the selection of LUCs as the non-CERCLA remedy for Zone 7. The LUC RD for OU 4, Zone 7 was finalized in February 2019 (Resolution, 2019a).

The most recent milestone completed for Zone 7 – Site 21 and Site 25 soil is RC and the current phase is LTMgt (see Table 2-1). For the Zone 7 – Site 21 and Site 25 Thames River sediment and groundwater, the SC milestone has been achieved.

### **2.2.12 Site 22 – Lower Subase – Pier 33**

Site 22 – Pier 33 is located on Lower Subase (OU 4), within Zone 5, which is north of Zone 6. Site 22 includes Pier 33, Building 175, and approximately 400 linear feet of additional riverfront property adjacent to these two structures. Building 175 is located northeast of Pier 33 and originally housed several ASTs used to store battery acid (sulfuric acid). A site plan is provided as Figure 2-20 in Appendix A.

The Lower Subase FS was prepared to develop and evaluate appropriate remedial alternatives for potentially impacted media (soil, groundwater, and sediment) at the Lower Subase sites. The final Lower Subase FS was issued in December 2010 (Tetra Tech, 2010c), and a Soil and Groundwater PDI Completion Report and FS Addendum (Tetra Tech, 2012a) were issued in January 2012. At Site 22, arsenic, copper, and lead concentrations detected during the Groundwater PDI were much less than their respective criteria; therefore, groundwater remediation was not required for CERCLA contaminants at Site 22. A final remedy of NFA for Zone 5 (Site 22) soil was selected in the OU 4 ROD (NAVFAC, 2012). The ROD also indicated NFA under CERCLA was selected for groundwater and the sediment in the Thames River adjacent to Zone 5 (Site 22).

The selection of the non-CERCLA remedy for the portion of Zone 5 that only included petroleum contamination was completed under the Navy's POL program. Additional investigations and remediation were completed in accordance with CT DEEP RSRs. A 60 Percent Design Report for non-CERCLA soil and groundwater in Zone 5 was finalized in 2019 (Resolution, 2019c). The RAP for Zone 5 (Tetra Tech, 2013d) recommended LUCs as the remedy for soil and installation of an iSOC for groundwater; however, based on data presented in the PDI for Zones 3 and 5 (AGVIQ, 2017), the groundwater remedy was changed to LTM.

As presented in Table 2-1, the soil, Thames River Sediment, and groundwater at Site 22 have achieved SC.

### **2.2.13 Site 23 – Former Fuel Farm and Site 9 – Former Wastewater Oily Tank OT-5**

Site 23 – Former Fuel Farm is located along the southern boundary of NSB NLON, north of Crystal Lake Road, and Site 9 – Former Wastewater Oily Tank (OT-5) is located within the northeastern portion of Site 23. Site 9, located within the limits of the Former Fuel Farm (Site 23), is currently developed as a recreation area that includes baseball fields. Site 23 is a former bulk fuel UST farm originally constructed in the early 1940s that included 11 USTs. Site plans for Sites 23 and 9 and provided as Figures 2-9 and 2-10 in Appendix A.

All 11 former USTs were closed in place between 1991 and 2006. Other site features included an oil/water separator and truck dumping pad and trough associated with OT-10. Currently, there are two active, 150,000-gallon, diesel ASTs (OT-12 and OT-13), a fuel loading rack, and associated piping system located at Site 23, east of former OT-5. The active ASTs are located within an earthen secondary containment that is clay lined; athletic fields occupy the majority of the remaining former fuel farm area. Because Site 9 is located within the site boundaries of Site 23, Site 9 groundwater was evaluated and is being addressed with Site 23 groundwater.

Although no significant groundwater contamination has been detected at Site 23, a number of petroleum releases were documented by the Navy at NSB-NLON in the vicinity of Site 23. Non-CERCLA investigations of Site 23 conducted from 1989 through 1999 under the Navy's POL program detected evidence of releases of petroleum products from Site 23 tanks, their associated piping and possibly from other nearby sources (B&RE 1997). Both soil contamination and free product were identified at Site 23 during these investigations and they were subsequently remediated under CT DEEP RSRs. Petroleum hydrocarbons have been detected periodically at the outfall of Site 23 storm sewer system. Site Assessment Screening Evaluations (SASEs) were subsequently completed for soil at Site 9 (Resolution, 2013) and Site 23 (Resolution, 2017b) to evaluate available soil data to determine an appropriate response to achieve site closure under CERLCA. Based on the conclusions of the SASEs, NFA was recommended for soil at Sites 9 and 23.

The remedy for Sites 9 and 23 groundwater selected in the OU 9 ROD was institutional controls, including: preventing withdrawal and/or use of groundwater for potable water purposes or any other purposes that may result in unacceptable risks to human health or the environment; ensuring that groundwater extracted from Site 9 and 23 during construction dewatering activities is handled, stored, and disposed in accordance with applicable state and federal regulatory requirements; and five-year reviews until

contaminant concentrations are shown to be protective of human health and the environment.

Based on the OU9 ROD, a RD for LUCs on Basewide Groundwater OU 9 was prepared (Tetra Tech, 2009b). The Site 23 underdrain metering pit was sampled after construction and quarterly for a period of 1 year starting in June 2007 (Tetra Tech, 2008). The metering pit collects groundwater from the Site 23 area underdrains from four former tanks. As reported in the LUC RD for OU 9 (Tetra Tech, 2009b), all relevant concentrations were less than established Connecticut criteria (with the exception of anomalous results as discussed in the Final ROD). Therefore, LUCs at Site 23 are to prevent the withdrawal and/or use of groundwater for potable water purposes until concentrations in groundwater meet criteria acceptable for UU/UE and to ensure that groundwater extracted during construction dewatering activities is properly handled, stored, and disposed of. The RACR for OU 9 was prepared to document completion of site remedies and LUCs at OU 9, including Site 23 (Tetra Tech, 2009a). A Site Assessment Screening Evaluation for Site 23, which included an assessment of soil compliance, was finalized in 2017 and recommended NFA under CERCLA (Resolution, 2017b).

The most recent milestone completed for Site 9 groundwater is RC (see Table 2-1). Site 9 is located within Site 23, and inspections and five-year reviews are planned for Site 23 until groundwater meets criteria for UU/UE. The current phase of the groundwater remedy is LTMgt. As reported in the RACR for OU 9 (Tetra Tech, 2009b), soil at Site 9 was investigated and remediated under the CT DEEP RCRA UST Program; therefore, no CERCLA decision documents were prepared for soil at Site 9. The SASE completed for Site 9 soil further evaluated the contaminated soil remaining at the site and determined NFA was required under CERCLA.

As presented in Table 2-1, the latest milestone completed for Site 23 groundwater is RC. LUC inspections and five-year reviews are planned for Site 23 until groundwater meets criteria for UU/UE; therefore, the current phase is LTMgt. As reported in the RACR for OU 9 (Tetra Tech 2009b) the soil at Site 23 was investigated and remediated under the CT DEEP RCRA UST Program; therefore, no CERCLA decision documents have been prepared for the soil at Site 23. The SASE completed for Site 23 soil further evaluated the contaminated soil remaining at the site and determined NFA was required under CERCLA.

#### **2.2.14 Zone 6 - Site 24 – Central Paint Accumulation Area (Building 174)**

Site 24 – Central Paint Accumulation Area, is located on Lower Subbase (OU 4), within Zone 6, which is north of Zone 5. Site 24 incorporates Building 174, which

encompasses approximately 8,000 square feet and was constructed prior to 1944. Historically, Building 174 was used for torpedo storage until 1982 when the building was retrofitted to include boat sandblasting and other paint activities. Currently, Building 174 is used as the primary storage facility for paints used in boat maintenance. A site plan is provided as Figure 2-21 in Appendix A.

NFA was the selected remedy for all media at Zone 6 under CERCLA (NAVFAC, 2012). The non-CERCLA remedy selection process for Zone 6 was placed in the Navy's POL program. Additional investigations and remediation were conducted in accordance with CT DEEP RSRs. A RAP for Zone 6 was completed in 2013 (Tetra Tech, 2013e) that documented the selection of LUCs as the non-CERCLA remedy for Zone 6. The LUC RD for OU 4, Zone 6 was finalized in February 2019 (Resolution, 2019b).

As presented in Table 2-1, the milestone of SC has been achieved for Zone 6 (Site 24) soil, Thames River Sediment and groundwater.

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**Table 2-1: Site Closeout Status of ER Program Sites**

Site/Zone	Medium	Operable Unit	Latest Core Document Completed	Milestone Completed	Core Documents Needed	Current Phase
Site 1 – Former CBU Drum Storage Area <sup>(1)</sup>	Soil	OU1	NFA DD	RC	None	NA
Site 2A – Area A Landfill	Soil	OU1	RACR, LUC RD	RC	Five-Year Review	LTMgt
	Groundwater	OU9	RACR, LUC RD	RC	Five-Year Review	LTMgt
Site 2B - Area A Wetland	Sediment	OU12	RACR, LUC RD	RC	Five-Year Review	LTMgt
Site 3 – Area A Downstream Watercourses and Former OBDA	Soil (ROD,ESD)	OU3	RACR, LUC RD	RC	Five-Year Review	LTMgt
	Sediment (ROD, ESD)	OU3	RACR, LUC RD	RC	Five-Year Review	LTMgt
	NSA Soil	OU3	NFA ROD	RC	None Under CERCLA	NA
	Groundwater	OU9	RACR, LUC RD	RC	Five-Year Review	LTMgt
Site 4 – Former Rubble Fill at Bunker A-86	Soil	OU10	NFA ROD	RC, SC	None	NA
Site 6 – Former DRMO	Soil	OU2	RACR, LUC RD	RC	Five-Year Review	LTMgt
	Groundwater	OU2	RACR, LUC RD	RC	Five-Year Review	LTMgt
Site 7 – Torpedo Shops	Soil	OU8	RACR	RC, SC	None	NA
	Groundwater	OU9	RACR	RC, SC	None	NA
Site 8 – Goss Cove Landfill	Soil	OU5	RACR, LUC RD	RC	Five-Year Review	LTMgt
	Sediment	OU5	NFA ROD	SC	None	NA
	Groundwater	OU5	RACR, LUC RD	RC	Five-Year Review	LTMgt
Site 9 – Former Oily Wastewater Tank OT-5 <sup>(2)</sup>	Soil	NA	SASE	RC	None Under CERCLA	NA
	Groundwater	OU9	RACR, LUC RD	RC	Five-Year Review	LTMgt
Site 10/Zone 1 – Lower Subase – Fuel Storage Tanks and Former Tank 54-H	Soil	OU4	RACR, LUC RD	RC	Five-Year Review	LTMgt
	Thames River Sediment	OU4	NFA ROD	SC	None	NA
	Groundwater	OU4	NFA ROD <sup>(3)</sup>	ROD	None	NA



**Table 2-1: Site Closeout Status of ER Program Sites (continued)**

Site/Zone	Medium	Operable Unit	Latest Core Document Completed	Milestones Completed	Core Documents Needed	Current Phase
Site 11/Zone 1 – Lower Subase – Power Plant Oil Tanks	Soil	OU4	RACR, LUC RD	RC	Five-Year Review	LTMgt
	Thames River Sediment	OU4	NFA ROD	SC	None	NA
	Groundwater	OU4	NFA ROD <sup>(3)</sup>	ROD	None Under CERCLA	LTMgt
	LNAPL	OU4	NA	NA	None Under CERCLA	NA
Site 13/Zone 4 – Lower Subase – Building 79 Former Waste Oil Pit	Soil	OU4	LUC RD	RC	RACR; Five-Year Review	LTMgt
	Thames River Sediment (Zone 4, IP1, and OP1)	OU4	ESD	RC	LTM, RACR, LUC RD, Five-Year Review	LTMgt
	Groundwater	OU4	NFA ROD, LUC RD	RC	None Under CERCLA	LTMgt
Site 14 – Former Overbank Disposal Area Northeast	Soil	OU8	NFA ROD	SC	None	NA
	Groundwater	OU9	NFA ROD	SC	None	NA
Site 15 – Former Spent Acid Storage and Disposal Area	Soil	OU6	NFA ROD	SC	None	NA
	Groundwater	OU9	NFA ROD	SC	None	NA
Site 16 – Former Hospital Incinerators	Soil	OU11	NFA ROD	SC	None	NA
Site 17/Zone 3 – Lower Subase – Former Hazardous Materials /Solvent Storage Area (Former Building 31)	Soil	OU4	PDI, LUC RD	RC	RACR; Five-Year Review	LTMgt
	Thames River Sediment	OU4	NFA ROD	SC	None	NA
	Groundwater	OU4	NFA ROD	SC	None	NA
Site 18 – Solvent Storage Area (Building 33)	Soil	OU11	NFA ROD	SC	None	NA
	Groundwater	OU9	NFA ROD	SC	None	NA
Site 19/Zone 4 – Lower Subase – Former Solvent Storage Area (Building 316)	Soil	OU4	NFA ROD	SC	None	NA
	Groundwater	OU4	NFA ROD	SC	None	NA
Site 20 – Area A Weapons Center	Soil	OU7	RACR	RC, SC	None	NA
	Sediment	OU7	RACR	RC, SC	None	NA
	Groundwater	OU9	NFA ROD	SC	None	NA
Site 21/Zone 7 – Lower Subase – Berth 16	Soil	OU4	LUC RD	RC	Five-Year Review	LTMgt
	Thames River Sediment	OU4	NFA ROD	SC	None	NA
	Groundwater	OU4	NFA ROD <sup>(3)</sup>	SC	None	NA

**Table 2-1: Site Closeout Status of ER Program Sites (continued)**

Site/Zone	Medium	Operable Unit	Latest Core Document Completed	Milestones Completed	Core Documents Needed	Current Phase
Site 22/Zone 5 – Lower Subase – Pier 33	Soil	OU4	NFA ROD <sup>(3)</sup>	SC	None Under CERCLA	NA
	Thames River Sediment	OU4	NFA ROD	SC	None	NA
	Groundwater	OU4	NFA ROD <sup>(3)</sup>	SC	None Under CERCLA	NA
Site 23 – Former Fuel Farm	Soil	NA	DGI, SASE	RC	None Under CERCLA	NA
	Groundwater	OU9	RACR, LUC RD, ROD	RC	Five-Year Review	LTMgt
Site 24/Zone 6 – Lower Subase – Central Paint Accumulation Area (Building 174)	Soil	OU4	NFA ROD <sup>(3)</sup>	SC	None Under CERCLA	NA
	Thames River Sediment	OU4	NFA ROD	SC	None	NA
	Groundwater	OU4	NFA ROD <sup>(3)</sup>	SC	None	NA
Site 25/Zone 7 – Lower Subase – Former Classified Materials Incinerator	Soil	OU4	LUC RD	RC	None	LTMgt
	Thames River Sediment	OU4	NFA ROD	SC	None Under CERCLA	NA
	Groundwater	OU4	NFA ROD <sup>(3)</sup>	SC	None	NA

- 1 Site 1 formerly located within Site 2 boundary.
- 2 Site 9 is within Site 23.
- 3 NFA under CERCLA. Petroleum-contaminated soil or groundwater being addressed under applicable CT DEEP RSRs.
- CBU - Construction Battalion Unit.
- CCR - Construction Completion Report.
- CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act.
- CT DEEP - Connecticut Department of Energy and Environmental Protection.
- DD - Decision Document.
- DGI - Data Gap Investigation.
- DRMO - Defense Reutilization and Marketing Office.
- ESD - Explanation of Significant Differences.
- LTMgt - Long-Term Management.

- LUC RD - Land Use Control Remedial Design.
- NA - Not Applicable.
- NFA - No Further Action.
- IP1 - Inner Pier 1.
- O&M - Operation and Maintenance.
- OBDA - Overbank Disposal Area.
- OP1 - Outer Pier 1.
- OT - Oil Tank.
- OU - Operable Unit.
- PDI - Pre-Design Investigation.
- RACR - Remedial Action Completion Report.
- RC - Response Complete.
- RD - Remedial Design.
- ROD - Record of Decision.
- RSRs - Remediation Standard Regulations.
- SC - Site Closeout.

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## **3.0 Schedule**

A schedule of milestones and a detailed schedule that covers all active ERP sites in the SMP are included in Appendix C. Dates for historical activities at the sites have generally been removed from the schedule, and only recent and future events are presented.

### **3.1 Schedule Development**

The schedules were developed using the current status of activity for each site at NSB NLON, anticipated activities, and projected funding availability. Line item durations were typically developed using the FFA, which provides durations for specific process activities. The FFA durations are presented in Table 1-1.

In some cases, due to requests from regulators, accelerated durations were used for scheduling. The deliverables required during the remedial process are separated into two categories, primary and secondary. A description of each of these deliverables is provided below, and a chronology of significant basewide environmental activities is provided in Appendix C.

#### **3.1.1 Primary Documents**

According to the FFA, Primary Documents are developed by the Navy and initially submitted as drafts. The draft Primary Documents are subject to review by EPA, CT DEEP, and other stakeholders (Natural Resources Trustees [National Oceanic and Atmospheric Administration and United States Fish and Wildlife Service] and Restoration Advisory Board). Following the Navy's responses to and resolution of EPA, CT DEEP, and stakeholder comments on draft Primary Documents, draft final versions of the Primary Documents are prepared. Following a regulator concurrence period, the final Primary Documents are prepared and issued. Primary Documents are summarized in Table 1-1.

#### **3.1.2 Secondary Documents**

Secondary Documents include documents that are discrete portions of Primary Documents and are typically input or feeder documents. Secondary Documents are issued by the Navy in draft and are subject to review and comment by EPA and CT DEEP. Although the Navy will respond to comments received, the draft Secondary Documents may be finalized in the context of the corresponding draft final Primary Documents. Secondary Documents are summarized in Table 1-1.

### **3.1.3 Durations**

The FFA (EPA, 1995) defines review, response, and revision time frames for Primary and Secondary documents, and those time frames are summarized in Table 1-1. The FFA also provides a provision to extend a timetable, deadline, or schedule for good cause. The review cycle for other documents, including the SMP, Engineering Evaluation/Cost Analyses, RAWPs, CCRs (Remedial and Removal), LUC RDs, and RACRs are also defined in Table 1-1 and include a 30-day period of review and comment by regulators, followed by a 30-day period for the Navy to respond to comments.

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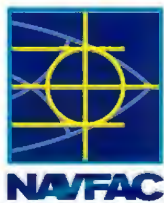
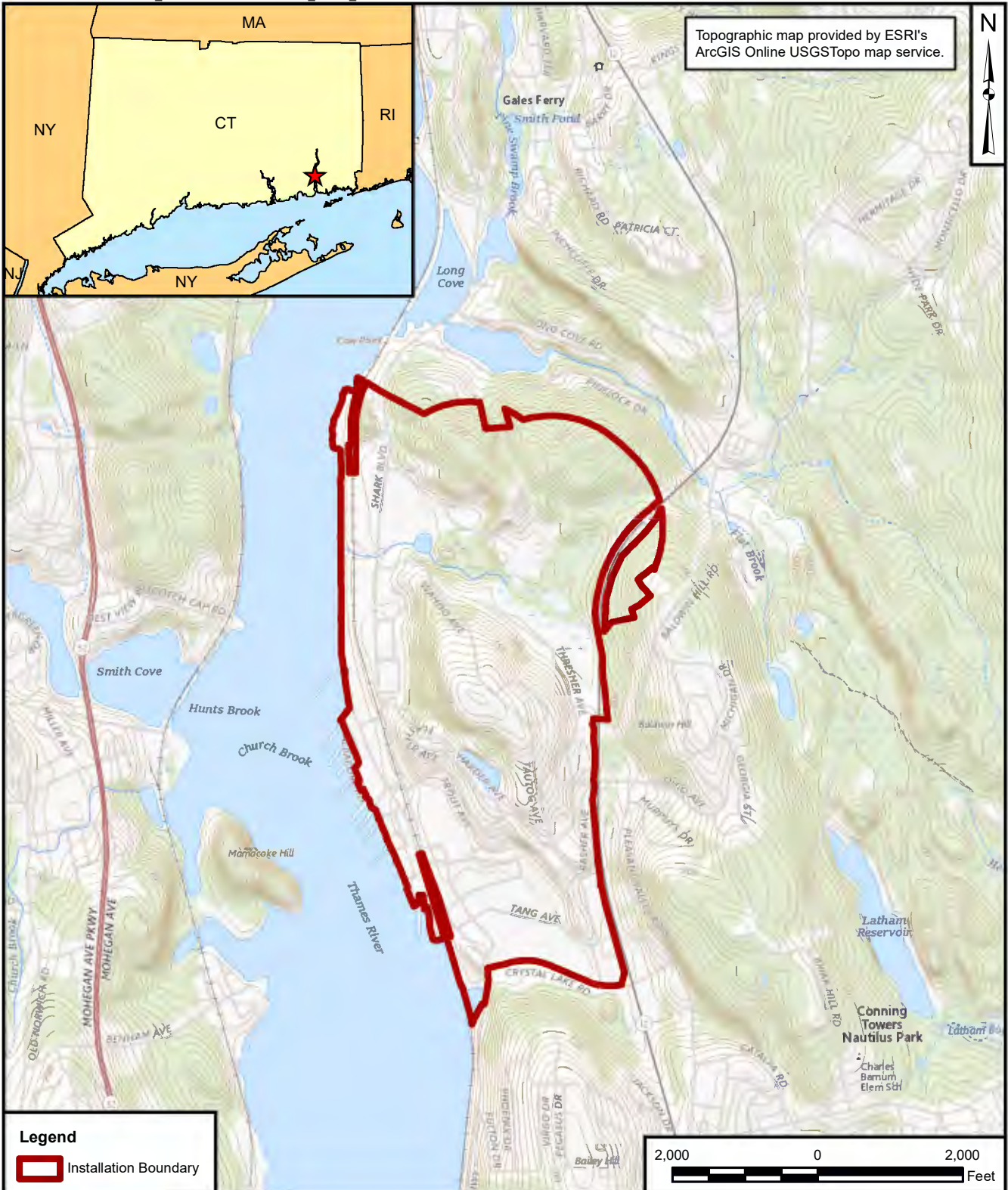
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**APPENDIX A**  
**FIGURES**

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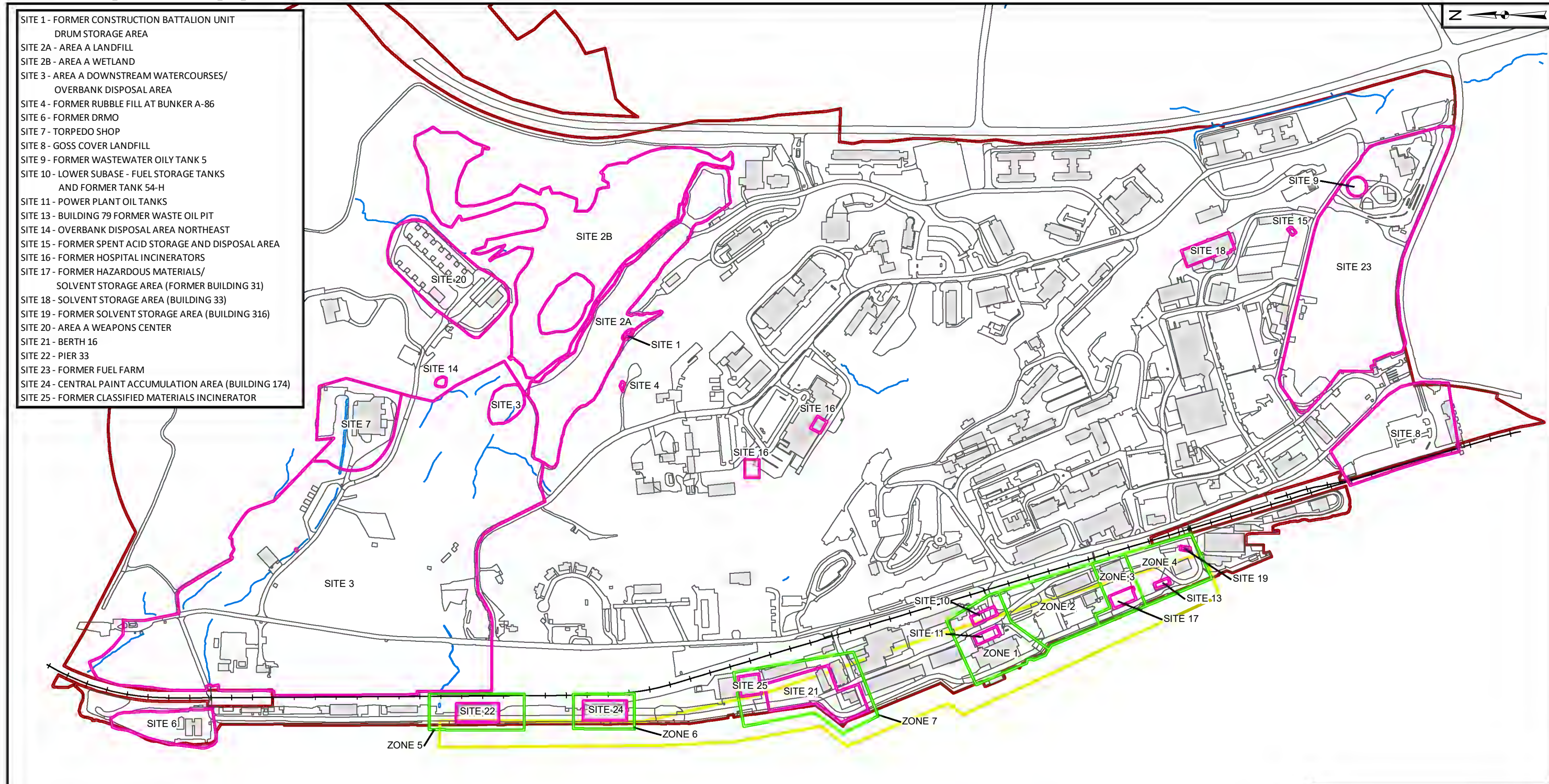


FACILITY LOCATION MAP  
 NAVAL SUBMARINE BASE NEW LONDON  
 GROTON, CONNECTICUT

CTO N4008519F5163	
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K. MOORE	02/14/20
CHECKED BY	DATE
C. RICH	06/17/20
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1-1	

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- SITE 1 - FORMER CONSTRUCTION BATTALION UNIT  
DRUM STORAGE AREA
- SITE 2A - AREA A LANDFILL
- SITE 2B - AREA A WETLAND
- SITE 3 - AREA A DOWNSTREAM WATERCOURSES/  
OVERBANK DISPOSAL AREA
- SITE 4 - FORMER RUBBLE FILL AT BUNKER A-86
- SITE 6 - FORMER DRMO
- SITE 7 - TORPEDO SHOP
- SITE 8 - GOSS COVER LANDFILL
- SITE 9 - FORMER WASTEWATER OILY TANK 5
- SITE 10 - LOWER SUBBASE - FUEL STORAGE TANKS  
AND FORMER TANK 54-H
- SITE 11 - POWER PLANT OIL TANKS
- SITE 13 - BUILDING 79 FORMER WASTE OIL PIT
- SITE 14 - OVERBANK DISPOSAL AREA NORTHEAST
- SITE 15 - FORMER SPENT ACID STORAGE AND DISPOSAL AREA
- SITE 16 - FORMER HOSPITAL INCINERATORS
- SITE 17 - FORMER HAZARDOUS MATERIALS/  
SOLVENT STORAGE AREA (FORMER BUILDING 31)
- SITE 18 - SOLVENT STORAGE AREA (BUILDING 33)
- SITE 19 - FORMER SOLVENT STORAGE AREA (BUILDING 316)
- SITE 20 - AREA A WEAPONS CENTER
- SITE 21 - BERTH 16
- SITE 22 - PIER 33
- SITE 23 - FORMER FUEL FARM
- SITE 24 - CENTRAL PAINT ACCUMULATION AREA (BUILDING 174)
- SITE 25 - FORMER CLASSIFIED MATERIALS INCINERATOR

**Legend**

- Site Boundary
- Zone Boundary
- Lower Subbase Boundary
- Installation Boundary
- Stream



**SITE LOCATION MAP**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

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CHECKED BY C. RICH	DATE 06/17/20
FIGURE NUMBER 1-2	



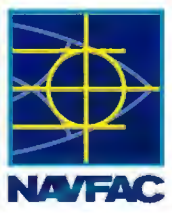
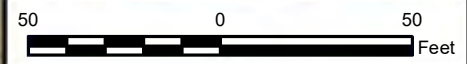
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**Legend**

-  Monitoring Well
-  Site Boundary
-  ESQD Arc



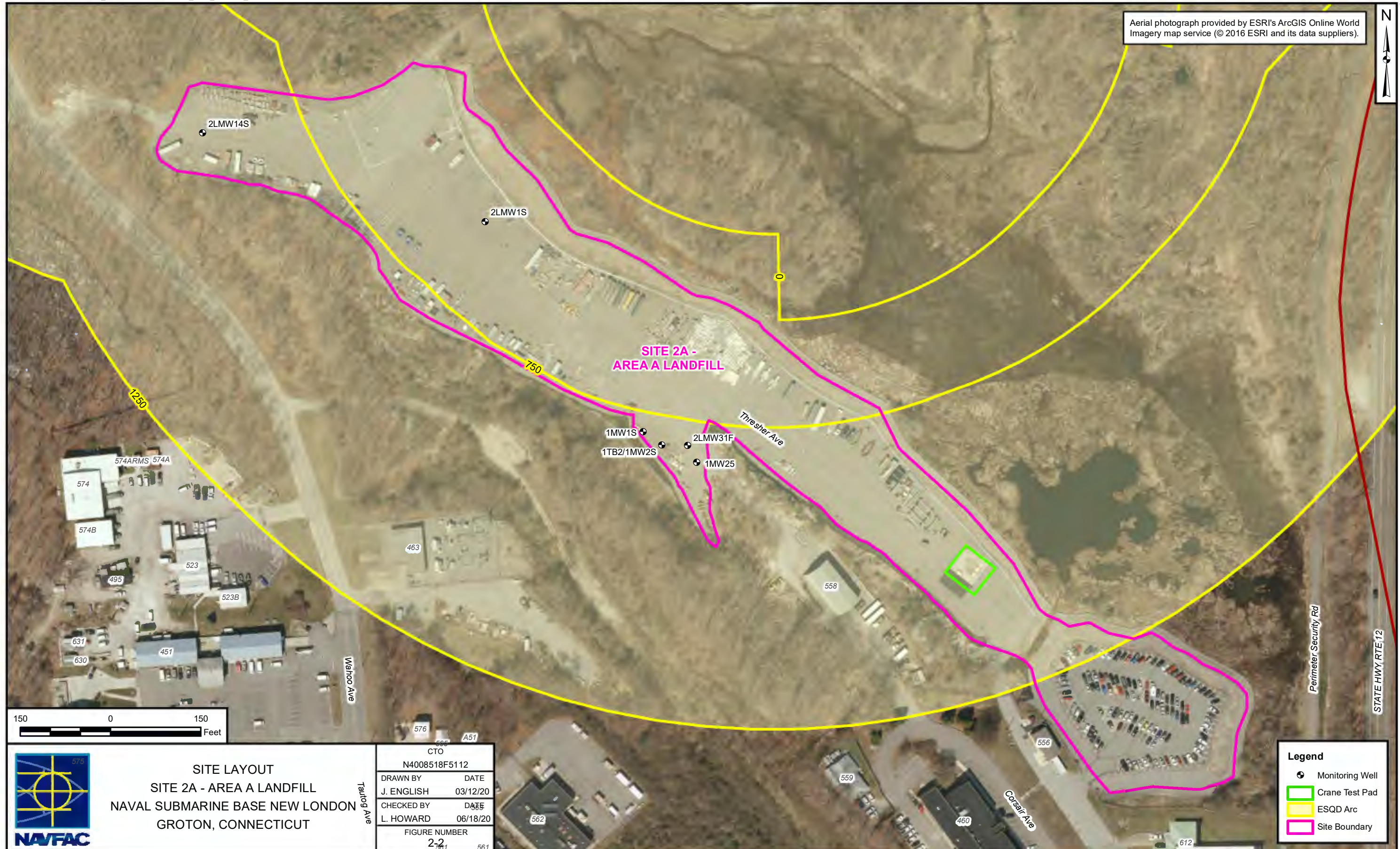
**SITE LAYOUT**  
**SITE 1 - CBU DRUM AREA**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

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DRAWN BY	DATE
J. ENGLISH	06/17/20
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L. HOWARD	06/18/20
FIGURE NUMBER 2-1	

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**SITE LAYOUT**  
**SITE 2A - AREA A LANDFILL**  
 NAVAL SUBMARINE BASE NEW LONDON  
 GROTON, CONNECTICUT

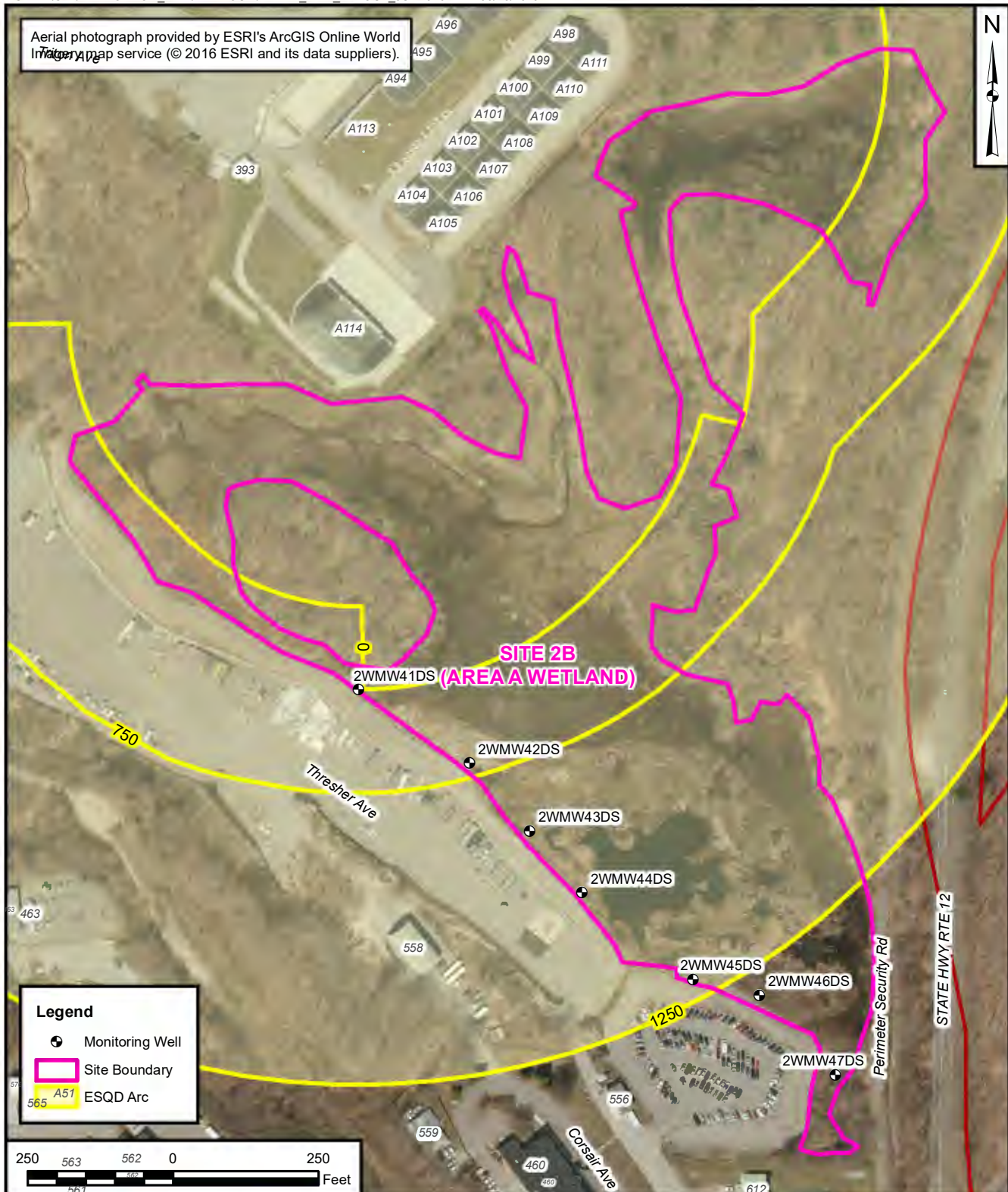
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Legend	
	Monitoring Well
	Crane Test Pad
	ESQD Arc
	Site Boundary



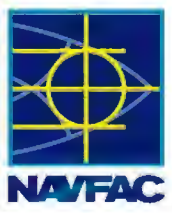
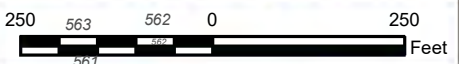
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**Legend**

- Monitoring Well
- Site Boundary
- A57 ESQD Arc



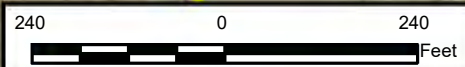
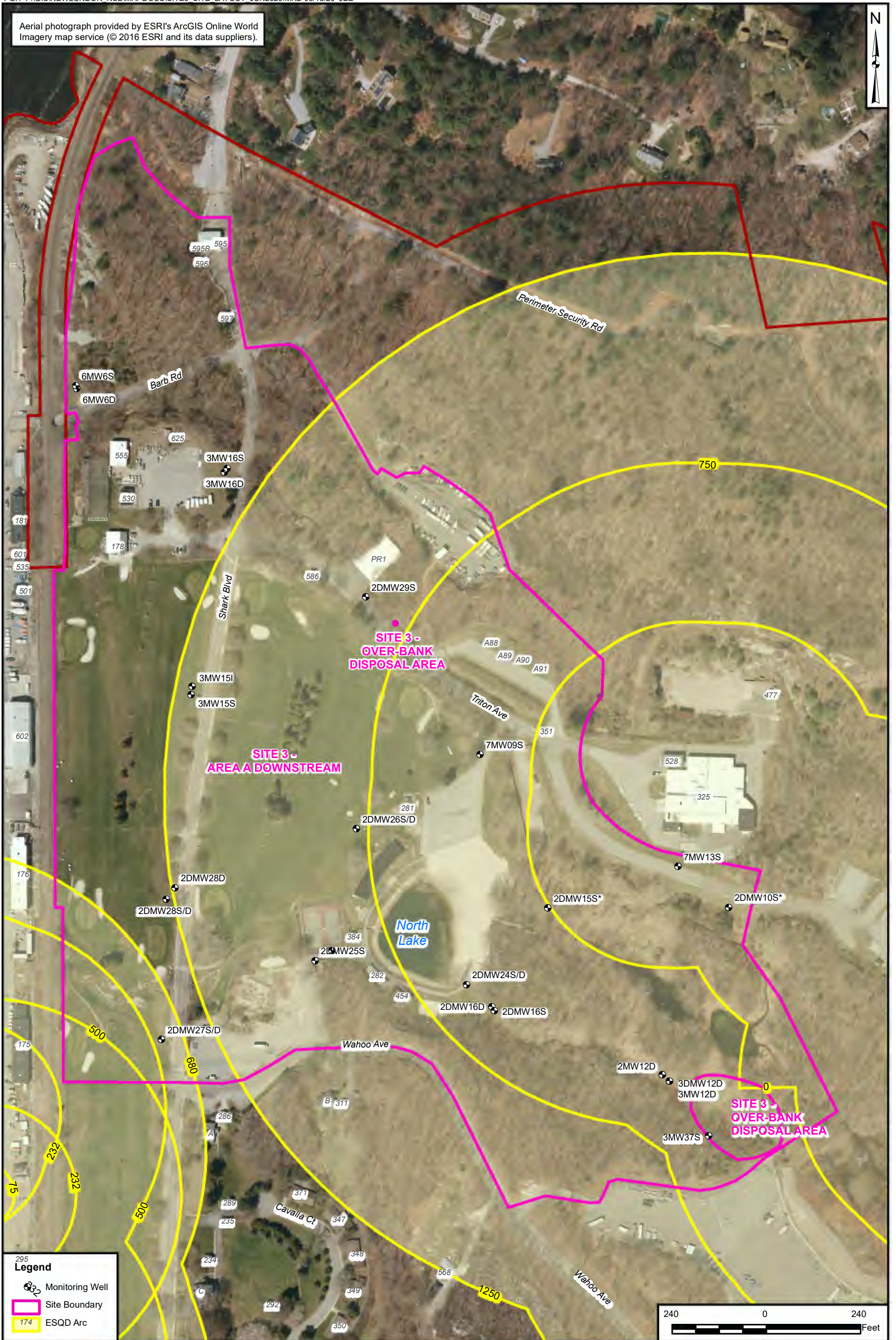
**SITE LAYOUT**  
**SITE 2B - AREA A WETLAND**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

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L. HOWARD	06/18/20
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295  
**Legend**

- Monitoring Well
- Site Boundary
- ESQD Arc



**SITE LAYOUT**  
**SITE 3 - AREA A DOWNSTREAM AND OVER-BANK DISPOSAL AREAS**  
 NAVAL SUBMARINE BASE NEW LONDON  
 GROTON, CONNECTICUT

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L. HOWARD	06/18/20
FIGURE NUMBER 2-4	





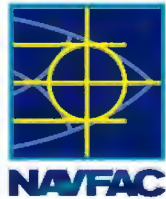
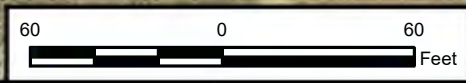
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Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**Legend**

-  Site Boundary
-  ESQD Arc



**SITE LAYOUT**  
**SITE 4 - RUBBLE FILL AT BUNKER A-86**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

CTO N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/18/20
CHECKED BY	DATE
L. HOWARD	06/18/20
FIGURE NUMBER	
2-5	

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Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



THAMES RIVER



SITE 6 -  
DPDO AREA / DRMO

6MW10S

6MW11S

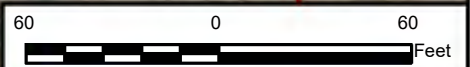
6MW2S

355




6MW1S

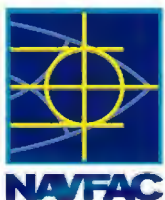
Barb Rd

Amberjack Rd



Legend

-  Monitoring Well
-  Site Boundary
-  Installation Boundary



SITE LAYOUT  
 SITE 6 - DEFENSE REUTILIZATION AND MARKETING OFFICE  
 NSB NEW LONDON  
 GROTON, CONNECTICUT

CTO N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/18/20
CHECKED BY	DATE
R. MOORE	06/19/20
FIGURE NUMBER 2-6	

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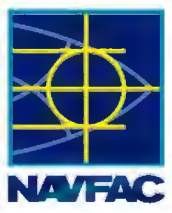


Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**Legend**

- Monitoring Well
- ESQD Arc
- Site Boundary






**SITE LAYOUT**  
**SITE 7 - TORPEDO SHOP**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

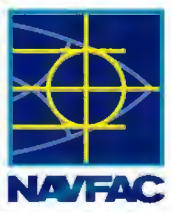
CTO	
N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/18/20
CHECKED BY	DATE
L. HOWARD	06/19/20
FIGURE NUMBER	
2-7	



Aerial photograph provided by  
ESRI's ArcGIS Online World  
Imagery map service ©2016  
ESRI and its data suppliers

**Legend**

-  Monitoring Well
-  Site Boundary
-  Installation Boundary



**SITE LAYOUT**  
**SITE 8 - GOSS COVE LANDFILL**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**


CTO N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/18/20
CHECKED BY	DATE
L. HOWARD	06/19/20
FIGURE NUMBER 2-8	

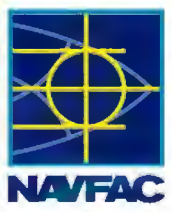
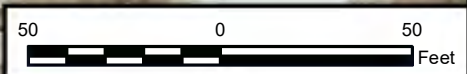


Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**Legend**

 Site Boundary



**SITE LAYOUT**  
**SITE 9 - FORMER WASTEWATER OILY TANK (OT-5)**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

CTO N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/17/20
CHECKED BY	DATE
L. HOWARD	06/30/20
FIGURE NUMBER	
2-9	

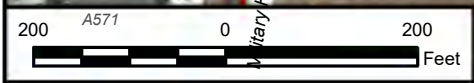


Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**Legend**

- Monitoring Well
- Site Boundary
- Installation Boundary

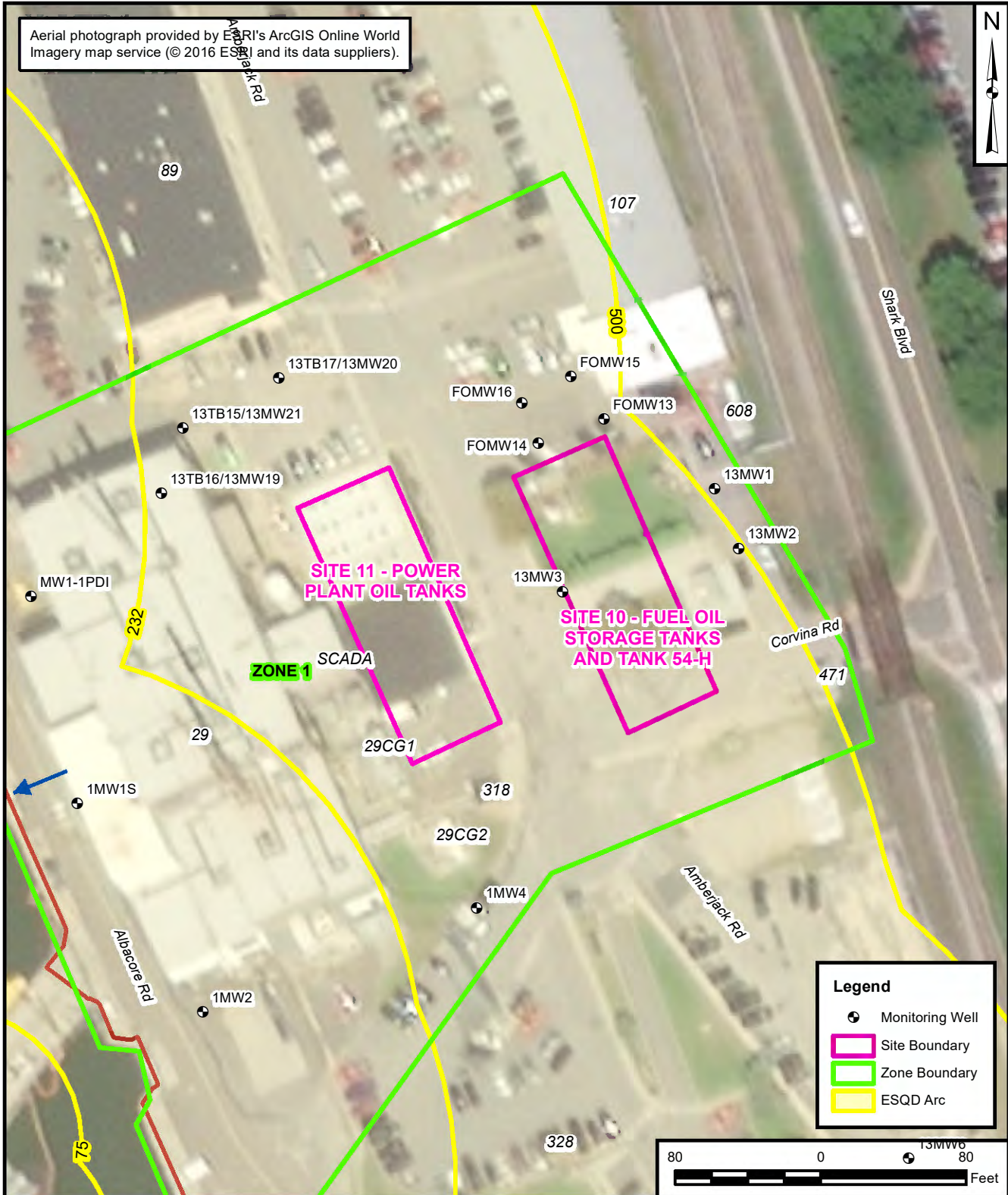


**SITE LAYOUT**  
**SITE 23 - FORMER FUEL FARM**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

CTO	
N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/18/20
CHECKED BY	DATE
L. HOWARD	06/30/20
FIGURE NUMBER	
2-10	



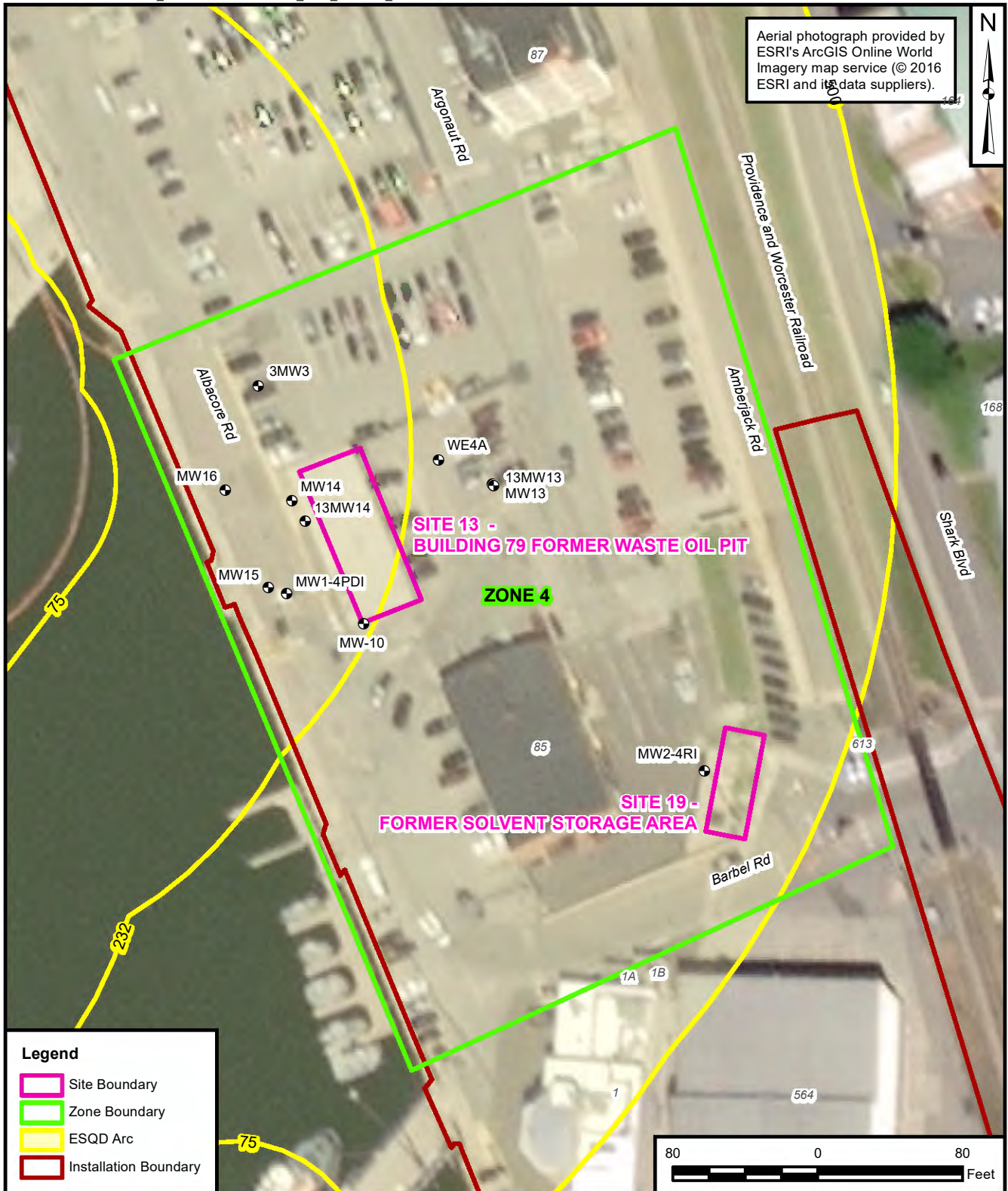
Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**SITE LAYOUT**  
**SITE 10 - FUEL STORAGE TANKS AND TANK 54-H AND**  
**SITE 11 - POWER PLANT OIL TANKS**  
**NSB NEW LONDON**  
**GROTON, CONNECTICUT**

CTO	
N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/19/20
CHECKED BY	DATE
L. HOWARD	08/10/20
FIGURE NUMBER	
2-11	





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Imagery map service (© 2016  
ESRI and its data suppliers).



**Legend**

- Site Boundary
- Zone Boundary
- ESQD Arc
- Installation Boundary



**SITE LAYOUT**  
**ZONE 4 - SITE 13 - BUILDING 79 FORMER WASTE OIL PIT AND**  
**SITE 19 - FORMER SOLVENT STORAGE AREA**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

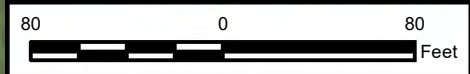
CTO N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/18/20
CHECKED BY	DATE
L. HOWARD	08/10/20
FIGURE NUMBER	
2-12	

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**Legend**

-  Site Boundary
-  ESQD Arc



SITE LAYOUT  
 SITE 14 - OVER-BANK DISPOSAL AREA NORTHEAST  
 NAVAL SUBMARINE BASE NEW LONDON  
 GROTON, CONNECTICUT

CTO N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/19/20
CHECKED BY	DATE
L. HOWARD	08/10/20
FIGURE NUMBER 2-13	

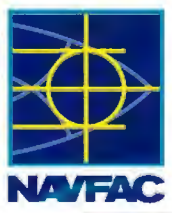


Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**Legend**

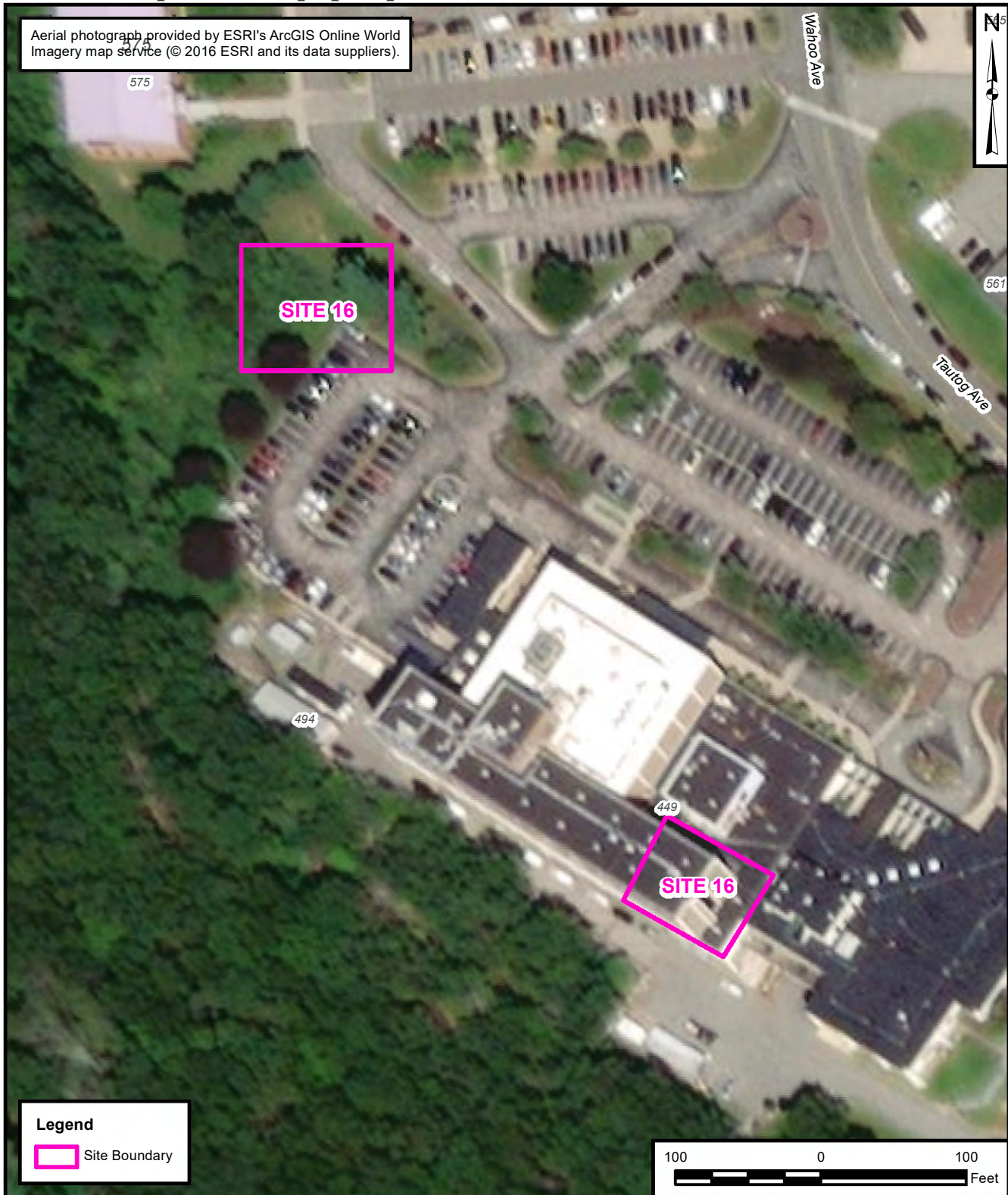
- Monitoring Well
- Site Boundary



**SITE LAYOUT**  
**SITE 15 - SPENT ACID STORAGE AND DISPOSAL AREA**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

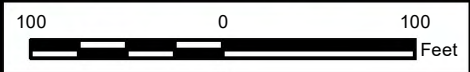
CTO	
N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/17/20
CHECKED BY	DATE
L. HOWARD	06/30/20
FIGURE NUMBER	
2-14	

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**Legend**

Site Boundary

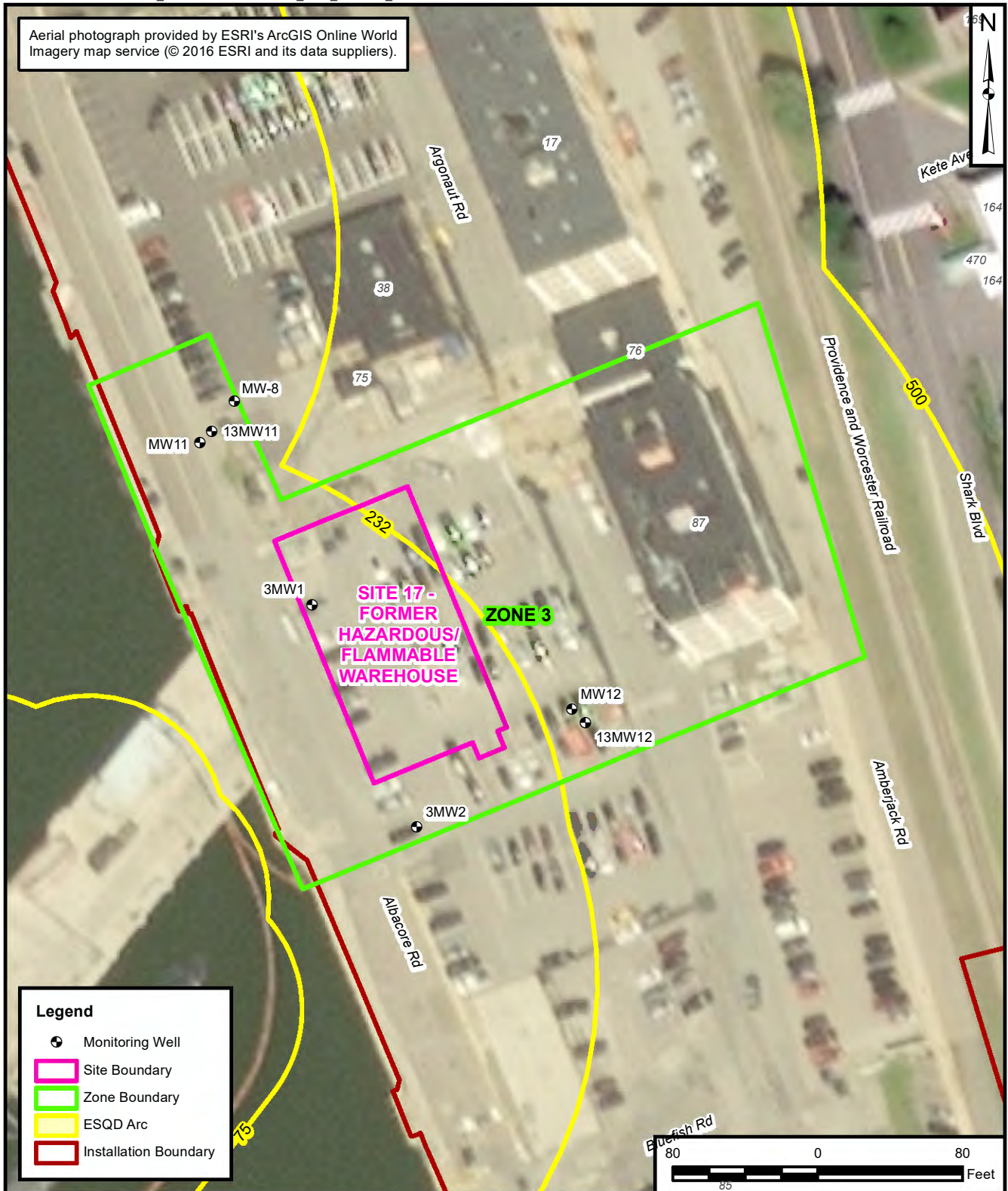


**SITE LAYOUT**  
**SITE 16 - FORMER HOSPITAL INCINERATORS**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

CTO	
N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/19/20
CHECKED BY	DATE
L. HOWARD	08/10/20
FIGURE NUMBER	
2-15	

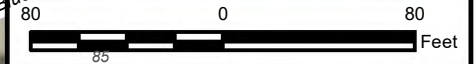


Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**Legend**

- Monitoring Well
- Site Boundary
- Zone Boundary
- ESQD Arc
- Installation Boundary



**SITE LAYOUT**  
**ZONE 3 - SITE 17 - FORMER HAZARDOUS MATERIALS**  
**AND SOLVENT STORAGE AREA**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

CTO	
N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/19/20
CHECKED BY	DATE
L. HOWARD	08/10/20
FIGURE NUMBER	
2-16	

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446

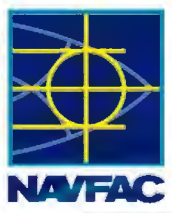
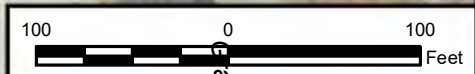


**Legend**

Site Boundary

OBG-7  
428

Tiger Ave



SITE LAYOUT  
 SITE 18 - SOLVENT STORAGE AREA (BUILDING 33)  
 NAVAL SUBMARINE BASE NEW LONDON  
 GROTON, CONNECTICUT

CTO N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/19/20
CHECKED BY	DATE
L. HOWARD	06/19/20
FIGURE NUMBER 2-17	



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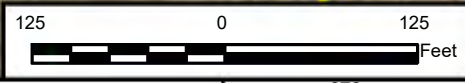


Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**SITE 20 -  
AREA A WEAPONS CENTER**

Legend	
	Monitoring Well
	Site Boundary
	ESQD Arc



SITE LAYOUT  
 SITE 20 - AREA A WEAPONS CENTER  
 NAVAL SUBMARINE BASE NEW LONDON  
 GROTON, CONNECTICUT

CTO N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/18/20
CHECKED BY	DATE
L. HOWARD	06/19/20
FIGURE NUMBER 2-18	



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**Legend** 88A

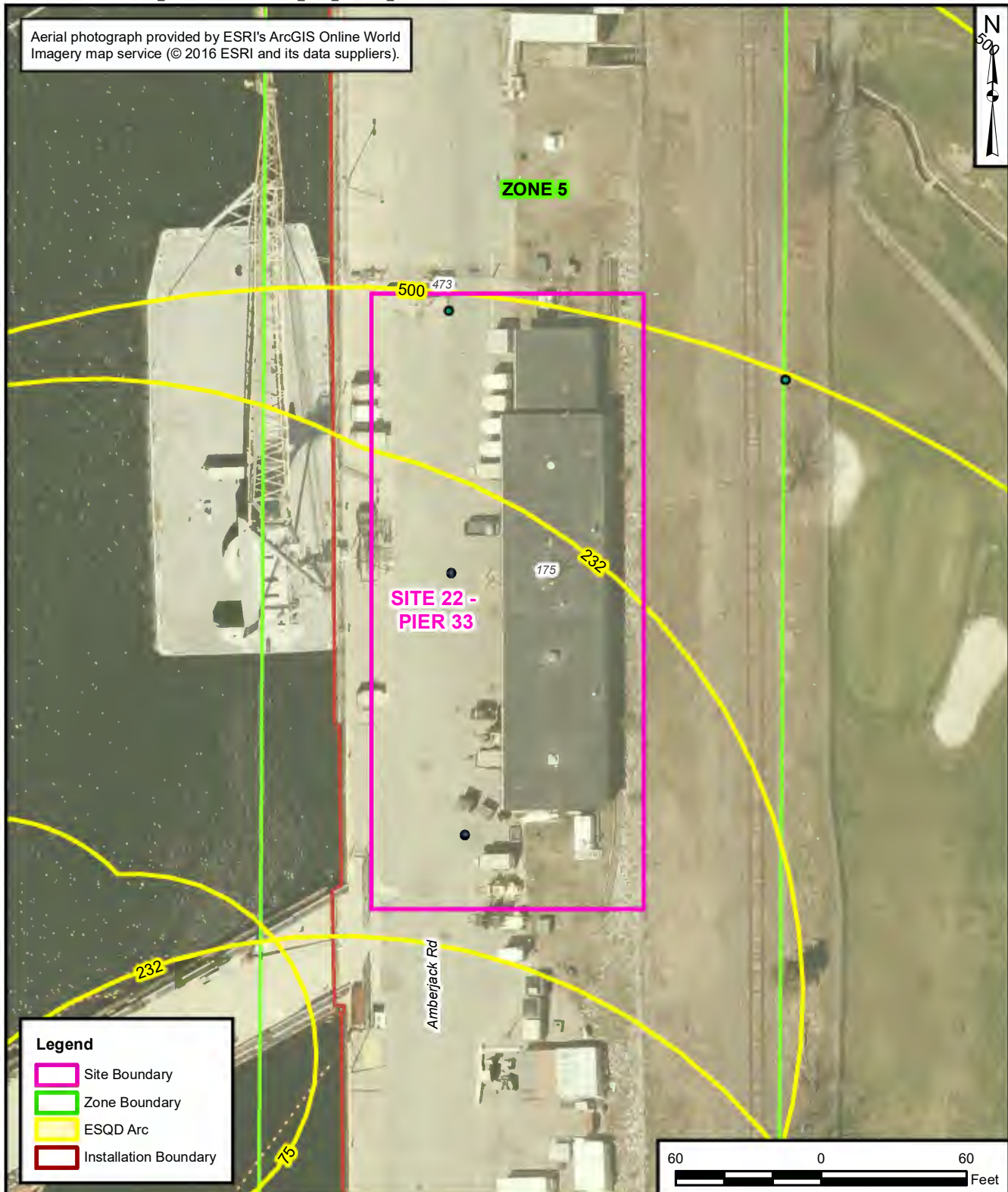
- Monitoring Well
- Site Boundary
- Zone Boundary
- ESQD Arc
- Installation Boundary



**SITE LAYOUT**  
**SITE 21 - BERTH 16 AND**  
**SITE 25 - FORMER CLASSIFIED MATERIALS INCINERATOR**  
**NAVAL SUBMARINE BASE NEW LONDON**  
**GROTON, CONNECTICUT**

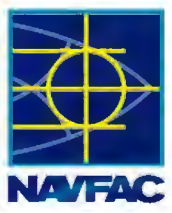
CTO	
N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	6/19/20
CHECKED BY	DATE
L. HOWARD	06/30/20
FIGURE NUMBER	
2-19	

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).



**Legend**

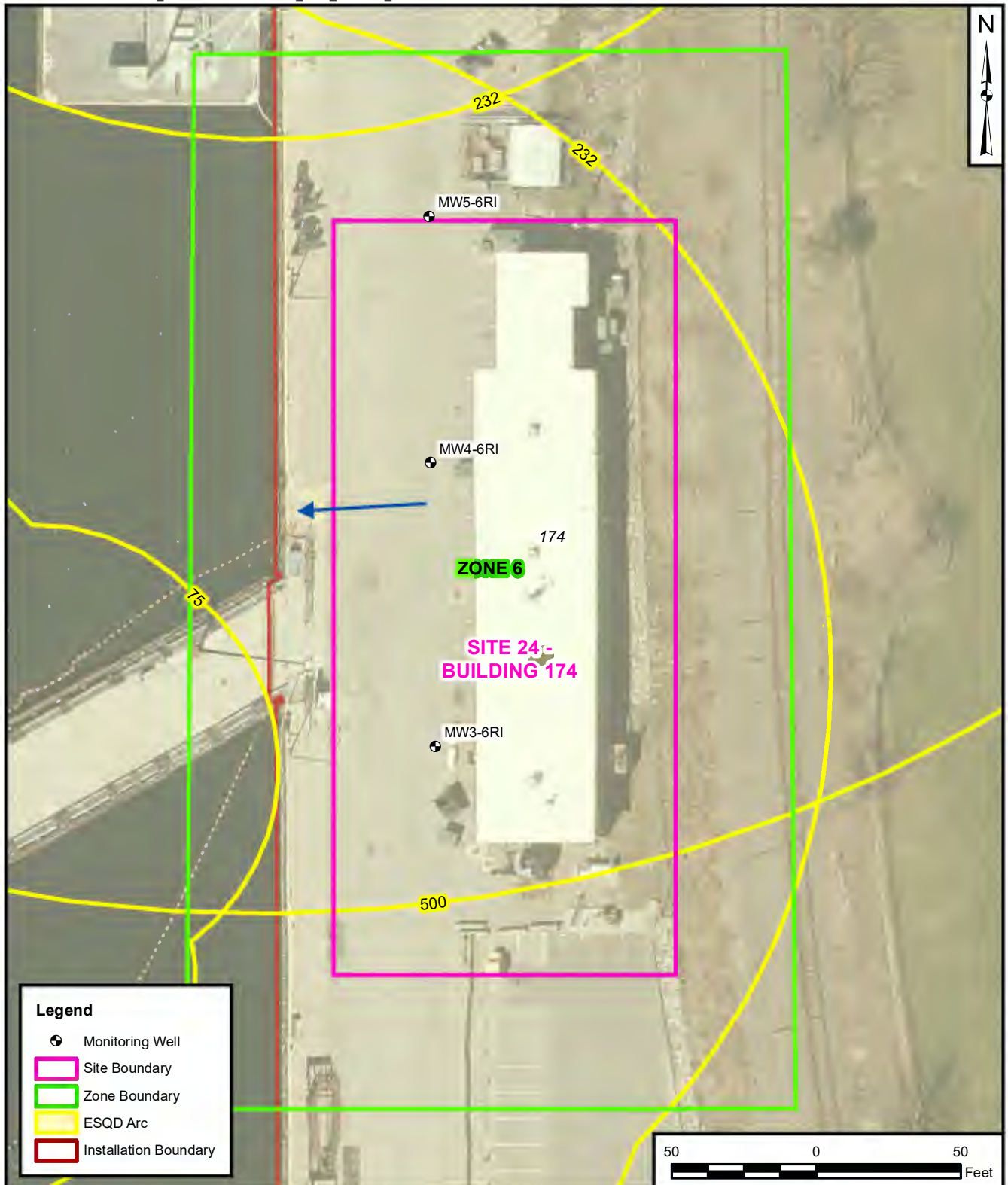
- Site Boundary
- Zone Boundary
- ESQD Arc
- Installation Boundary



SITE LAYOUT  
 SITE 22 - PIER 33  
 NAVAL SUBMARINE BASE NEW LONDON  
 GROTON, CONNECTICUT

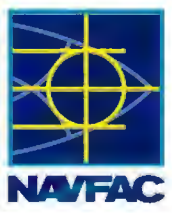
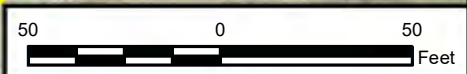
CTO N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/17/20
CHECKED BY	DATE
L. HOWARD	06/19/20
FIGURE NUMBER 2-20	





**Legend**

- Monitoring Well
- Site Boundary
- Zone Boundary
- ESQD Arc
- Installation Boundary



**TRAFFIC CONTROL PLAN**  
**SITE 24 - CENTRAL PAINT ACCUMULATION AREA**  
**(BUILDING 174)**  
**NSB NEW LONDON**  
**GROTON, CONNECTICUT**

CTO N4008518F5112	
DRAWN BY	DATE
J. ENGLISH	06/19/20
CHECKED BY	DATE
L. HOWARD	06/19/20
FIGURE NUMBER 2-21	

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**APPENDIX B**  
**MAJOR PHASES OF THE CERCLA PROCESS**



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**Appendix A**  
**Major Phases of the CERCLA Process**  
**Site Management Plan, FY2020**  
**NSB-NLON - Groton, Connecticut**

Phase	Description
Study Area Screening Evaluation (SASE)	<p>Typically, the initial study conducted under CERCLA at a site in response to a real or suspected hazardous substance release is the Preliminary Assessment and Site Inspection (PA/SI). At Federal Facilities, the lead agency (the Navy in the case of NSB-NLON) collects the data for the PA/SI. The EPA evaluates the PA/SI data. The PA/SI relies heavily on existing information, and is limited in scope. If the PA/SI identifies sites or study areas as potentially posing a threat to human health or the environment, an RI/FS is conducted.</p> <p>At federal facilities where the responsible federal agency has entered into a FFA with the EPA, the SASE is an alternative to the PA/SI process. The SASE is the mechanism for evaluating whether identified Site Screening Areas (SSAs) should proceed with an RI/FS. SSAs refer to areas not previously identified that may pose a threat, or potential threat, to public health, welfare, or the environment. The SASE considers current CERCLA guidance to determine if there have been releases of hazardous substances, pollutants, or contaminants, to the environment from the SSAs. The SASE Report provides the basis as to whether a site should become an AOC subject to further study through CERCLA RI/FS process.</p>
Remedial Investigation and Feasibility Study (RI/FS)	<p>The RI/FS is the next phase of the CERCLA remedial process and is required for all AOCs. The RI is intended to determine the nature and extent of contamination, potential migration pathways, toxicity and persistence of contaminants, and potential (risk) for adverse impacts to human health or the environment. The FS is intended to develop remedial objectives, identify Applicable or Relevant and Appropriate Requirements (ARARs), develop and screen remedial alternatives, analyze remedial alternatives, and compare the alternatives against the CERCLA criteria (protection of human health and the environment, compliance with ARARS, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, long-term effectiveness, implementability, cost, state acceptance, and community acceptance).</p> <p>After completion of the RI/FS, a PRAP is completed which outlines the Navy's proposed remedial alternative. The PRAP is released to the public and a formal public comment period is held. Subsequently, a ROD that identifies the preferred remedial alternative(s) is issued. RIDEM has the opportunity to concur on the ROD.</p>

Phase	Description
Removal Action	<p>A removal action may be completed prior to or during the RI/FS to reduce the threat to human health or the environment by removing released hazardous substances or reducing potential exposure pathways. Emergency removal actions are taken when there is an imminent threat to human health or the environment. Time-critical removal actions are taken when a threat to public health or welfare of the environment exists and it is determined that less than six months exist before on-site removal activity must be initiated. Non-time-critical removal actions are those actions where a planning period of at least six months exists before on-site activities to reduce the threat to human health or the environment exists.</p> <p>In order to select the best remedial alternative for non-time-critical removal actions an Engineering Evaluation/Cost Analysis (EE/CA) is prepared. Unlike the FS, the EE/CA focuses only on the material or the risk to be removed and does not use the full CERCLA criteria. Both time-critical and non-time critical removal actions require that a public comment period be held in order that the public be afforded an opportunity to comment on the removal.</p> <p>Subsequent to a removal action, the FS may conclude that no further action is required to reduce the threat to human health and the environment. In this case, an NFA ROD would be issued and the CERCLA remedial process would be concluded.</p>
Interim Remedial Action	<p>An interim remedial action may be completed prior to or during the RI/FS to reduce the threat to human health or the environment by removing released hazardous substances or reducing potential exposure pathways. In order to select the best remedial alternative for an interim remedial action, a focused FS may be prepared. An interim action must be consistent with the anticipated long-term remedial action. An interim ROD is issued and interim remedial design and remedial action activities are initiated.</p>
Remedial Design and Remedial Action (RD/RA)	<p>The ROD establishes the scope of the RA. The RD often proceeds in a stepped process and addresses detailed design issues not addressed during the FS. The RA involves implementation of the RD. The FFA establishes a process for developing an RD/RA schedule.</p>
Five Year Review	<p>Five-year reviews generally are required when hazardous substances remain on site above levels that do not permit unlimited use and unrestricted exposure. Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment.</p>

<b>Phase</b>	<b>Description</b>
Response Complete (RC)/ Remedy in Place (RIP)	The RIP milestone signifies the completion of the remedial action construction phase and that the remedy has been implemented and has been demonstrated to be functioning as designed. RC is the point at which the remedy has achieved the required reduction in risk to human health and the environment (cleanup goals have been met). RC is followed by site closeout. Once all RCs and RIPs have been documented for every site at the facility and the terms of the FFA have been met, site closeout and NPL deletion is completed.

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**APPENDIX C**  
**SITE SCHEDULES**



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### CURRENT AND PROJECTED PROJECT ACTIVITIES NSB-NLON, GROTON, CONNECTICUT

ID	Task Name	Start	Finish	Duration	% Complete	Qtr 3, 2019			Qtr 4, 2019			Qtr 1, 2020			Qtr 2, 2020			Qtr 3, 2020			Qtr 4, 2020			Qtr 1, 2021			Qtr 2, 2021			Qtr 3, 2021		
						Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
246	Resolution of Issues	Mon 5/24/21	Sun 6/6/21	14 days	0%																											
247	Final 2020 LTM Report	Mon 6/7/21	Sun 6/20/21	14 days	0%																											
248	FINAL 2020 REPORT	Sun 6/20/21	Sun 6/20/21	0 days	0%																											
249	<b>2020 LUC CERTIFICATION</b>	<b>Mon 6/21/21</b>	<b>Wed 2/9/22</b>	<b>234 days</b>	<b>0%</b>																											
250	Internal Draft Report	Mon 6/21/21	Thu 8/19/21	60 days	0%																											
251	INTERNAL REPORT	Thu 8/19/21	Thu 8/19/21	0 days	0%																											
252	Navy Review	Fri 8/20/21	Sat 9/18/21	30 days	0%																											
253	Resolution of Comments	Sun 9/19/21	Sat 10/2/21	14 days	0%																											
254	Draft LTM Report	Sun 10/3/21	Sat 10/16/21	14 days	0%																											
255	DRAFT LTM REPORT	Sat 10/16/21	Sat 10/16/21	0 days	0%																											
256	Regulator Review	Sun 10/17/21	Mon 11/15/21	30 days	0%																											
257	Resolution of Comments	Tue 11/16/21	Mon 11/29/21	14 days	0%																											
258	Draft Final Report	Mon 11/29/21	Mon 11/29/21	0 days	0%																											
259	DRAFT FINAL REPORT	Tue 11/30/21	Wed 12/29/21	30 days	0%																											
260	Regulator Concurrence	Thu 12/30/21	Wed 1/12/22	14 days	0%																											
261	Resolution of Issues	Thu 1/13/22	Wed 1/26/22	14 days	0%																											
262	Final LUC Certification Report	Thu 1/27/22	Wed 2/9/22	14 days	0%																											
263	FINAL LUC CERTIFICATION REPORT	Wed 2/9/22	Wed 2/9/22	0 days	0%																											
264	<b>2020 LUC CERTIFICATION INSPECTION REPORT</b>	<b>Thu 2/10/22</b>	<b>Sat 10/15/22</b>	<b>248 days</b>	<b>0%</b>																											
265	LUC Inspection Event	Thu 2/10/22	Fri 3/11/22	30 days	0%																											
266	Internal Draft LUC Inspection Report	Sat 3/12/22	Tue 5/10/22	60 days	0%																											
267	INTERNAL LUC INSPECTION REPORT	Tue 5/10/22	Tue 5/10/22	0 days	0%																											
268	Navy Review	Wed 5/11/22	Thu 6/9/22	30 days	0%																											
269	Resolution of Comments	Fri 6/10/22	Thu 6/23/22	14 days	0%																											
270	Draft LTM Report	Fri 6/24/22	Thu 7/7/22	14 days	0%																											
271	DRAFT LTM REPORT	Thu 7/7/22	Thu 7/7/22	0 days	0%																											
272	Regulator Review	Fri 7/8/22	Thu 7/21/22	14 days	0%																											
273	Resolution of Comments	Fri 7/22/22	Thu 8/4/22	14 days	0%																											
274	Draft Final Report	Fri 8/5/22	Thu 8/18/22	14 days	0%																											
275	DRAFT FINAL REPORT	Thu 8/18/22	Thu 8/18/22	0 days	0%																											
276	Regulator Concurrence	Fri 8/19/22	Sat 9/17/22	30 days	0%																											
277	Resolution of Issues	Sun 9/18/22	Sat 10/1/22	14 days	0%																											
278	Final LUC Certification Inspection Report	Sun 10/2/22	Sat 10/15/22	14 days	0%																											
279	FINAL LUC CERTIFICATION INSPECTION REPORT	Sat 10/15/22	Sat 10/15/22	0 days	0%																											
280	<b>Sites 9 and 23 NFA Decision Document</b>	<b>Tue 11/3/20</b>	<b>Mon 5/3/21</b>	<b>182 days</b>	<b>0%</b>																											
281	Internal Draft Document	Tue 11/3/20	Fri 1/1/21	60 days	0%																											
282	INTERNAL DRAFT DOCUMENT	Fri 1/1/21	Fri 1/1/21	0 days	0%																											
283	Navy Review	Sat 1/2/21	Sun 1/17/21	16 days	0%																											
284	Resolution of Comments	Mon 1/18/21	Sun 1/24/21	7 days	0%																											
285	Draft Document	Mon 1/25/21	Mon 2/1/21	8 days	0%																											
286	DRAFT DOCUMENT	Mon 2/1/21	Mon 2/1/21	0 days	0%																											
287	Regulator Review	Tue 2/2/21	Sat 2/6/21	5 days	0%																											
288	Resolution of Comments	Sun 2/7/21	Thu 2/11/21	5 days	0%																											
289	Draft Final Document	Fri 2/12/21	Sun 2/14/21	3 days	0%																											
290	DRAFT FINAL DOCUMENT	Mon 2/15/21	Tue 3/16/21	30 days	0%																											
291	Regulator Concurrence	Wed 3/17/21	Sun 4/4/21	19 days	0%																											
292	Resolution of Issues	Mon 4/5/21	Mon 4/19/21	15 days	0%																											
293	Final NFA Decision Document	Tue 4/20/21	Mon 5/3/21	14 days	0%																											
294	FINAL NFA DECISION DOCUMENT	Mon 5/3/21	Mon 5/3/21	0 days	0%																											
295	<b>NON-CERCLA SOIL &amp; GROUNDWATER</b>	<b>Mon 6/3/19</b>	<b>Tue 6/8/21</b>	<b>737 days</b>	<b>19%</b>																											
296	<b>O&amp;M MANUAL - ZONES 1 THROUGH 7 - NON-CERCLA SOIL &amp; GROUNDWATER</b>	<b>Thu 1/9/20</b>	<b>Sun 11/8/20</b>	<b>305 days</b>	<b>71%</b>																											
297	Internal Draft O&M Manual	Thu 1/9/20	Mon 3/9/20	61 days	100%																											
298	INTERNAL DRAFT O&M MANUAL	Mon 3/9/20	Mon 3/9/20	0 days	100%																											
299	Navy Review	Tue 3/10/20	Mon 7/27/20	140 days	100%																											
300	Resolution of Comments	Tue 7/28/20	Wed 8/5/20	9 days	100%																											
301	Draft O&M Manual	Thu 8/6/20	Thu 8/13/20	8 days	100%																											
302	DRAFT O&M MANUAL	Thu 8/13/20	Thu 8/13/20	0 days	100%																											
303	Regulator Review	Fri 8/14/20	Sat 9/12/20	30 days	0%																											
304	Resolution of Comments	Sun 9/13/20	Sat 9/26/20	14 days	0%																											

Project: NSBNLON_PriCOSchd_FnlSM Date: Tue 10/27/20	Task		Rolled Up Milestone		Split		Inactive Milestone		Duration-only		Finish-only		Deadline	
	Milestone		Rolled Up Progress		Rolled Up Split		Inactive Milestone		Manual Summary Rollup		External Tasks			
	Summary		External Tasks		External Milestone		Inactive Summary		Manual Summary		External Milestone			
	Rolled Up Task		Project Summary		Inactive Task		Manual Task		Start-only		Progress			

### CURRENT AND PROJECTED PROJECT ACTIVITIES NSB-NLON, GROTON, CONNECTICUT

ID	Task Name	Start	Finish	Duration	% Complete	Qtr 3, 2019			Qtr 4, 2019			Qtr 1, 2020			Qtr 2, 2020			Qtr 3, 2020			Qtr 4, 2020			Qtr 1, 2021			Qtr 2, 2021			Qtr 3, 2021						
						Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep				
305	Draft Final O&M Manual	Sun 9/27/20	Sat 10/10/20	14 days	0%																															
306	DRAFT FINAL O&M MANUAL	Sat 10/10/20	Sat 10/10/20	0 days	0%																															
307	Regulator Concurrence	Sun 10/11/20	Tue 10/20/20	10 days	0%																															
308	Resolution of Remaining Issues	Wed 10/21/20	Sun 10/25/20	5 days	0%																															
309	Final O&M Manual - Zones 1 through 7 - non-CERCLA Soil and Groundwater	Mon 10/26/20	Sun 11/8/20	14 days	0%																															
310	FINAL O&M MANUAL - ZONES 1 THROUGH 7 - NON-CERCLA SOIL AND GROUNDWATER	Sun 11/8/20	Sun 11/8/20	0 days	0%																															
311	LTM Report - Zones 3, 4, 5 - NON-CERCLA GROUNDWATER	Mon 11/4/19	Tue 6/8/21	583 days	4%																															
312	LTM Round 1 Sampling Event	Mon 11/4/19	Fri 11/8/19	5 days	100%																															
313	LTM Round 2 Sampling Event	Mon 2/24/20	Thu 2/27/20	4 days	100%																															
314	LTM Round 3 Sampling Event	Mon 5/18/20	Thu 5/21/20	4 days	100%																															
315	LTM Round 4 Sampling Event	Mon 8/31/20	Thu 9/3/20	4 days	0%																															
316	Data Analysis and Validation	Fri 9/4/20	Mon 11/2/20	60 days	0%																															
317	Internal Draft LTM Report	Tue 11/3/20	Fri 1/1/21	60 days	0%																															
318	INTERNAL LTM REPORT	Fri 1/1/21	Fri 1/1/21	0 days	0%																															
319	Navy Review	Sat 1/2/21	Sun 1/31/21	30 days	0%																															
320	Resolution of Comments	Mon 2/1/21	Sun 2/14/21	14 days	0%																															
321	Draft LTM Report	Mon 2/15/21	Sun 2/28/21	14 days	0%																															
322	DRAFT LTM REPORT	Sun 2/28/21	Sun 2/28/21	0 days	0%																															
323	Regulator Review	Mon 3/1/21	Tue 3/30/21	30 days	0%																															
324	Receive Regulator Comments	Tue 3/30/21	Tue 3/30/21	0 days	0%																															
325	Resolution of Comments	Wed 3/31/21	Tue 4/13/21	14 days	0%																															
326	Draft Final LTM Report	Wed 4/14/21	Tue 4/27/21	14 days	0%																															
327	DRAFT FINAL LTM REPORT	Tue 4/27/21	Tue 4/27/21	0 days	0%																															
328	Regulator Concurrence	Wed 4/28/21	Tue 5/11/21	14 days	0%																															
329	Resolution of Issues	Wed 5/12/21	Tue 5/25/21	14 days	0%																															
330	Final LTM Report- Zones 3, 4, 5 - non-CERCLA Groundwater	Wed 5/26/21	Tue 6/8/21	14 days	0%																															
331	FINAL LTM REPORT - ZONES 3, 4, 5 - NON-CERCLA GROUNDWATER	Tue 6/8/21	Tue 6/8/21	0 days	0%																															
332	LUC RD - ZONES 5 - NON-CERCLA SOIL & GROUNDWATER	Mon 6/3/19	Mon 9/21/20	477 days	0%																															
333	INTERNAL DRAFT LUC RD	Mon 6/3/19	Mon 6/3/19	0 days	100%																															
334	DRAFT LUC RD	Mon 12/2/19	Mon 12/2/19	0 days	100%																															
335	DRAFT FINAL LUC RD	Tue 3/10/20	Tue 3/10/20	0 days	100%																															
336	Regulator Concurrence	Tue 3/10/20	Wed 6/17/20	100 days	0%																															
337	Resolution of Issues	Thu 6/18/20	Tue 9/15/20	90 days	0%																															
338	FINAL LUC RD - Zone 5 - non-CERCLA Soil & Groundwater	Wed 9/16/20	Mon 9/21/20	6 days	0%																															
339	FINAL LUC RD - ZONE 5 - NON-CERCLA SOIL & GROUNDWATER	Mon 9/21/20	Mon 9/21/20	0 days	0%																															
340	LUC RD - ZONES 3 and 4 - NON-CERCLA SOIL & GROUNDWATER	Mon 6/3/19	Mon 9/21/20	477 days	0%																															
341	INTERNAL DRAFT LUC RD	Mon 6/3/19	Mon 6/3/19	0 days	100%																															
342	DRAFT LUC RD	Mon 12/2/19	Mon 12/2/19	0 days	100%																															
343	DRAFT FINAL LUC RD	Tue 3/10/20	Tue 3/10/20	0 days	100%																															
344	Regulator Concurrence	Tue 3/10/20	Wed 6/17/20	100 days	0%																															
345	Resolution of Issues	Thu 6/18/20	Tue 9/15/20	90 days	0%																															
346	FINAL LUC RD - Zones 3 and 4 - non-CERCLA Soil & Groundwater	Wed 9/16/20	Mon 9/21/20	6 days	0%																															
347	FINAL LUC RD - ZONES 3 AND 4 - NON-CERCLA SOIL & GROUNDWATER	Mon 9/21/20	Mon 9/21/20	0 days	0%																															
348	LUC INSPECTION REPORT - ZONES 3, 4, 5 - NON-CERCLA SOIL & GROUNDWATER	Thu 10/1/20	Sat 6/5/21	248 days	0%																															
349	LUC Inspection Event	Thu 10/1/20	Fri 10/30/20	30 days	0%																															
350	Internal Draft LUC Inspection Report	Sat 10/31/20	Tue 12/29/20	60 days	0%																															
351	INTERNAL LUC INSPECTION REPORT	Tue 12/29/20	Tue 12/29/20	0 days	0%																															
352	Navy Review	Wed 12/30/20	Thu 1/28/21	30 days	0%																															
353	Resolution of Comments	Fri 1/29/21	Thu 2/11/21	14 days	0%																															
354	Draft LUC Inspection Report	Fri 2/12/21	Thu 2/25/21	14 days	0%																															
355	DRAFT LUC Inspection Report	Thu 2/25/21	Thu 2/25/21	0 days	0%																															

Project: NSBNLON\_PrjCOSchd\_FnlISM  
Date: Tue 10/27/20

Task		Rolled Up Milestone		Split		Inactive Milestone		Duration-only		Finish-only		Deadline	
Milestone		Rolled Up Progress		Rolled Up Split		Inactive Milestone		Manual Summary Rollup		External Tasks			
Summary		External Tasks		External Milestone		Inactive Summary		Manual Summary		External Milestone			
Rolled Up Task		Project Summary		Inactive Task		Manual Task		Start-only		Progress			







**APPENDIX D**  
**CHRONOLOGY OF SIGNIFICANT BASEWIDE ENVIRONMENTAL**  
**ACTIVITIES**



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A chronology of significant environmental activities and reports at NSB NLON is presented below.

Event	Date
State of Connecticut donates 112 acres on the eastern bank of the Thames River to the Department of the Navy	1867
Navy officially designates the property as a Navy Yard	1868
Navy officially designates the site as a Submarine Base	1916
Six piers and 81 buildings added	1917-1918
Submarine school established	1917
Submarine Medical Center founded	1918
180 buildings constructed and adjacent land acquired	1935-1945
Medical Research Laboratory established	1946
Submarine School became largest tenant	1968
Naval Submarine Support Facility established	1974
Naval Undersea Medical Institute established	1975
First environmental study for investigation of oil contamination in groundwater at NSB NLON	February 1979
Navy initiated the Naval Assessment and Control of Installation Pollutants Program	1980
Initial Assessment Study completed at NSB NLON	March 1983
Department of Defense developed the Installation Restoration Program	1986
Inclusion of NSB NLON on the Federal Agency Hazardous Waste Compliance Docket	1988
US EPA adds NSB NLON to the National Priorities List	August 1990
RCRA Facility Investigation completed	1992
Phase I Remedial Investigation	August 1992
Federal Facility Agreement signed by the Navy, US EPA, and CT DEEP	October 1994
Background Soils Data Report	July 1994
Background Concentrations of Inorganics in Soil Report	April 1995
Initiation of the remedial action for Site 2A – Area A Landfill soil	December 1996
Phase II Remedial Investigation Report	March 1997
Standard Operating Procedure Administrative (SOPA [ADMIN]) New London Instruction (NLONINST) 5090.18 issued (Installation Restoration Site Use Restrictions at NSB-NLON)	October 2000
First Five-Year Review Report	December 2001
Basewide Groundwater OU Remedial Investigation	December 2001

O&M Manual – Volumes I, III, IV, and V (Revision 0 Final)	September 2002
O&M Manual – Volume II (Revision 0 Final)	March 2003
SOPA (ADMIN) NLONINST 5090.18B issued	February 2003
Basewide Groundwater OU 9 Remedial Investigation Update/Feasibility Study	July 2004
O&M Manual – Volumes I, II, III, IV, and V	January 2006
Basewide monitoring well inventory	September 2007
Second Five-Year Review Report	December 2006
SOPA (ADMIN) NLONINST 5090.18C issued	December 2006
Basewide Groundwater OU9 Record of Decision signed	September 2008
SOPA (ADMIN) NLONINST 5090.18D issued	September 2008
Letters to Towns of Ledyard (1 September) and Groton (14 September) regarding Land and Groundwater Use Restrictions submitted by the Navy	September 2009
Basewide Groundwater OU9 Land Use Control Remedial Design	November 2009
SOPA (ADMIN) NLONINST 5090.25 issued (Establishment and Maintenance of Environmental Restoration Land Use Controls and Restrictions at NSB NLON) replace SOPA (ADMIN) NLONINST 5090.18D	June 2009
Basewide Groundwater OU9 Remedial Action Completion Report	June 2010
O&M Manual – Volumes I, II, III, IV, V, and VI (Revision 2 Final)	July 2011
Third Five-Year Review Report	December 2011
O&M Manual – Volumes I (Revision 3 Final), VII, and VIII (Revision 0 Final)	November 2012
Site Assessment Screening Evaluation Site 9 – Former Waste Oil UST (OT-5), Naval Submarine Base, New London, Groton, Connecticut	February 2013
Remedial Action Plan for Zones 1 and 2 at Naval Submarine Base New London Groton, Connecticut	June 2013
Remedial Action Plan for Zones 3 and 4 at Naval Submarine Base New London Groton, Connecticut	June 2013
Remedial Action Plan for Zone 5 at Naval Submarine Base New London Groton, Connecticut	June 2013
Remedial Action Plan for Zone 6 at Naval Submarine Base New London Groton, Connecticut	June 2013
Remedial Action Plan for Zone 7 at Naval Submarine Base New London Groton, Connecticut	March 2013
Removal Action Completion Report Pier 1 Inner Area Sediment Removal Action Phase 2	June 2014
Remedial Action Work Plan Operable Unit 4 (Ou 4) Zones 4 And 7 CERCLA Soils	June 2014

60 Percent Design Report For CERCLA Sediment Lower Subbase Operable Unit 4	November 2014
Remedial Action Completion Report For Area A Wetland Site 2B Remedial Action	June 2015
Remedial Action Completion Report Operable Unit 7 Site 20 Area A Weapons Center Soil And Sediment	December 2015
Remedial Action Completion Report Operable Unit 8 Site 7 Torpedo Shops	August 2016
Fourth Five-Year Review Report	December 2016
Land Use Control Remedial Design Operable Unit 1 Site 2A Area A Landfill	February 2017
Land Use Control Remedial Design Concrete Encapsulated Soil Operable Unit 3 Site 3 Area A Downstream Watercourses And Overbank Disposal Area	February 2017
Land Use Control Remedial Design Operable Unit 2 Site 6 Former Defense Reutilization And Marketing Office	February 2017
Land Use Control Remedial Design Operable Unit 5 Site 8 Goss Cove Landfill	February 2017
Data Gap Investigation Report Site 23 Former Fuel Farm Oil Tanks 4 And 10	April 2017
Site Assessment Screening Evaluation Site 23 Former Fuel Farm	April 2017
Explanation Of Significant Differences To The Record Of Decision For Sediment At Operable Unit 4 Lower Subbase Zone 4 Sites 13, 19 And Outer Pier 1	April 2017
60 Percent Remedial Design Report For CERCLA Sediment Lower Submarine Base Operable Unit 4	April 2017
Remedial Action Work Plan Non-CERCLA Soil And Groundwater Lower Subbase Operable Unit 4 Zones 1 And 2	May 2018
100 Percent Design Report Non-CERCLA Soil And Groundwater Lower Subbase Operable Unit 4 Zones 1 And 2	May 2018
Subbase New London Instruction (SUBASENLONINST) 5090.25A (Establishment and Maintenance of Environmental Restoration (ER) Land Use Controls (LUCs) and Restrictions at Naval Submarine Base New London (SUBASENLON) issued to replace SOPA (ADMIN) NLONIST 5090.25	August 2018
Non-CERCLA Land Use Control Remedial Design Lower Subbase Operable Unit 4 Zone 6	February 2019
Non-CERCLA Land Use Control Remedial Design Lower Subbase Operable Unit 4 Zone 7	February 2019
60 Percent Design Report For Non-CERCLA Soil And Groundwater Lower Subbase Operable Unit 4 Zone 5 (Revision 2 Final)	March 2019
60 Percent Design Report For Non-CERCLA Soil And Groundwater Lower Subbase Operable Unit 4 Zones 3 And 4 (Revision 2 Final)	March 2019

Construction Completion Report Remedial Construction Activities Operable Unit 4 Zone 7 Storm Drain Upgrades	April 2019
Remedial Action Completion Report Operable Unit 1 Site 2A Area A Landfill	May 2019
Remedial Action Completion Report Operable Unit 3 Site 3 Area A Downstream Watercourses And Overbank Disposal Area	May 2019
Remedial Action Completion Report Operable Unit 2 Site 6 Defense Reutilization And Marketing Office	May 2019
Remedial Action Completion Report Operable Unit 5 Site 8 Goss Cove Landfill	May 2019
Supplemental Groundwater Investigation Site 3 Area A Downstream Water Courses And Overbank Disposal Area Operable Units 3 And 9	August 2019
Construction Completion Report Operable Unit 4 Zone 4 CERCLA Soils	February 2020
Draft Final Non-CERCLA Land Use Control Remedial Design Lower Subase Operable Unit 4 Zones 3 and 4	March 2020
Draft Final Non-CERCLA Land Use Control Remedial Design Lower Subase Operable Unit 4 Zone 5	March 2020
Second ESD OU4 - Lower SUBASE, Zone 4 Sites 13 and 19 and Outer Pier 1	May 2020
Land Use Control Remedial Design Lower Subase Operable Unit 4 Soils	August 2020