

4/1/06 - 01953

Final
2006-2007
Site Management Plan
Naval Weapons Station Yorktown
Yorktown, Virginia
and
Cheatham Annex
Williamsburg, Virginia



Prepared For
Department of the Navy
Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia

Contract No. N62470-02-D-3052
CTO-092

April 2006

Prepared by
CH²HILL
Federal Group, Ltd.
Baker
Environmental, Inc.

FINAL

**2006 – 2007
SITE MANAGEMENT PLAN
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA
AND
CHEATHAM ANNEX
WILLIAMSBURG, VIRGINIA**

CONTRACT TASK ORDER 092

Prepared for:

**DEPARTMENT OF THE NAVY
NAVFAC MIDLANT
*Norfolk, Virginia***

Under the:

**NAVFAC ATLANTIC CLEAN PROGRAM
CONTRACT N62470-02-D-3052**

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APRIL 2006

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ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirements
AST	Aboveground Storage Tank
CAX	Cheatham Annex
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	CERCLA Information System
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DERP	Defense Environmental Restoration Program
DNAPL	Dense Nonaqueous Phase Liquids
DON	Department of the Navy
DRMO	Defense Recycling Material Office
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosives Ordnance Disposal
EPIC	Environmental Photographic Interpretation Center
ESD	Explanation of Significant Differences
ESI	Expanded Site Inspection
ESS	Explosives Safety Submission
FFA	Federal Facility Agreement
FISC	Fleet and Industrial Supply Center
FS	Feasibility Study
FY	Fiscal Year
GWOU	Groundwater Operable Unit
HI	Hazard Index
HRS	Hazard Ranking System
HRSD	Hampton Roads Sanitation District
IAS	Initial Assessment Study
IRP	Installation Restoration Program
LTM	Long-Term Monitoring
MCL	Maximum Contaminant Level
NCP	National Oil and Hazardous Substance Contingency Plan
NEDED	Naval Explosives Development Engineering Department
NEESA	Naval Engineering and Environment Support Activity
NFA	No Further Action
NFESC	Naval Facilities Engineering Services Command
NFRAP	No Further Remedial Action Planned
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NTCRA	Non-Time-Critical Removal Action

ACRONYMS AND ABBREVIATIONS
(Continued)

O&M	Operation and Maintenance
OU	Operable Unit
PA	Preliminary Assessment
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RBC	Risk-Based Concentrations
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	Cyclotrimethylenetrinitramine
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SI	Site Investigation
SMP	Site Management Plan
SSA	Site Screening Area
SSP	Site Screening Process
STP	Sewage Treatment Plant
SVOC	Semivolatile Organic Compound
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TCRA	Time-Critical Removal Action
TNT	Trinitrotoluene
TRC	Technical Review Committee
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VDEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compound
WPNSTA	Naval Weapons Station

1.0 INTRODUCTION

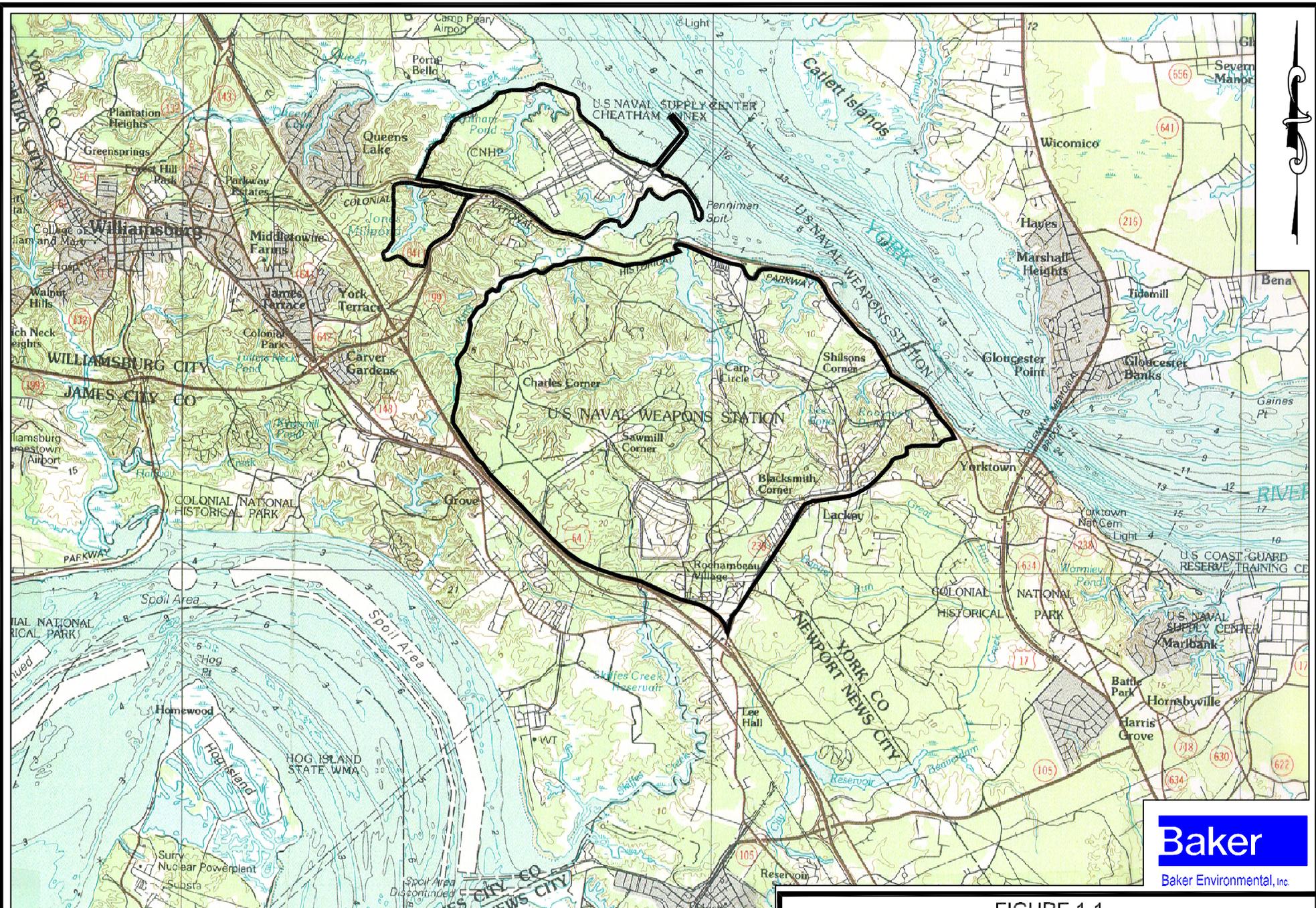
This document presents the Site Management Plan (SMP) for Naval Weapons Station (WPNSTA) Yorktown, Yorktown, Virginia and Cheatham Annex (CAX), Williamsburg, Virginia. The SMP is required as part of the WPNSTA Federal Facility Agreement (FFA) (United States Environmental Protection Agency [USEPA], 1994) and the CAX FFA (USEPA, 2005) as the management tool for planning, reviewing, and setting priorities for all remedial response activities to be conducted at a facility. The FFAs require that the SMP include detailed site descriptions including current and future status, detailed scheduling of activities for two fiscal years, annual updating of the scheduled activities, and review and approval by the USEPA Region III and the Commonwealth of Virginia. For reasons such as Federal budgetary constraints, changes in scope of investigation or remediation activities, revisions in priorities as work progresses and additional information becomes available, or other unanticipated events, the SMP allows for annual adjustment in scheduled activities without modifying the FFA. This SMP presents the rationale underlying the sequence of future investigation and remediation activities and the estimated schedule for completion of each, including detailed schedules for Fiscal Years (FY) 2006 and 2007.

1.1 Facility Descriptions

1.1.1 Naval Weapons Station Yorktown

WPNSTA Yorktown is a 10,624-acre installation located on the Virginia Peninsula in York and James City Counties and the City of Newport News (Figure 1-1). WPNSTA Yorktown is bounded on the northwest by CAX and the King's Creek Commerce Center, on the northeast by the York River and the Colonial National Historic Parkway, on the southwest by Route 143 and Interstate 64, and on the southeast by Route 238 and the town of Lackey. Originally named the U.S. Mine Depot, WPNSTA Yorktown was established in 1918 to support mine laying in the North Sea during World War I. For 20 years after World War I, the depot received, reclaimed, stored, and issued mines, depth charges, and related materials. During World War II, the facility was expanded to include three trinitrotoluene (TNT) loading plants and new torpedo overhaul facilities. A research and development laboratory for experimentation with high explosives was established in 1944. In 1947, a quality evaluation laboratory was developed to monitor special tasks assigned to the facility, which included the design and development of depth charges and advanced underwater weapons. On August 7, 1959, the depot was renamed the U.S. Naval Weapons Station. Today, the primary mission of WPNSTA Yorktown is to provide ordnance, technical support, and related services to sustain the war-fighting capability of the Armed Forces in support of national military strategy.

WPNSTA Yorktown was included on the National Priorities List (NPL) on October 15, 1992. Table 1-1 presents a listing of the sites and site screening areas (SSAs) at WPNSTA. As part of the FFA development and by mutual consent of the Navy and the USEPA, several Resource Conservation and Recovery Act (RCRA) Solid Waste Management Units (SWMUs) at WPNSTA were initially included for investigation and evaluation. Fifteen former SWMUs, two areas identified in the Environmental Photographic Interpretation Center (EPIC) study, one Area of Concern (AOC), and one former Installation Restoration Program (IRP) site were listed in Appendix A of the FFA as SSAs in need of further investigation. In addition to these 19 SSAs listed in the FFA, 5 additional SSAs were added for investigation and evaluation, for a total of 24. Based on the results of the site screening process (SSP), to date, eight SSAs at WPNSTA have been retained as IRP sites for additional Remedial Investigation/Feasibility Study (RI/FS) efforts. Scheduled and completed activities for the 25 sites and 16 SSAs at WPNSTA are presented in this SMP. Figure 1-2 depicts the location of each site and SSA at WPNSTA.



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FIGURE 1-1
LOCATION OF NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA AND CHEATHAM ANNEX
WILLIAMSBURG, VIRGINIA

8333 0 4166 8333 16666
1 inch = 8333 ft.

SOURCE: U.S.G.S. 1:100,000-SCALE PLANIMETRIC
MAP, WILLIAMSBURG, VIRGINIA, 1984.

TABLE 1-1

**SITES AND SITE SCREENING AREAS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA**

Site No.	Site Name	Navy OU No. ⁽¹⁾	CERCLIS OU No. ⁽²⁾	GW OU No.	Former SSA Designation	Current Site Designation	ROD Signed	Institutional Controls
1	Dudley Road Landfill	VIII	6	I	-	-	6/9/1999	Yes
2	Turkey Road Landfill	-	9	VI	-	-	-	-
3	Group 16 Magazine Landfill	IX	6	I	-	-	6/9/1999	Yes
4	Burning Pad Residue Landfill	XVI	7	IV	-	-	-	-
5	Surplus Transformer Storage Area	I	1	II	-	-	9/29/1994	No
6	Explosives-Contaminated Wastewater Impoundment	XIII, XIV, XV	2	I	-	-	10/13/1998	Yes
7	Plant 3 Explosives-Contaminated Wastewater Discharge Area	XII	2	I	-	-	10/13/1998	Yes
8	NEDED Explosives-Contaminated Wastewater Discharge Area	-	9	IV	-	-	-	-
9	Plant 1 Explosives-Contaminated Wastewater Discharge Area	VI	3	VII	-	-	3/23/1998	No
10	-	-	-	-	-	-	-	-
11	Abandoned Explosives Burning Pits	X	8	I	-	-	10/2/2000	No
12	Barracks Road Landfill	III, IV, V	4	III	-	-	4/16/1997	Yes
13	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-
16	West Road Landfill	II	5	IV	-	-	9/29/1995	Yes
17	Holm Road Landfill	XI	8	I	-	-	10/2/2000	Yes
18	Building 476 Discharge Area	-	9	VII	-	-	-	-
19	Conveyor Belt Soils at Building 10	VII	3	VII	-	-	3/23/1998	Yes
20	-	-	-	-	-	-	-	-
21	Battery and Drum Disposal Area	XVIII	7	IV	-	-	9/30/2003	No
22	Burn Pad	XVII	7	IV	-	-	9/30/2003	No
23	Building 428 Teague Road Disposal Area	-	10	II	SSA 1	-	-	-
24	Aviation Field	-	10	I	SSA 6	-	-	-
25	Building 373 Rocket Plant	-	10	I	SSA 7	-	-	-
26	Building 1816 Mark 48 Waste Otto Fuel Tank	-	10	V	SSA 18	-	-	-
27	Building 1751 Chemistry Laboratory Neutralization Unit and Drainage Area	-	11	IV	SSA 9	-	-	-
28	Building 28 X-Ray Facility Tank Drain Field	-	11	VI	SSA 10	-	-	-
29	Lee Pond	-	11	VII	SSA 20	-	-	-
30	Bracken Road Incinerator and Environs	-	11	II	SSA 24	-	-	-

TABLE 1-1
SITES AND SITE SCREENING AREAS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SSA No.	Site Name	Navy OU No. ⁽¹⁾	CERCLIS OU No. ⁽²⁾	GW OU No.	Former SSA Designation	Current Site Designation	ROD/DD Signed	Institutional Controls
1	Now Site 23	-	-	-	-	23	-	-
2	Former EOD Burning/Disposal Area	-	-	X	-	-	3/18/1996	No
3	Fire Training Pits and Vicinity	-	-	I	-	-	5/20/2004	No
4	Weapons Casing/Drum Disposal Area	-	-	II	-	-	5/20/2004	No
5	Bypass Road Landfill	-	-	II	-	-	5/20/2004	No
6	Now Site 24	-	-	-	-	24	-	-
7	Now Site 25	-	-	-	-	25	-	-
8	Building 350 Rail Roundhouse Maintenance Area Trench Outfall	-	-	VII	-	-	7/29/1997	No
9	Now Site 27	-	-	-	-	27	-	-
10	Now Site 28	-	-	-	-	28	-	-
11	Building 3 Neutralization Unit	-	-	III	-	-	7/29/1997	No
12	Public Works Storage Yard/Building 683 Vicinity	-	-	VII	-	-	7/29/1997	No
13	Building 529 Battery Drainage Area	-	-	III	-	-	7/29/1997	No
14	Building 537 Discharge to Felgates Creek	-	9	IV	-	-	-	-
15	Sewage Treatment Plant #1 Sludge Drying Beds and Discharge Area	-	-	III	-	-	-	-
16	Building 402 Metal Disposal Area and Environs	II	5	IV	-	-	9/29/1995	Yes
17	Building 1456 Mark 46 Waste Otto Fuel Tank	-	-	V	-	-	3/18/1996	No
18	Now Site 26	-	-	-	-	26	-	-
19	Beaver Road/Ponds 11 and 12 Drainage Area and Environs	-	-	X	-	-	3/18/1996	No
20	Now Site 29	-	-	-	-	29	-	-
21	Roosevelt Pond	-	-	II	-	-	5/20/2004	No
22	Sand Blasting Grit Pile (formerly AOC 4)	-	-	VII	-	-	5/20/2004	No
23	Coal Storage Area	-	-	VIII	-	-	5/20/2004	No
24	Now Site 30	-	-	-	-	30	-	-
25	Wetlands Down-Gradient of Beaver Pond	-	-	III	-	-	-	No

Notes:

(1) An Operable Unit (OU) is a discrete action that comprises an incremental step toward comprehensively remediating the site. The Navy and USEPA have assigned different numbering systems for the OUs at WPNSTA Yorktown and CAX.

(2) CERCLIS is the USEPA's Comprehensive Environmental Response, Compensation and Liability Information System. CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL.

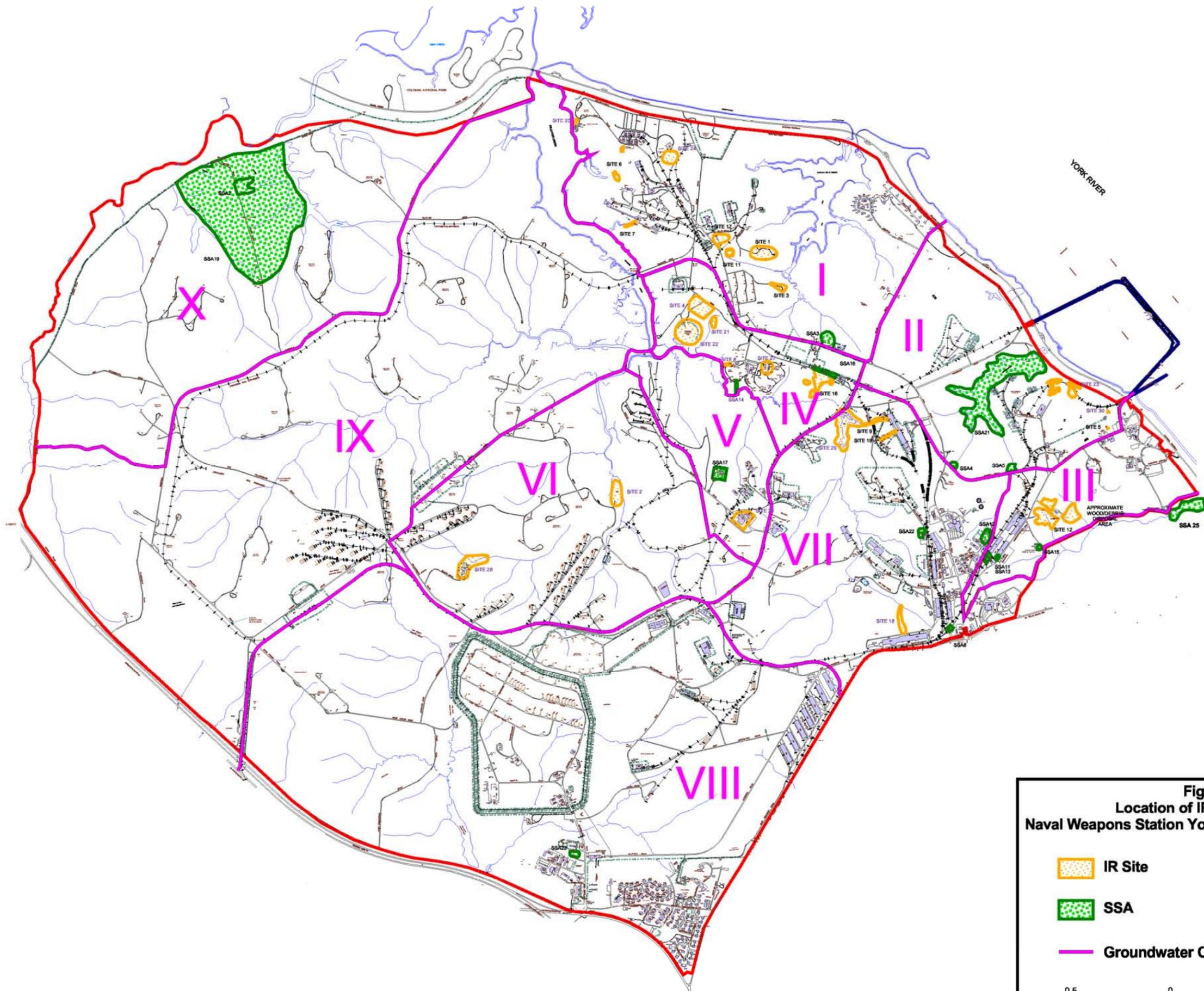


Figure 1-2
Location of IR Sites and SSAs
Naval Weapons Station Yorktown Site Management Plan

-  IR Site
-  SSA
-  Groundwater Operable Unit Boundary

0.5 0 0.5 1 Miles

A Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remedial action is often divided into Operable Units (OUs). As defined by the National Oil and Hazardous Substance Contingency Plan (NCP), an OU is a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response may manage migration, eliminate a release, or may mitigate a release, threat of release, or pathway of exposure. OUs can address geographical portions of a site or specific site problems or may consist of any set of actions over time or that are concurrent but located in different parts of a site. At WPNSTA Yorktown, sites are designated as OUs when investigative activities are completed. Assigning sites to OUs aids in the selection of remedial action alternatives and serves accounting purposes for multiple IRP site Records of Decision (RODs) produced for WPNSTA Yorktown. Table 1-1 lists the OU designated for each site.

Separate from the OUs, the Yorktown Partnering Team developed groundwater operable units (GWOU) to determine a discrete portion of a remedial response to mitigate a release, threat of release, or pathway of exposure to groundwater. GWOU have been established for each site and SSA at WPNSTA as outlined in Table 1-1 and shown in Figure 1-2.

1.1.2 Cheatham Annex

CAX is located on the site of the former Penniman Shell Loading Plant, which was a large powder- and shell-loading facility operated during World War I. The Penniman facility closed in 1918, and between 1918 and 1943, the property was used for farming or left idle until CAX was commissioned in 1943 as a satellite unit of the Naval Supply Depot to provide bulk storage facilities and serve as an assembly and overseas shipping point throughout World War II. At inception, CAX occupied approximately 3,349 acres. Several portions of the original base have since been declared surplus and transferred to other government jurisdictions, including the National Park Service, the Commonwealth of Virginia, and York County. CAX is currently comprised of 2,300 acres (Figure 1-1). CAX is divided into two separate parcels, with the larger parcel situated along the banks of the York River. Almost all of the activities at CAX (administration, training, maintenance, support, and housing) take place in this portion of the Installation. The smaller parcel is located south of the Colonial National Historic Parkway. This area contains Jones Pond and is used mainly as a watershed protection area. In July 1987, CAX was designated the Hampton Roads Navy Recreational Complex. Today, the mission of CAX includes supplying Atlantic Fleet ships and providing recreational opportunities to military and civilian personnel.

In October 1998, CAX control was transferred from Fleet and Industrial Supply Center (FISC) to WPNSTA. On December 1, 2000, CAX was included on the NPL. Prior to this, all IRP actions initiated at CAX were voluntary and consistent with other Department of Navy (DON) installations. The FFA for CAX was finalized in March 2005 and identified a total of 12 sites and 7 AOCs at CAX. These sites and AOCs are listed in Table 1-2 and shown in Figure 1-3. Scheduled and completed activities for all CAX sites and AOCs are presented in this SMP.

OUs and GWOU have not been established for CAX.

1.2 Regulatory Framework and CERCLA Process Activities

CERCLA and the Superfund Amendments and Reauthorization Act of 1986 (SARA) established programs for the cleanup of hazardous waste disposal and spill sites. The IRP is a component of the Defense Environmental Restoration Program (DERP) which is one of the programs established under CERCLA/SARA by the DON. The USEPA and Virginia Department of Environmental Quality (VDEQ) have been actively involved in the IRP at WPNSTA Yorktown and CAX.

TABLE 1-2

**SITES AND AREAS OF CONCERN
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA
CHEATHAM ANNEX**

Site No.	Site Name	Navy OU No. ⁽¹⁾	CERCLIS OU No. ⁽²⁾	GW OU No.	Former AOC Designation	Current Site Designation	ROD/DD Signed	Institutional Controls
1	Landfill Near Incinerator	-	1	NA	5	-	NA	NA
2	Contaminated Food Disposal Area	-	8	NA	-	-	NFRAP 8/14/03	No
3	Submarine Dye Disposal Area	-	8	NA	-	-	NFRAP 8/14/03	No
4	Outdated Medical Supply Disposal Area	-	4	NA	4	-	NA	NA
5	Photographic Chemicals Disposal Area	-	8	NA	-	-	NFRAP 8/14/03	No
6	Spoiled Food Disposal Area	-	8	NA	-	-	NFRAP 8/14/03	No
7	Old DuPont Disposal Area	-	3	NA	-	-	NA	NA
8	Landfill Near Building CAD 14	-	8	NA	-	-	NFRAP 8/14/03	No
9	Transformer Storage Area	-	6	NA	-	-	NA	No
10	Decontamination Agent Disposal Area Near First Street	-	8	NA	-	-	NFRAP 8/14/03	No
11	Bone Yard	-	5	NA	-	-	NA	NA
12	Disposal Site Near Water Tower	-	7	NA	-	-	NFRAP 4/22/04	NA
AOC No.								
1	Scrap Metal Dump	-	-	NA	-	-	NA	NA
2	Dextrose Dump	-	3	NA	-	-	NA	NA
3	CAD 11/12 Pond Bank	-	-	NA	-	-	NA	NA
4	Now Site 4	-	-	-	-	4	NA	-
5	Now Site 1	-	-	-	-	1	NA	-
6	Penniman AOC	-	2	NA	-	-	NA	NA
7	Drum and Can Disposal Area	-	-	NA	-	-	NA	NA

Notes:

(1) An Operable Unit (OU) is a discrete action that comprises an incremental step toward comprehensively remediating the site. The Navy and USEPA have assigned different numbering systems for the OUs at WPNSTA Yorktown and CAX.

(2) CERCLIS is the USEPA's Comprehensive Environmental Response, Compensation and Liability Information System. CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL.

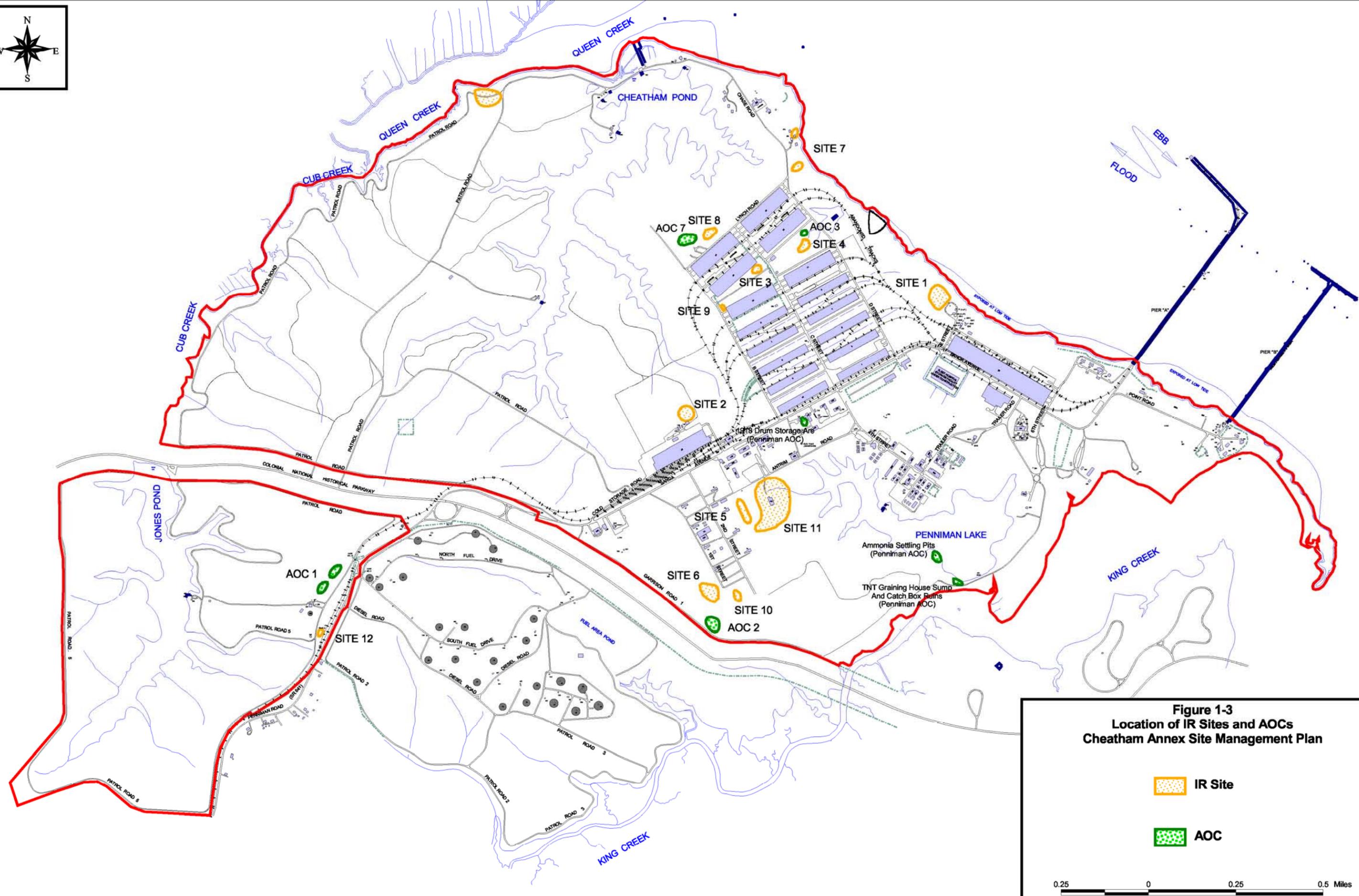


Figure 1-3
Location of IR Sites and AOCs
Cheatham Annex Site Management Plan

-  IR Site
-  AOC

0.25 0 0.25 0.5 Miles

The investigations and remedial activities to be completed at WPNSTA Yorktown and CAX will follow the guidelines established by the USEPA as part of the CERCLA process. Once an area has been identified as potentially containing contaminated media (soil, groundwater, sediment, and surface water) and the site screening investigation and risk screening process (both limited in scope) have determined that a potential risk to human health and/or the environment exists, the site will be subjected to the RI/FS process. However, a removal action and/or an interim remedial action may also be appropriate. The decision to implement one or a combination of these actions at established RI/FS sites is dependent upon the nature and extent of contamination at the site; how well the site is characterized; the degree of associated human health and/or environmental risks; and the complexity of the potential remedial actions (i.e., the feasibility of the optimal remedy). The CERCLA processes are described below and depicted on Figure 1-4.

1.2.1 Preliminary Assessment/Site Inspection

Once a site is identified, a site assessment is performed, beginning with a Preliminary Assessment (PA) to determine if the site poses a potential hazard and whether further action is necessary. During the PA, any available documentation pertaining to the site is reviewed. In addition, there may be a site visit, but sampling generally does not occur at this time.

If information generated during the PA reveals that potential environmental contamination exists but does not pose an immediate threat, a more extensive study, called a Site Inspection (SI), is performed. Typically, the SI involves a site visit and sample collection to define and further characterize the nature of the contamination at a site. If results of the SI indicate the site presents an imminent and substantial threat, a removal action may be implemented (USEPA, 1992).

At WPNSTA Yorktown, the PA was implemented in the form of an Initial Assessment Study (IAS). The purpose of the IAS was to identify and assess sites posing a potential threat to human health and/or the environment due to contamination from past operations. A total of 19 potentially contaminated sites were identified based on information from historical records, aerial photographs, field inspections, and personnel interviews. Each site was evaluated for the type of contamination, migration pathways, and pollutant receptors. The IAS concluded that 15 of the 19 sites posed a sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

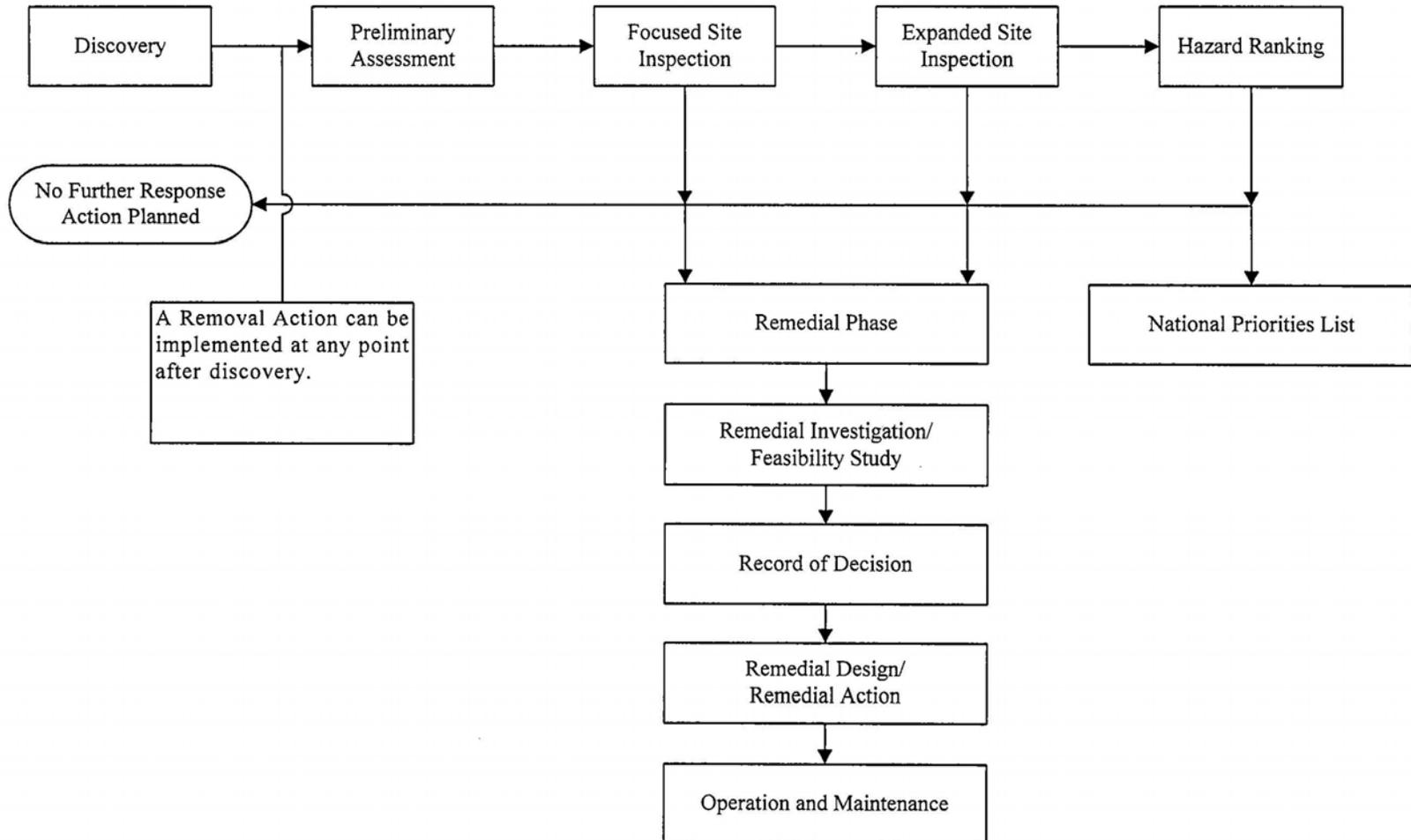
In November 1990, WPNSTA Yorktown personnel identified an additional site (Site 21, the Battery and Drum Disposal Area) that had not been included in the previous investigations. An SI at Site 21 was conducted in October 1991. Three monitoring wells were installed and sampled, and surface and subsurface soil samples were collected (Baker and Weston, 1992).

The IAS at CAX was conducted in 1984. A total of 12 potentially contaminated sites were identified based on information from historical records, aerial photographs, field inspections, and personnel interviews. Each site was evaluated for the type of contamination, migration pathways, and pollutant receptors. The IAS concluded that 4 of the 12 sites were a sufficient threat to human health or the environment to warrant Confirmation Studies (Naval Engineering and Environmental Support Activity [NEESA], 1984).

1.2.2 Expanded Site Inspection

The objective of the Expanded Site Inspection (ESI) is to collect data necessary to prepare a Hazard Ranking System (HRS) scoring package to evaluate the site for potential inclusion on the NPL. The HRS is a numerically-based scoring system that uses information from the PA and SI to assign sites scores

FIGURE 1-4
CERCLA PROCESS



based on releases or potential releases of contaminants, characteristics of substances, and people and sensitive environment's that would be impacted by a release. To fully evaluate the site and to fulfill HRS documentation requirements, the ESI will:

- Investigate and document critical hypotheses or assumptions not completely tested during the SI.
- Collect samples to determine whether hazardous substances or contaminants are attributable to past/current site operations.
- Collect samples to establish representative background levels.
- Collect any other missing (HRS) data for pathways of concern.

When environmental samples do not provide the information needed for HRS documentation requirements, investigations also may need to include special field activities. The purpose of these procedures, which are beyond the screening scope of the SI, is to supply data to refine and document the site score. Special ESI field activities may include monitoring well installation, air sampling, geophysical studies, drum or tank sampling, borings, immunoassay screening to define the extent of contamination, and complex background sampling studies.

Sampling during the ESI should be designed to support and document HRS requirements, including: 1) observed releases of hazardous substances relative to background; 2) observed contamination; and 3) levels of contamination. The ESI should facilitate collection of a complete set of Quality Assurance/Quality Control (QA/QC) and background samples to fully and confidently document and attribute releases to the site.

The scope of an ESI is not necessarily larger than a SI but depends on the data gaps remaining after all previous investigation information is evaluated. The ESI also differs from the SI by emphasizing collection of all missing non-sampling information for pathways of concern. These data may be used to support previous documentation or references, fulfill remaining data requirements, and/or identify other sources of contamination in the vicinity of the site.

At the conclusion of the field activities, an ESI report summarizing findings and analytical results is prepared. Per USEPA regional and State instructions, the ESI should evaluate all site data according to the HRS. The HRS package consists of the HRS documentation record, reference materials, HRS score sheets, and site narrative summaries along with other administrative requirements as specified in *Regional Quality Control Guidance for NPL Candidate Sites* (USEPA, 1991). Preparing the HRS package is not considered part of SI or ESI activities. However, all data necessary to document a HRS score should be collected during the ESI (USEPA, 1992).

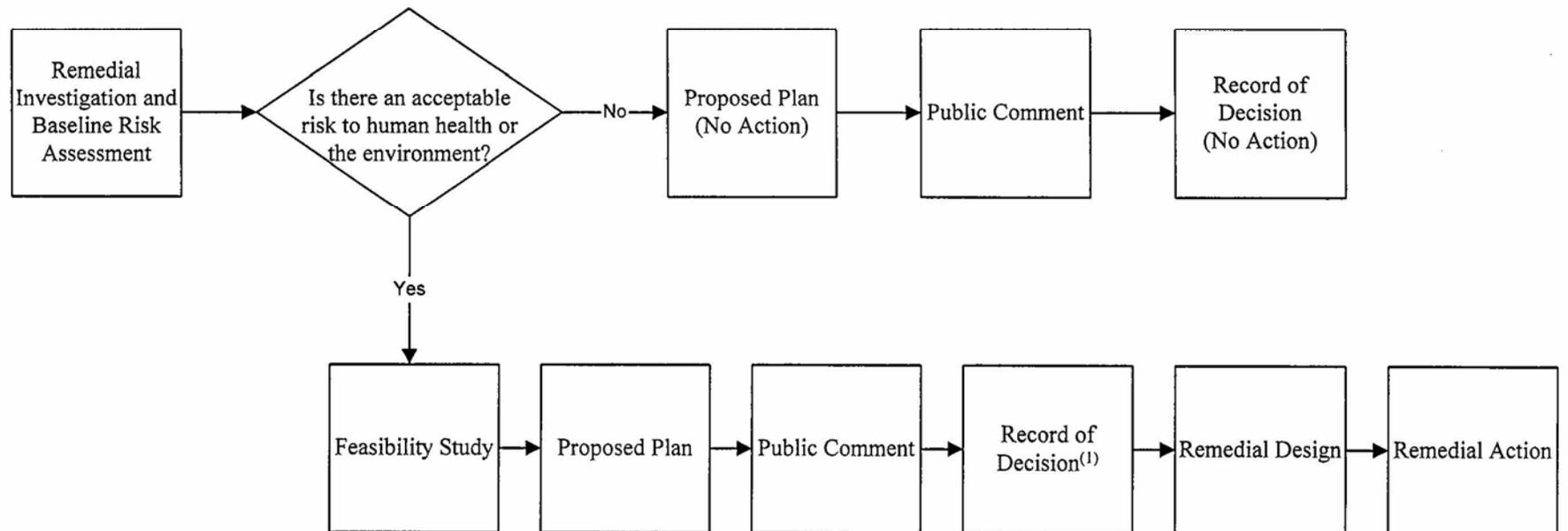
When applied to investigating individual sites, the ESI also functions as another decision node and data evaluation process by which the most appropriate option in the CERCLA process (e.g., no action, removal action, or remedial action) may be selected. If sufficient data is collected, the ESI may be functionally equivalent to a Remedial Investigation (RI). To date, no ESIs have been performed at WPNSTA Yorktown or CAX.

1.2.3 Remedial Investigation/Feasibility Study Process

The RI/FS phase is generally the most involved step in the CERCLA process. Figure 1-5 outlines the steps to remedial action under the RI/FS process. For the RI/FS, an RI, baseline risk assessment, and FS are completed, along with a Proposed Plan prior to a formal public comment period. After public comments have been addressed as part of the Responsiveness Summary in the ROD, the ROD is placed in the Administrative Record. Subsequent to completion and agency approval of the ROD, remedial design activities are initiated, followed by the implementation of the remedial action. Following are general descriptions of the key components of the RI/FS process:

FIGURE 1-5

REMEDIAL INVESTIGATION/FEASIBILITY STUDY PROCESS



⁽¹⁾ Includes summary of any Interim Remedial Actions or Removal Actions for the site(s)

- Remedial Investigation: An assessment of the nature and extent of contamination and the associated health and environmental risks.
- Feasibility Study: Development and analysis of the range of cleanup alternatives for the site.
- Proposed Plan: Identifies a preferred remedial alternative and explains why the alternative was selected. Allows for public comment.
- Record of Decision: The official report documenting the background information on the site and describing the chosen remedy and why it was selected.

If unacceptable human health or ecological risks do not exist, sites are recommended for no further action. If risks do exist, removal actions, interim actions, or additional RI/FS activities are proposed in order to mitigate the risks or further delineate the extent of contamination.

Bypassing the SI or ESI phase and commencing immediately with the RI/FS may be cost-effective and beneficial if known contamination or specific details regarding previous practices is present and it is reasonably certain that in-depth study of the site is required.

1.2.3.1 WPNSTA Yorktown Confirmation Study and Remedial Investigation Interim Report

Two rounds of data were obtained during the Confirmation Study for WPNSTA Yorktown. During the first round of sampling, conducted in the winter of 1986, environmental samples were collected from the 15 sites identified in the IAS. This effort was documented in the “Confirmation Study Step IA (Verification), Round One,” (Dames & Moore, 1986a). The initial sampling effort included:

- Installation and sampling of 26 monitoring wells.
- Collection and analysis of 21 surface water and sediment samples.
- Collection and analysis of 26 surface soil samples.

The second round of sampling was conducted during November and December 1987. The Round Two effort included:

- Collection and analysis of 26 groundwater samples from the previously installed wells.
- Collection and analysis of 26 surface water and 32 sediment samples.
- Collection and analysis of 12 surface soil samples.

The results of the analyses and comparisons with appropriate regulatory standards were presented in the “Confirmation Study Step IA (Verification), Round Two” report (Dames & Moore, 1988a). The Draft RI Interim Report contained the combined and summarized results of these field efforts (Dames & Moore, 1989). This report was subsequently revised by Versar in 1991 to incorporate comments from the Technical Review Committee (TRC); this revised report is the RI Interim Report (Versar, 1991). The RI Interim Report recommended that further RI activities be completed at 14 of the 15 sites for which data were available.

1.2.3.2 CAX Confirmation Studies

The Confirmation Studies at CAX were conducted by Dames & Moore in two rounds. During the first round of sampling, conducted in the winter of 1986, environmental samples were collected from the four sites (Sites 1, 9, 10, and 11) identified in the IAS. This effort was documented in the Confirmation Study Step IA (Verification), Round One (Dames & Moore, 1986b). The initial sampling effort included:

- Installation and sampling of five monitoring wells.
- Collection and analysis of four groundwater samples from previously installed wells at Site 1.
- Collection and analysis of three surface water and 3 sediment samples.
- Collection and analysis of 22 surface soil samples.

The Transformer Storage Area (Site 9) was taken off the list based on the results of the sampling completed during Round One of the Confirmation Study. Additional investigations were recommended for the three remaining sites (Sites 1, 10, and 11) under the Confirmation Studies.

The second round of sampling for the Confirmation Study was conducted during November and December 1987. The Round Two effort for the three sites included:

- Collection and analysis of nine groundwater samples (Sites 1 and 11).
- Collection and analysis of three surface water and three sediment samples (Site 11).

The results of the analyses performed on these samples and comparisons with applicable regulatory standards were presented in the Confirmation Study Step IA (Round Two). No recommendations were presented (Dames & Moore, 1988b).

1.2.3.3 CAX Remedial Investigation Interim Report

The purpose of the RI Interim Report was to summarize available data for Sites 1, 9, 10, and 11 and, based on the data, provide recommendations for additional efforts to be conducted to complete the RI. The recommendations included aerial photographic interpretation, an off-Base well inventory, limited biota sampling, and background sampling of soil, surface water, and sediment. Site-specific recommendations included collection of groundwater samples from Site 1, historic aerial photographic interpretation to gather information regarding disposal activities at Site 10, and collection of groundwater, surface water, sediment, and soil samples from Site 11. The RI Interim Report recommended additional investigation of Sites 1, 10, and 11 and recommended no further investigation of Site 9 (Dames & Moore, 1991).

1.2.3.4 Summary of RI/FS Documents

The following RIs have been completed at WPNSTA Yorktown and CAX:

- Final Round One RI for Sites 1-9, 11, 12, 16-19, and 21 (Baker and Weston, 1993a)
- Final Round Two RI for Sites 1 and 3 (Baker, 1998a)
- Final Round Two RI for Sites 2, 8, 18, and SSA 14 (Baker, 2004a)
- Final Round Two RI for Sites 4, 21, and 22 (Baker, 2001a)
- Final Round Two RI for Sites 6 and 7 (Baker, 1998b)
- Final Round Two RI for Sites 9 and 19 (Baker, 1997a)
- Final Round Two RI for Sites 11 and 17 (Baker, 1997b)
- Final Round Two RI for Site 12 (Baker, 1996a)
- Final Round Two RI for Site 16 and SSA 16 (Baker, 1995a)
- Draft Final Round One RI for Sites 23, 24, 25, and 26 (Baker, 2002a)
- Final Round One RI for Sites 27, 28, 29, and 30 (Baker, 2005a)
- Final RI for CAX Site 1 (Baker, 2004b)
- Draft RI for CAX Site 11 (Baker, 2004c)

The following SSP Reports have been completed at WPNSTA Yorktown and CAX:

- Final SSP Report for SSAs 1, 6, 7, and 15 (Baker, 1996b)
- Final SSP Report for SSAs 2, 17, 18, and 19 (Baker, 1996c)
- Final SSP Report for SSAs 3, 4, 5, 9, 10, 20, 21, 22, 23, and 24 (Baker, 2001b and 2004d)
- Final SSP Report for SSAs 8, 11, 12, and 13 (Baker, 1997c)
- Final SSP Report for CAX Sites 1, 10, and 11 (Baker, 1997d)

The following FS Reports have been completed at WPNSTA Yorktown and CAX:

- Final FS for Sites 1 and 3 (Baker, 1997e)
- Draft FS for Sites 2, 8, 18, and SSA 14 (Baker, 1998c)
- Final FS for Sites 4, 21, and 22 (Baker, 2001c)
- Final FS for Sites 6 and 7 (Baker, 1998d)
- Final FS for Sites 9 and 19 (Baker, 1997f)
- Final FS for Sites 11 and 17 (Baker, 1999a)
- Final FS for Site 12 (Baker, 1996d)
- Final FS for CAX Site 1 (Baker, 2000a)

The following Proposed Plans have been completed at WPNSTA Yorktown and CAX:

- Final Proposed Plan for Sites 1 and 3 (Baker, 1998e)
- Final Proposed Plan for Sites 4 and 22 (Baker, 2001d)
- Final Proposed Plan for Site 5 (Baker, 1994a)
- Final Proposed Plan for Sites 6 and 7 (Baker, 1998f)
- Final Proposed Plan for Sites 9 and 19 (Baker, 1997g)
- Final Proposed Plan for Sites 11 and 17 (Baker, 1999b)
- Final Proposed Plan for Site 12 (Baker, 1996e)
- Final Proposed Plan for Site 16 and SSA 16 (Baker, 1995b)
- Final Proposed Plan for Site 18 (Baker, 2005b)
- Final Proposed Plan for Site 21 (Baker, 2001e)

The following RODs have been completed at WPNSTA Yorktown and CAX:

- Final ROD for Sites 1 and 3 (Baker, 1999c)
- Final ROD for Site 4 (Baker, 2005c)
- Final ROD for Site 5 (Baker, 1994b)
- Final ROD for Sites 6 and 7 (Baker, 1998g)
- Final ROD for Sites 9 and 19 (Baker, 1998h)
- Final ROD for Sites 11 and 17 (Baker, 2000b)
- Final ROD for Site 12 (Baker, 1997h)
- Final ROD for Site 16 and SSA 16 (Baker, 1995c)
- Final ROD for Site 18 (Baker, 2005d)
- Final ROD for Site 21 (Baker, 2003a)
- Final ROD for Site 22 (Baker, 2003b)

1.2.4 Removal Actions

Removal actions are those actions taken to clean up or remove released hazardous substances from the environment. In addition, a removal action may also be implemented to mitigate, minimize, or prevent damage to human health and the environment from a release or threat of a release by limiting exposure to the hazardous substances (i.e., security fencing or access limitation). Removal actions are classified as either time-critical or non-time-critical. Time-critical removal actions (TCRAs) are conducted when there is an imminent and substantial threat to human health and the environment, such as corroded drums of wastes that are leaking into groundwater. Non-time-critical removal actions (NCRAs) are defined as actions that, based on the degree of potential risk to human health and/or the environment, may be delayed for six months or more before on-site cleanup is initiated.

A removal action may be completed any time during the evaluation or remedial processes. However, it will often begin prior to the completion of the RI/FS to mitigate the spread of contamination.

Figure 1-6 shows the general process for NTCRAs. Rather than preparing an FS, an Engineering Evaluation/Cost Analysis (EE/CA), which focuses only on the individual contaminated medium to be addressed, is completed. Other potentially contaminated media will be addressed as part of the RI/FS process and are not addressed in the EE/CA. Because the scope of a removal action is typically smaller than a final, full-scale remedial action, the time frames for completion of the EE/CA, related design efforts, and implementation of the removal action are much shorter than for a full-scale FS. The opportunity for public involvement is similar to the FS, with a public comment period and an Action Memorandum Decision Document (similar to a ROD in the RI/FS process) completed to document the evaluation and choice of removal action procedures. It should be noted that a removal action may become the final remedial action if the risk screening/assessment results indicate that further remediation is not required for protection of human health and the environment. Where no further action is required at a site that has undergone a removal action, a no action ROD will be completed in order to remove the site from the program.

Removal actions have been conducted at both WPNSTA Yorktown and CAX. These removal actions are discussed in the site descriptions in Sections 2.0 and 3.0.

1.2.5 Interim Remedial Actions

Interim remedial actions are those activities designed to provide temporary mitigation of potential risks posed by a site until a final remedial action is selected. As with removal actions, interim remedial actions usually take place prior to initiation of a full-scale FS because of the risks posed by the contamination in the area. For example, installation of a groundwater pump and treat system to control plume migration would be considered an early remedial action. Initiation of remedial action early in the CERCLA process might reduce costs in the long-term by limiting the extent of contaminant migration.

Rather than preparing an FS, a focused FS is completed, as is an early action ROD to document the activities to be performed. Design and implementation activities follow. It should be noted that an early remedial action may become the final remedial action, if the risk screening/assessment results indicate that further remediation is not required.

Interim remedial actions have been conducted at both WPNSTA Yorktown and CAX. These remedial actions are discussed in the site descriptions in Sections 2.0 and 3.0.

1.2.6 Presumptive Remedies

Presumptive remedies help to streamline the site cleanup process by eliminating the need for initial identification and screening of numerous remedial alternatives during the FS process. Presumptive remedies are preferred technologies for common categories of sites based on historical patterns of remedy selection at similar types of sites. The selection of a presumptive remedy must be considered at the beginning of the RI/FS process so that particular attention can be directed to the risk evaluation, areas of potential contaminant migration, and identification of “hot spots.”

1.2.7 Treatability Studies

Treatability studies may be conducted prior to finalization of FS reports or prior to removal actions to better evaluate the performance of a particular technology. Treatability studies are conducted to:

- Provide sufficient data to allow treatment alternatives to be fully developed and evaluated.
- Support the remedial design of a selected alternative.

FIGURE 1-6

**NON-TIME-CRITICAL REMOVAL ACTION PROCESS
NAVAL WEAPONS STATION YORKTOWN AND
CHEATHAM ANNEX**



(1) Includes Responsiveness Summary to Public Comment

- Reduce cost and performance uncertainties for treatment alternatives to acceptable cleanup levels to aid in remedy selection.

Bench-scale treatability studies may be performed to evaluate the effectiveness of using certain technologies.

1.2.8 No Further Response Action Planned

The NCP states that sites that the USEPA determines need no additional evaluation are given a No Further Remedial Action Planned (NFRAP) designation within the CERCLA Information System (CERCLIS) as defined in Section 300.5 of the NCP. CERCLIS contains the official inventory of CERCLA sites and supports the USEPA's site planning and tracking functions. This designation means that no supplemental investigation or remediation work will be performed at the site(s) unless new information about the site(s) is presented indicating that the initial decision was not appropriate.

The NFRAP evaluation process is shown in Figure 1-7. Decisions to recommend sites for NFRAP status or to proceed with site-specific response actions are integral to the execution of the IRP and generally occur at one of four phases in the environmental response process. The decisions are reached on the basis of site or operable unit information, which is commonly organized in terms of hazardous substance sources, exposure pathways, and receptors. The NFRAP decision can be implemented upon completion of any of the following phases of the RI process: (1) the PA; (2) the SI; (3) the RI/FS; and (4) the removal action or remedial action phase.

NFRAP decision criteria are typically derived from statutory and regulatory provisions under Federal statutes, such as CERCLA and RCRA, as well as similar State statutes. In general, these statutes and regulations require that human health and the environment be adequately protected in the event of a release or threatened release of a hazardous substance. The following area designations along with other Federal and State criteria provide the foundation associated with the NFRAP decision:

- Areas of no suspected contamination.
- Areas below action levels where no response or remedial action is required to ensure protection of human health and the environment.
- Areas where remedies have been implemented/completed.

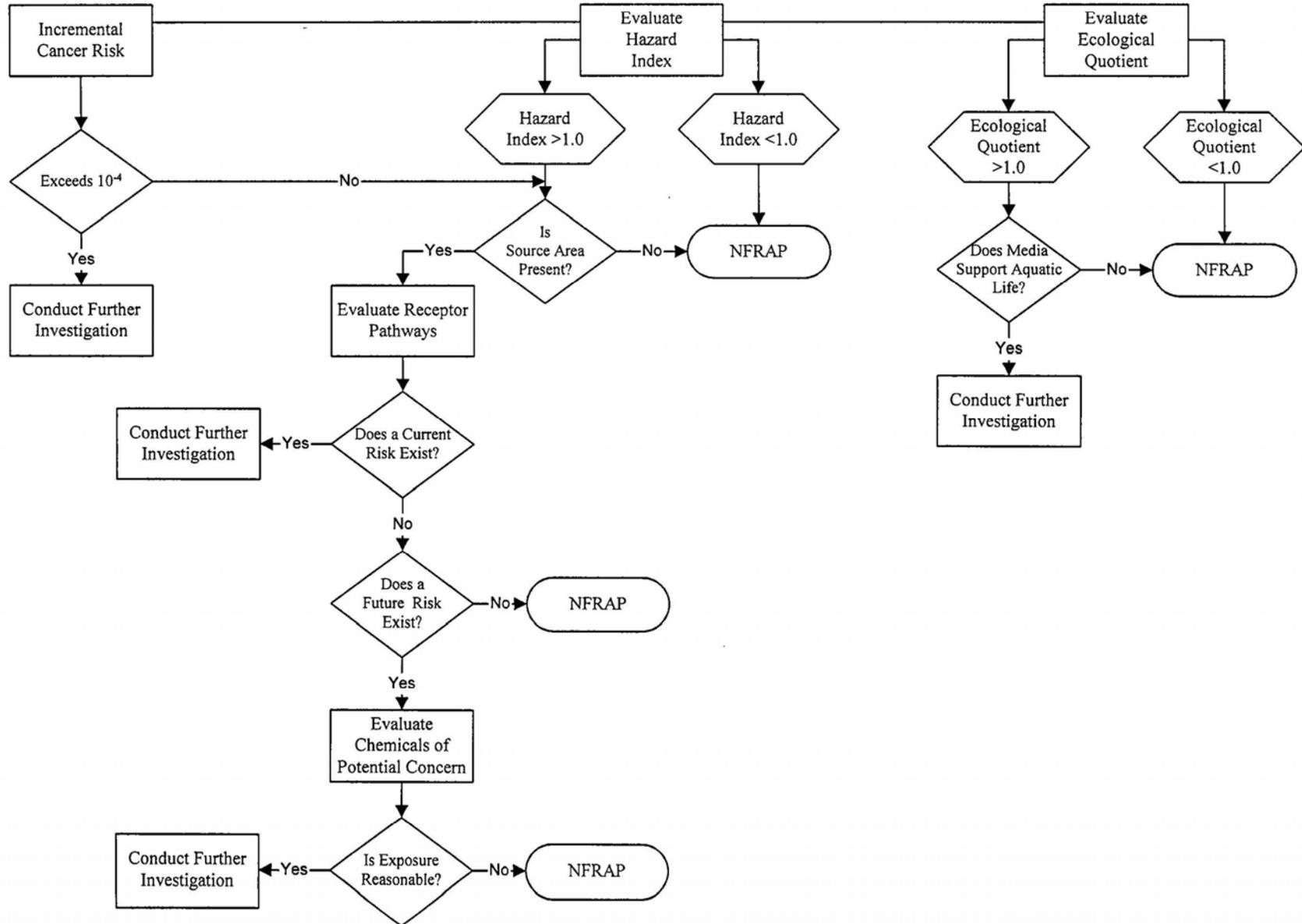
The NFRAP decision is usually made on the basis of an SI, an ESI or an equivalent effort, if it can be shown that the levels of hazardous substances detected in a given area do not:

- Exceed media-specific action levels (e.g., chemical-specific applicable or relevant and appropriate requirements [ARARs] or risk-based concentrations [RBCs]).
- Result in a non-carcinogenic hazard index (HI) above 1.0.
- Result in a cumulative carcinogenic baseline site risk to an individual exceeding the USEPA's acceptable risk range of 1×10^{-6} to 1×10^{-4} , using reasonable maximum exposure assumptions for either current or future land use.
- Otherwise exceed applicable Federal or State requirements.

The following NFRAP reports have been completed at WPNSTA Yorktown and CAX:

- Final NFRAP Decision Document for CAX Sites 2, 3, 5, 6, 8, and 10 (Baker, 2003c)
- Final NFRAP Decision Document for CAX Site 12 (Baker, 2004e)

**FIGURE 1-7
NO FURTHER RESPONSE ACTION PLANNED
EVALUATION DIAGRAM**



1.2.9 Site Completion

Following remedial actions, steps must be followed to ensure that the cleanup methods are working properly. Once the remedy implemented is operational and functional and meets its designated environmental, technical, legal, and institutional requirements, the site status will be designated as a “site completion.” Clean Closure may also need to be evaluated in accordance with 40 Code of Federal Register (CFR) 264 Subpart G.

1.2.9.1 Operations and Maintenance

Once the remedial actions are completed, continuing site operation and maintenance (O&M) activities may be needed to maintain the effectiveness of the remedy and to ensure that no new threat to human health or the environment arises.

Operation and maintenance activities are dictated by the amount of hazardous substances remaining at the site after the completion of the remedial action. RCRA land disposal closure standards apply to waste removed from the site under CERCLA. If hazardous materials remain, post-closure groundwater monitoring is required. Only in those cases where no hazardous substances remain at a site and no residual groundwater contamination is present, is it possible to avoid groundwater monitoring. If the remedial action results in any hazardous substance remaining at the site, CERCLA, Section 121(c), requires review of such action at least every five years after the initiation of the remedial action. It is the installation’s responsibility to ensure that this review is conducted and further action taken, if necessary.

In accordance with CERCLA, Section 121(c), if hazardous substances, pollutants, or contaminants remain at a site after the remedial action step, monitoring records will be reviewed to ensure that human health and the environment are being protected. The compliance review will be made every five years beginning with the initiation of the remedial action step until the remedy is no longer needed.

Many remedial technologies will require operation and maintenance of electro-mechanical equipment after the remedial action is installed. Structures and earthworks may require maintenance. Most sites that have hazardous substances remaining after the remedial action is installed will require periodic monitoring. Appropriate plans for these post-project activities will have been identified in the FS, ROD or decision document, detailed during remedial design, and implemented as appropriate.

The first Five-Year Review Report for WPNSTA Yorktown was conducted in 2002 and included Sites 1, 6, 7, 12, 16, and 19. The next Five-Year Review Report for WPNSTA Yorktown will be submitted in 2007 for Sites 1, 6, 7, 12, 16, and 19.

1.2.9.2 Site Closeout

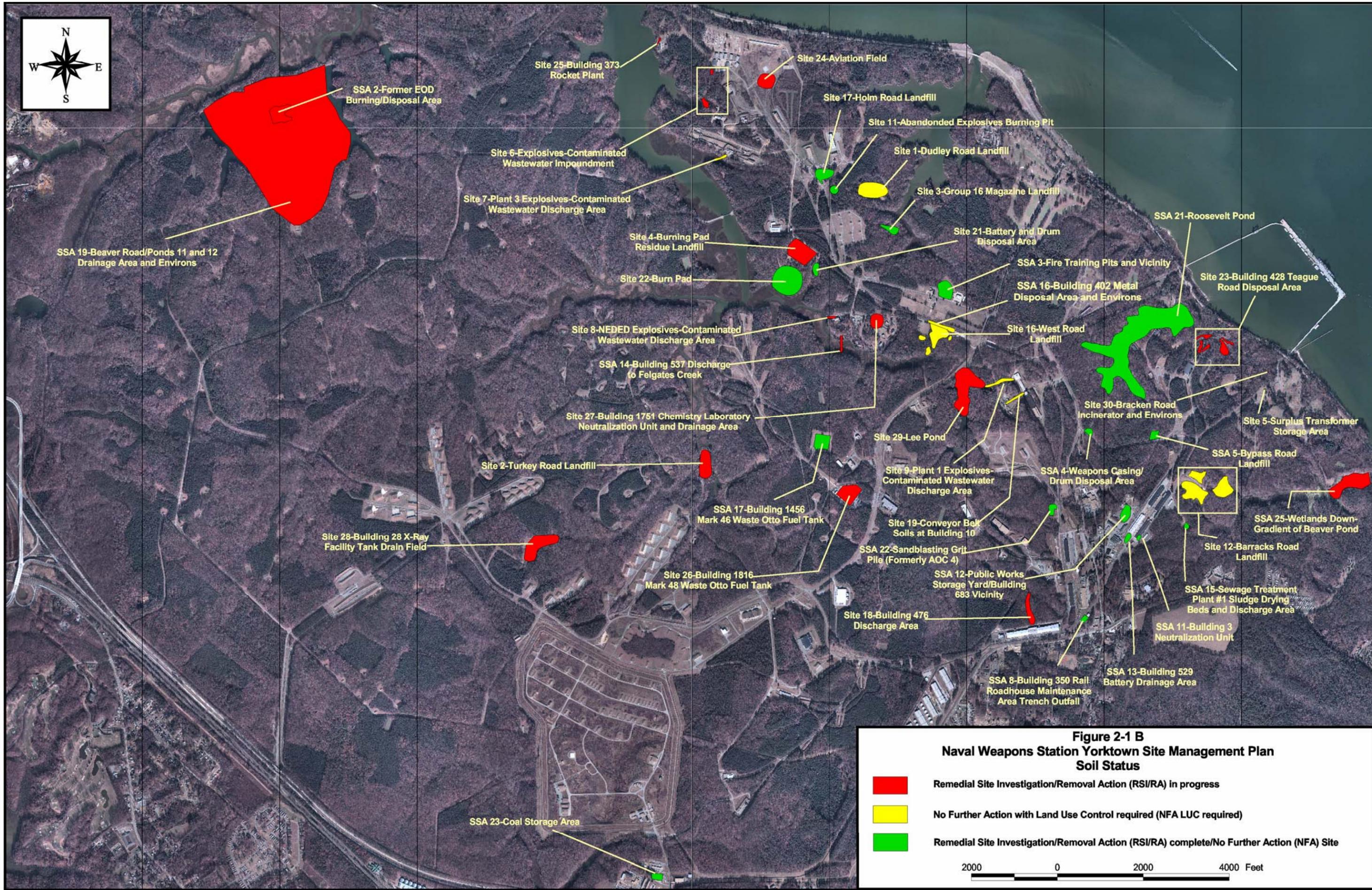
The end point for all sites that enter the remedial action phase is closeout. A closeout is appropriate when no further response actions, under the IRP are considered appropriate for the site.

1.2.9.3 NPL Delisting

Section 300.425(e) of the NCP identifies the actions that must be completed and the procedures to follow in deleting a site from the NPL. Sites having releases may be deleted from, or re-categorized on, the NPL, when no further response is appropriate.

2.0 WPNSTA SITE AND SSA DESCRIPTIONS

This section provides summaries of the site histories and status for each of the 25 sites and 16 SSAs. A summary of the significant CERCLA documents completed for each site is presented chronologically. Figures 2-1A and 2-1B depict the groundwater and soil status for each site and SSA while Figures 2-2 through 2-43 show site-specific layouts.



Site 1 – Dudley Road Landfill

Site Description:

Site 1 is an approximately 6-acre area located just north of the headwaters of Indian Field Creek. A dirt road runs through the site and a dirt mound is located in the northern portion of the site. The majority of the area is cleared, but it is surrounded by woods. Site 1 is named for its proximity to Dudley Road.

The general topography at Site 1 is level (near the landfill) with a slight slope to the east and more pronounced slopes east and south of the site toward Indian Field Creek. Thus, the majority of surface water drains toward Indian Field Creek.

Site 1 was originally used for sand mining, but it became a landfill as depressional areas created by the mining activities were used for waste disposal. The landfill was operated under a Conditional Permit (No. 287) issued by VDEQ. According to the IAS, the solid waste landfill was in use for general disposal from approximately 1965 to 1979, with one area used for disposal of plastic lens grinding waste until 1983. Wastes disposed within the depression created by sand mining included asbestos insulation from steam piping; oil, grease, paint, and solvent containers; nitramine-contaminated carbon; household appliances; scrap metal banding; construction rubble; plastic lens grinding wastes; tree limbs; lumber; packaging wastes; electrical wires; and waste oil. The landfill received an estimated 255 tons of waste while in use.

On January 12, 1979, VDEQ performed an inspection of the site. The landfill did not meet the requirements for a permitted landfill by the Virginia Department of Health governing the disposal of solid waste. The deficiencies were corrected and the landfill received approved waste until 1985 when the facility was closed. Another inspection of the closed disposal facility conducted by VDEQ on August 29, 1995 found deficiencies (subsidence and ponding water) within the landfill cover. The landfill was later covered by approximately two feet of soil, and the abandoned sand reclamation area was covered by eight feet of soil.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 1, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 1 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 1 (Versar, 1991).

Round One RI Data gathered during the Round One RI conducted in 1993 indicated potential shallow groundwater contamination within the area of monitoring well 1GW12 at Site 1. Soil, surface water, sediment, and groundwater were collected and analyzed for Target Compound List (TCL) organic compounds, and Target Analyte List (TAL) inorganic compounds. Data generated during the Round One RI were compared with standards and/or available criteria. The RI results indicated the presence of contamination in soil and groundwater at Site 1; therefore, Site 1 was recommended for a more comprehensive investigation and baseline risk assessment to better evaluate the significance of site related contamination (Baker and Weston, 1993a).

Habitat Evaluation The Habitat Evaluation Report included Site 1 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA Yorktown. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species supported, and a record of any animal species encountered or suspected to be present or using IRP site habitats (Baker, 1995d).

Round Two RI The Round Two RI was performed in February 1996. The field investigation was designed to provide information necessary to characterize potential human health effects and ecological impacts resulting from previous site activities. Groundwater monitoring wells were installed, test pits were excavated, and surface soil, subsurface soil, and groundwater samples were collected. Surface water, sediment, and biota samples were also collected within Indian Field Creek. Results of the Round Two groundwater sample analysis indicated that the upgradient sources of volatile organic compound (VOC) contamination within the landfill at Site 1 did not exist and the presence of dense nonaqueous phase liquids (DNAPL) was not observed within the subsurface soil obtained during monitoring well installation. Trichloroethene (TCE) levels appeared to have dropped in monitoring well 1GW12, and TCE contamination appeared to be limited to the upper portion of the deep aquifer. The Round Two RI Report concluded that the subsurface soil at Site 1 had not been significantly impacted by the past disposal practices and the surface water and sediment associated with Site 1 had not been impacted by past site operations. However, a potential hot spot of arsenic-contaminated surface soil was identified at Site 1 (Baker, 1998a).

FS The FS for Site 1 presented the following remedial action alternatives: No Action; Soil Cover and Surface Debris Removal; and Soil Cover, Surface Debris Removal, and Excavation with Off-Site Disposal (Baker, 1997e).

Proposed Plan The Proposed Plan for Site 1 was released to the public in May 1998 for a 30-day review and comment period. In addition, a public meeting was held on May 26, 1998 to provide the community information about the preferred remedial alternative under consideration and to seek public comments. The preferred alternative for Site 1 was the excavation and off-site disposal of contaminated soil with arsenic concentrations exceeding the remediation level of 63 mg/kg. Land use controls would be implemented to prohibit residential development at Site 1 and activities that interfere with or compromise the integrity of the soil cover at Site 1 (Baker, 1998e).

ROD The ROD for Site 1 was signed in June 1999. The ROD specified debris removal and excavation and disposal of arsenic contaminated soil and the reestablishment of the soil cover over the solid waste landfill portion of the site. In addition, land use controls, independent of the land use controls associated with the Explosive Safety Quantity Distance arc, will exist to prohibit future residential property use because the soil would be remediated to meet commercial/industrial levels, the most likely future land use scenario, and contaminant concentrations exceeding residential remediation levels would remain in soil at Site 1 (Baker, 1999c).

1999 Remedial Action The remedial action at Site 1 began in July 1999 and was completed in April 2000. It included the removal of the metal debris and transporting it the Defense Recycling Material Office (DRMO); placing additional soil over the landfill area; removing the arsenic contaminated waste and disposing it off-site; placing borrow soil in the excavated area; grading the landfill area and excavated area to provide graded slopes; and restoring the site with upland grasses (OHM, 2001a).

Explanation of Significant Differences (ESD) The remedy for Site 1 changed during the remedial action. The ROD stated to fill low spots, but the actual remedy was 18 inches of cover, followed by 6 inches of topsoil. This remedy change will be document in an ESD. However, Site 1 still has waste in place and will continue to need a Remedial Design and five-year reviews.

Long-Term Monitoring Long-term monitoring (LTM) for VOCs of the groundwater at Site 1 and the surface water and sediment of Indian Field Creek along the Site 1 boundary began in May 2000 and continues. Following the fifth round of LTM sample collection in July 2005, an LTM report summarizing the results will be submitted.

Five-Year Review Site 1 was included in the first five-year review conducted at WPNSTA Yorktown. This review was conducted in June 2002. The report concluded that the completed remedial action is protective of human health and the environment. No issues or deficiencies were identified at Site 1 during the first five-year review (Baker, 2002b).

Remedial Design for Land Use Controls A draft remedial design for Site 1 is in progress. The Site 1 remedial design specifies land use control implementation and maintenance actions, including periodic inspections and long-term groundwater monitoring (Baker, 2005e).

GWOU I Round One RI Groundwater at Site 1 is being addressed under GWOU I. A draft Round One RI for GWOU I is currently being developed. Groundwater samples were collected from Site 1 as part of this RI.

Status: Institutional controls and long-term monitoring are in place. The draft remedial design, LTM report, and GWOU I Round One RI are in progress. The next five-year review at Site 1 is due in 2007. An ESD for the ROD is pending.

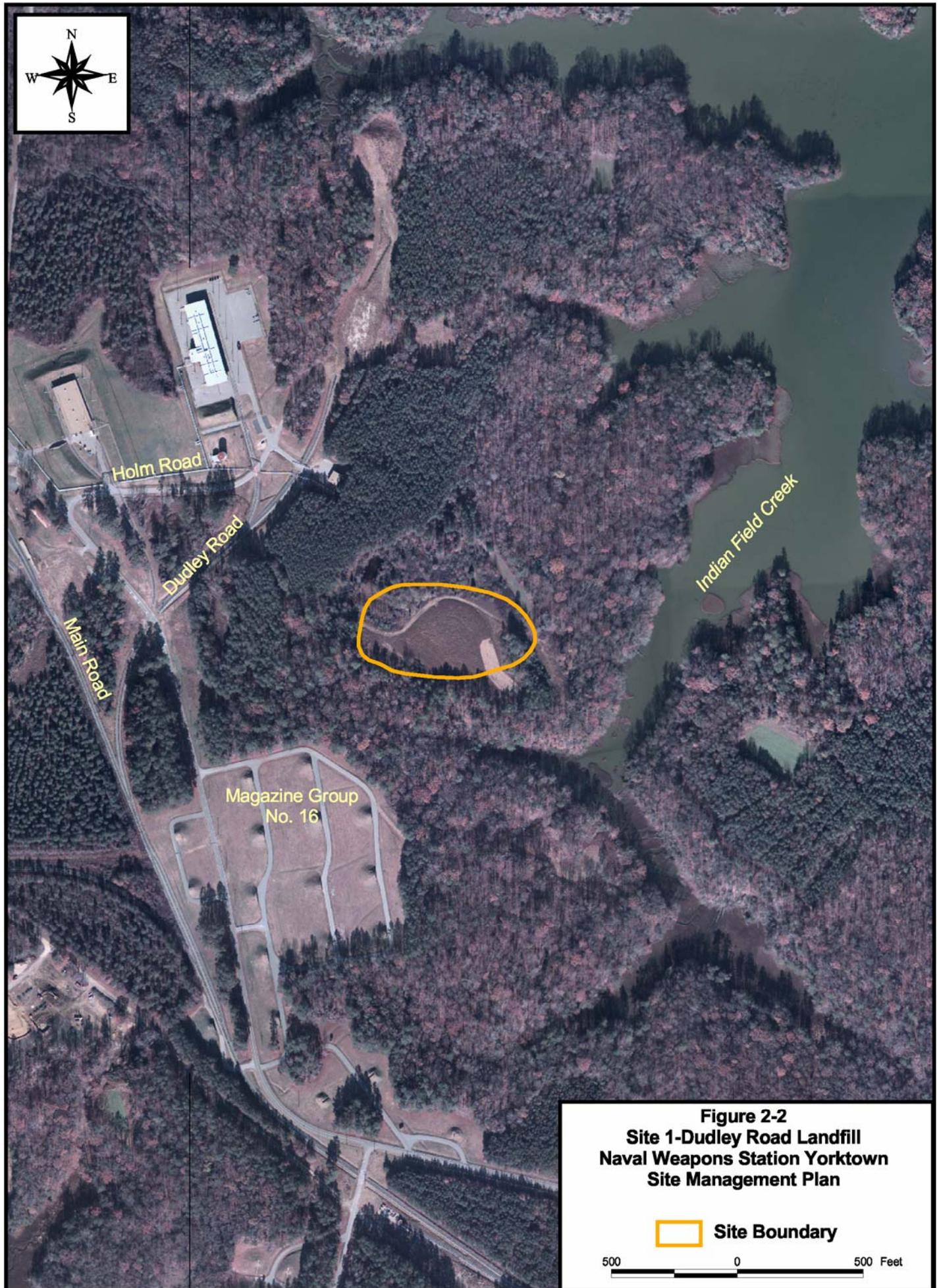


Figure 2-2
Site 1-Dudley Road Landfill
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet



Site 2 – Turkey Road Landfill

Site Description:

Site 2 is a five-acre disposal area located east of Turkey Road in a wetland area adjacent to the southern branch of Felgates Creek. Operations at the disposal area reportedly began in the 1940s and ceased in 1981. Wastes disposed included mercury and carbon-zinc batteries, tree stumps and limbs, construction rubble, missile hardware (e.g., wings, fins, and power packs), electrical devices, and unidentified drums and/or tanks. Waste quantities have been estimated at 240 tons during the period of use. Hard waste material (mine casings) was primarily located along the unnamed tributaries to the southern branch of Felgates Creek.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 2, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 2 was included in the “Confirmation Study Step IA (Verification), Round One,” conducted in the winter of 1986 (Dames & Moore, 1986a). A second round of data was obtained in 1987. Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 2 (Versar, 1991).

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek (Baker and Weston, 1993b).

Round One RI A Round One RI was performed from June to October 1992. Based on the results of the Round One RI, a removal action to excavate and dispose of surface waste and debris was recommended, followed by a risk evaluation (Baker and Weston, 1993a).

Habitat Evaluation The Habitat Evaluation Report included Site 2 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species supported, and a record of any animal species encountered or suspected to be present or using IRP site habitats (Baker, 1995d).

1994 Removal Action A removal action was conducted at Site 2 from September through December 1994. The main objectives of the removal action were to remove all surface and near surface wastes from designated areas at Site 2 and to restore the site to pre-removal action conditions. Based on historical photographs, waste disposal appears to have been limited to the perimeter of the site. Wastes encountered at Site 2 included large concrete masses, asphalt, HEPA filter drums, scrap metal, empty drums, miscellaneous construction/demolition debris, and unexploded ordnance (UXO). Excavated wastes consisted of batteries and soil. All ordnance items were certified as inert. After all wastes were removed, confirmatory soil sample was conducted to develop a database from which a determination as to further RI/FS and remediation activities would be made (IT Corporation, 1995).

Round Two RI The Round Two RI for Site 2 was conducted to: (1) develop an RI report based on evaluation of Round One and Round Two field investigation results; (2) assess the nature and extent of contamination at Site 2 and/or identify data gaps preventing an adequate understanding of site conditions; and (3) assess potential human health and ecological risks associated with any contamination at Site 2. The Round Two RI concluded that there were potentially unacceptable total site risks for future residents and lower trophic level aquatic ecological receptors (Baker, 2004a).

Pre-Removal Characterization of Soil The purpose of this study was to collect soil samples to recharacterize the soil conditions at Site 2 to support a planned removal/remedial action at the site. As a result of this supplemental field sampling, it may be necessary to conduct an ecological re-evaluation to incorporate new data as a section in an EE/CA or FS. The primary field investigation objective was to gather surface and subsurface soil information to determine the extent of chemicals identified as either human health or ecological contaminants of concern (COCs) within the soil upgradient of the two unnamed tributaries that define the eastern and western boundaries of Site 2 (Baker, 2005f). The soil sampling event was conducted in June 2005. Results of the soil sampling will be discussed in an EE/CA or FS.

Status: The pre-removal characterization of the soil sampling event is pending. The EE/CA and Remedial/Removal Action will be conducted, if necessary. Groundwater will be addressed under GWOU VI.



Site 3 – Group 16 Magazine Landfill

Site Description:

Site 3 is a two-acre area located behind the Group 16 magazines, just south of Site 1 (separated from Site 1 by a ravine), and along the headwaters of Indian Field Creek. Although it was named for its proximity to the Group 16 Magazines, this site's operations were unrelated to any activities at the magazines. Site 3 was used as a landfill area, reportedly from 1940 to 1970, and it received an estimated 90 tons of waste during the period of use. The site was originally used for sand mining, but became a landfill as depressional areas created by mining activities were used for waste disposal. Wastes disposed within the depressions included solvents, sludge from boiler cleaning operations, grease trap wastes, Imhoff tank skimmings containing oil and grease, and animal carcasses. The general topography at Site 3 can be described as uneven with topographic highs at the northern and southwestern areas of the site, and topographic lows (excluding the areas adjacent to Indian Field Creek) within the landfill. Surface water across the site flows in the direction of Indian Field Creek. Most of the site, which is overgrown with trees, was covered by approximately two feet of soil with some scattered surface debris.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 3, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 3 was included in the "Confirmation Study Step IA (Verification), Round One" (Dames & Moore, 1986a) and "Confirmation Study Step IA (Verification), Round Two" (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 3 (Versar, 1991).

Round One RI A Round One RI was performed June to October 1992. Results of the Round One RI conducted at Site 3 indicated that landfill activities affected groundwater quality as TCE and possible elevated levels of metals were identified in samples taken from test wells. Elevated levels of semivolatile organic compounds (SVOCs) were identified in soil samples. It was recommended that Site 3 be investigated further (Baker and Weston, 1993a).

Habitat Evaluation The Habitat Evaluation Report included Site 3 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species supported, and a record of any animal species encountered or suspected to be present or using IRP site habitats (Baker, 1995d).

Round Two RI The Round Two RI report for Site 3 was completed in July 1997. Additional soil data indicated that contamination was present at Site 3. A potential hot spot of polynuclear aromatic hydrocarbons (PAH)-contaminated soil was identified at Site 3. Subsequent hot spot delineation sampling was conducted at the site. This additional sampling indicated that a PAH hot spot was identified and confirmed in the surface soil at Site 3 near surface soil sample location 3SS10 (Baker, 1998a).

FS The FS for Site 3 presented the following remedial action alternatives: No Action; No Action with Institutional Controls and Debris Removal; Soil Excavation with On-Site Treatment and Debris Removal; and Soil Excavation with Off-Site Disposal and Debris Removal (Baker, 1997e).

Proposed Plan The Proposed Plan for Site 3 was released to the public in May 1998 for a 30-day review and comment period. A public meeting was also held on May 26, 1998 to provide the community information about the preferred remedial alternative under consideration and to seek public comments. The preferred alternative for Site 3 was soil excavation with off-site disposal, debris removal, and institutional controls (Baker, 1998e).

ROD The ROD for Site 3 was signed in June 1999. The ROD specified the excavation and off-site disposal of contaminated soil with total carcinogenic PAH concentrations exceeding the remediation level of 10 mg/kg. The surficial debris (miscellaneous metal and construction debris) identified within and around the Site 3 area would be removed and disposed and/or recycled as appropriate. Institutional land use controls were implemented to prohibit residential development at the site (Baker, 1999c).

1999 Remedial Action The remedial action at Site 3 began in July 1999 and was completed in April 2000. It consisted of the removal and disposal of PAH-contaminated soil per the design plan, backfilling the excavation, and restoring the area. During the removal action, additional wastes (i.e., unidentified drums, galley waste, and batteries) were discovered and disposed off-site (OHM, 2001a).

Explanation of Significant Differences (ESD) The remedial action for Site 3 cleaned the site to residential levels, instead of the industrial levels presented in the ROD. Therefore, an ESD for the Site 3 ROD will be necessary to document that residential cleanup goals have been met and land use controls are not necessary. Because the remedial action for Site 3 cleaned the site to residential levels, it was not included in the first five-year review conducted at WPNSTA Yorktown and does not require a Remedial Design.

Long-Term Monitoring LTM for VOCs in the groundwater at Site 3 and the surface water and sediment of Indian Field Creek along the Site 3 boundary began in May 2000 and continues. Following the fifth round of LTM sample collection in July 2005, an LTM report summarizing the results will be submitted.

GWOU I Round One RI Groundwater at Site 3 is being addressed under GWOU I. A draft Round One RI for GWOU I is currently being developed. Groundwater samples were collected from Site 3 as part of this RI.

Status: Long-term monitoring is in place. The draft LTM report and GWOU I Round One RI are in progress. An ESD for the ROD is pending.

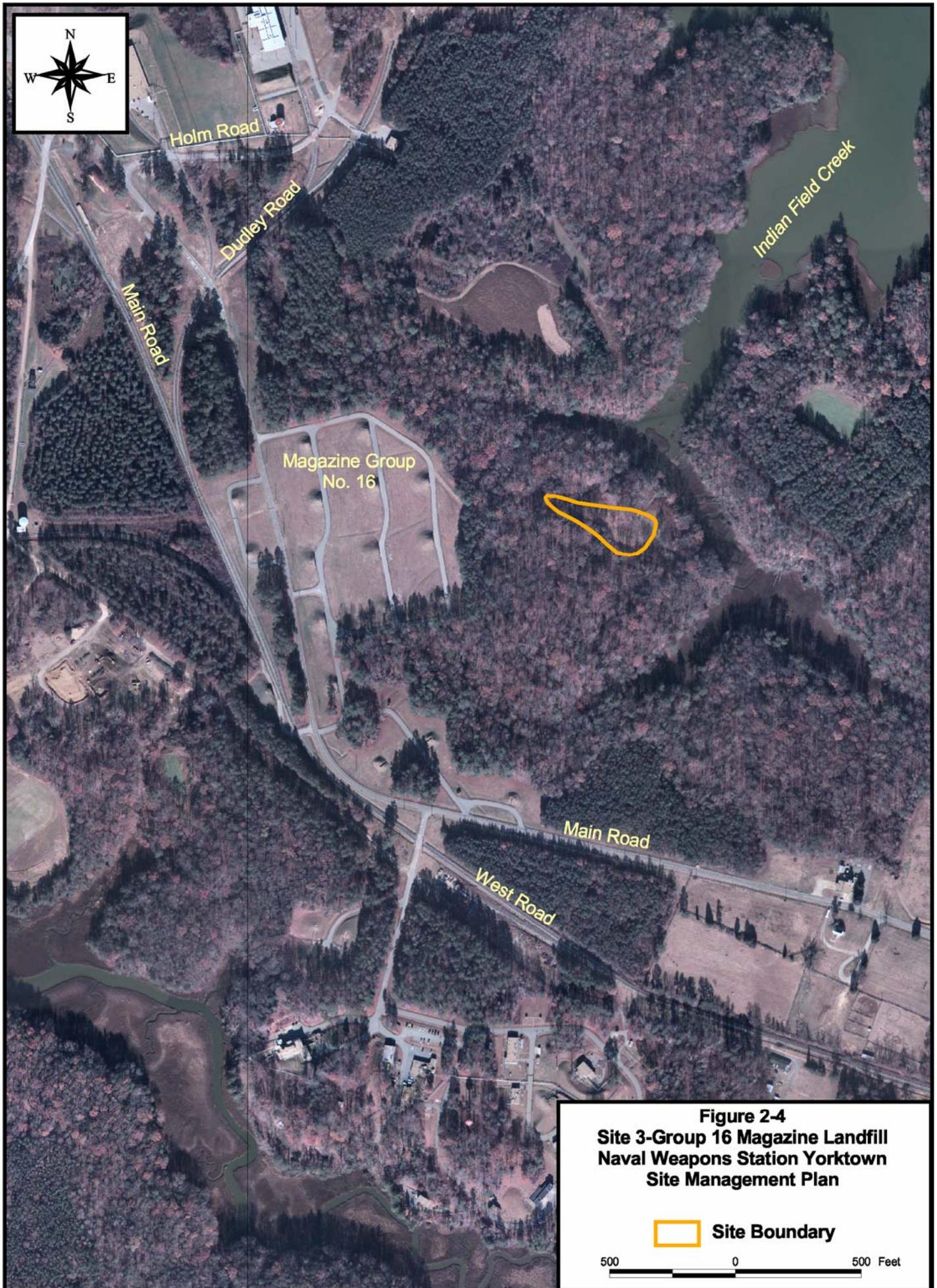


Figure 2-4
Site 3-Group 16 Magazine Landfill
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 4 – Burning Pad Residue Landfill

Site Description:

Site 4 consists of a landfill approximately 10-acres. The site is bordered by Site 22 to the southwest, Site 21 and an unnamed drainageway to the southeast, West Road to the northeast, and a gravel road leading to the burning facility to the northwest.

Site 4 was used as a land disposal area from 1940 until 1975, during which time it was reportedly backfilled three to four times a week. An ash pile measuring approximately 100 feet by 150 feet was located in the northeast corner of the site. Materials reportedly disposed at the site included carbon-zinc batteries from underwater weapons, burning pad residues, tree stumps, fly ash from coal-fired boilers, mine casings, electrical equipment, and transformers. A large battery disposal area was identified in the southeast portion of the site. In addition, construction debris, pipes, glass, concrete, bottles, cans, and drums have been discovered in various locations within the site boundary.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 4, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 4 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 4 (Versar, 1991).

Round One RI The Round One RI was conducted in 1992 based on the recommendations made in the Interim RI Report. The objectives of the RI were to assess the nature and extent of contamination and to perform human health and ecological risk assessments to evaluate the impacts on human health and the environment. Results of the Round 1 Remedial Investigation conducted at Site 4 indicated the presence of elevated levels of volatile organics and inorganics in the groundwater, soil, and sediment sample analyses. Explosives compounds were also identified in several samples, however the source of these compounds was inconclusive as a RCRA permitted detonation area was located in the proximity of Site 4. Due to the identified compounds in the sampled media, it was recommended that Site 4 proceed through the standard RI/FS process (Baker and Weston, 1993a).

1994 Removal Action A removal action was conducted at Site 4 during the summer of 1994. Wastes encountered during the removal action included surface debris consisting of large concrete masses, empty drums, steel cables, tree stumps, assorted construction debris, asphalt shingles, slate shingles, scrap metal, and assorted porcelain fixtures including a kitchen sink. Excavated wastes consisted of batteries and explosives containing ash residue. Several suspected UXO devices also were encountered and identified as inert. An approximate total of 7,285 tons of material, including 2,460 tons of ash, 3,025 tons of batteries, 1,295 tons of soil, and 510 tons of debris was removed from the site (IT Corporation, 1995).

Habitat Evaluation Results A habitat evaluation was conducted in 1995 at 15 sites at WPNSTA including Site 4. The objectives of the study were to: identify potential aquatic and terrestrial receptors for the ecological risk assessment; identify habitats within the study areas; identify existing wetland areas and sensitive environments; and identify any endangered species in the study areas.

At Site 4, three general habitat types were identified; an open field, shrub/mixed forest edge, and upland forest. Some upland forest was present at Site 4. Because of the various types of habitats present at Site 4, a number of local and migratory birds, amphibians, white-tailed deer, and squirrels were identified during the evaluation.

Aquatic habitats at Site 4 included one small stream that drains Site 4. An intermittent channel drains the northern portion of Site 4 and leads to the main stream channel (Baker, 1995d).

Round Two RI The Round Two RI for Site 4 was completed in January 2001. The purpose of the Round Two RI was to assess the nature and extent of contamination and address any data gaps observed after the Round One RI, the 1994 removal action, and the habitat evaluation. Due to the size of Site 4, it was divided into two areas: Site 4 Proper and Site 4 Hot Spot. Generally, the results of the Round Two surface soil investigation at Site 4 were consistent with the Round One results. Results of the investigations indicated the presence of low levels of PAHs in 29 of the 51 surface soil samples collected at Site 4. Nitramine compounds were detected in six of the surface soil samples and organics and inorganics were also identified in the surface soils. Low levels of organics and inorganics were identified in the subsurface soils and the groundwater. Sediment samples contained VOCs, SVOCs, and nitramines (Baker, 2001a).

Dioxin Investigation In July 2000, soil samples were collected from Site 4 and analyzed for dioxins and dibenzofurans. This site was identified as a candidate site for dioxin and dibenzofuran analysis because of the past burning of explosives and waste materials that may have contained residual chlorinated solvents such as TCE. Results indicated that dioxin and dibenzofuran concentrations were similar to WPNSTA Yorktown background concentration.

ES A Feasibility Study was developed in April 2001 and identified remedial action technologies for Site 4 including No Action, Capping, Hot Spot Removal and Off-Site Disposal with Ex-Situ Phytoremediation, Excavation with Off-Site Disposal, and Soil Washing (Baker, 2001c).

Proposed Plan The Proposed Plan for Site 4 was released to the public for review and comment in June 2001. A public meeting was held on February 21, 2001 to provide the community information about the preferred remedial alternative under consideration and to seek public comments. The preferred alternative identified in the Proposed Plan was Excavation with Off-Site Disposal (Baker, 2001d).

2005 Removal Action A second removal action began at Site 4 during 2003 and was completed in 2005. Approximately 57,600 tons of contaminated soil exceeding residential human health and ecological cleanup goals were removed (Shaw, 2005).

ROD A No Further Action (NFA) ROD for soil has been finalized and is currently awaiting signature. No further remedial action for soil is required at Site 4 since post-excavation sampling, conducted as part of the 2005 removal action, confirmed that the soil poses no threat to human health or the environment (Baker, 2005c).

Status: Signature of the NFA ROD is pending. Groundwater will be addressed under GWOU IV.

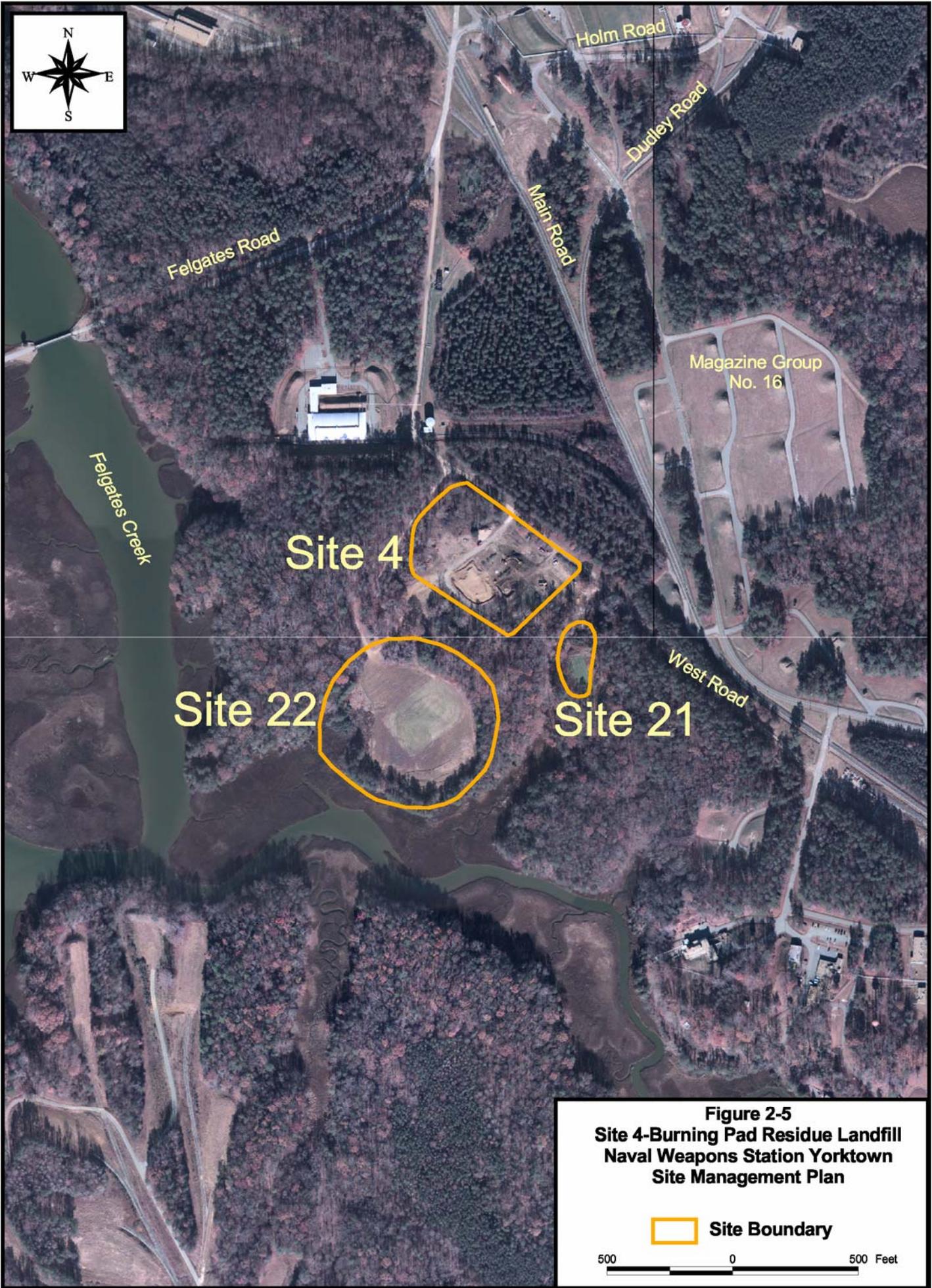


Figure 2-5
Site 4-Burning Pad Residue Landfill
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

Site 5 – Surplus Transformer Storage Area

Site Description:

Site 5 is located off Barracks Road in the northeastern portion of WPNSTA Yorktown. It was adjacent to the north end of Building 76; however, this building has since been demolished. Site 5 is approximately 1,000 square feet in size. It was fenced and had two concrete pads and a gravel area located within the fence; however, all of these materials were removed when the buildings in the area were razed. This site was used from 1940 to 1981 as a storage area for surplus polychlorinated biphenyl (PCB)-containing transformers, which were stored on and around the two large concrete pads. Following 1981, only non-PCB containing transformers were stored at this location.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 5, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 5 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a). Site 5 was not included in the second round of sampling for the Confirmation Study (Dames & Moore, 1988a). Results of the investigation were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 5 (Versar, 1991).

Round One RI In December 1982, contaminated soils were removed from Site 5; however, the results of this removal effort were not verified. Therefore, the Round One RI was performed in 1992 to determine the success of the previous removal effort and to further define the vertical and horizontal extent of potential PCB contamination in the soils. During the investigation at Site 5, 24 soil samples were collected. Additionally, four concrete chip samples were collected from the concrete pads upon which the transformers had been stored, and one groundwater sample was collected at the location of the highest value detected during the Confirmation Study. Aroclor-1260 was the only PCB congener detected; this Aroclor was detected in 17 of the soil samples. Concentrations ranged from 16 to 1,400 µg/kg. Detectable concentrations of Aroclor-1260 were reported in the concrete chip samples, but the levels were less than those detected in the soils. The groundwater sample did not display detectable concentrations of PCBs (Baker and Weston, 1993a).

Risk Evaluation A risk evaluation was performed to identify whether further remedial action should be taken at Site 5. The report concluded that the PCB risk at Site 5 fell within the USEPA’s target risk range. The report recommended no further remedial action for Site 5 and preparation of a No-Action Proposed Remedial Action Plan and Record of Decision (Baker, 1994c).

Proposed Plan The Proposed Plan for Site 5 was released to the public in June 1994 for a 30-day review and comment period. A public meeting was also held on June 29, 1994 to provide information to interested members of the community about the preferred remedial alternative under consideration and to seek public comments. The preferred alternative identified in the Proposed Plan was No Action. This alternative meant the site would remain as is, with no additional sampling or monitoring, as acceptable levels of risk to both human health and the environment existed at the site (Baker, 1994a).

ROD The ROD for Site 5 was signed in September 1994. The selected remedy for Site 5 was a no action remedial alternative. The selected remedy is protective of human health and the environment.

Contaminant levels detected in the media at the site were found to present minimal risk to human health and the environment. A five-year review will not be necessary for Site 5 (Baker, 1994b).

Status: No further action.



Figure 2-6
Site 5-Surplus Transformer Storage Area
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 6 – Explosives-Contaminated Wastewater Impoundment

Site Description:

Site 6 contains a three-acre, unlined, surface impoundment area located adjacent to wetlands and along a small unnamed tributary to the main branch of Felgates Creek. This impoundment operated from 1942 to 1975 and received contaminated wastewater and solvents from the explosives reclamation facility at Building 109 and from weapons loading operations (washdown water) at Building 110. In 1975, a carbon adsorption tower was installed to treat the contaminated wastewater prior to discharge into the drainage way, and the discharge of solvents ceased. A National Pollutant Discharge Elimination System (NPDES) permit was granted by USEPA Region III to allow the discharge of effluent from the carbon adsorption tower containing relatively low concentrations of nitramines/nitroaromatics. In 1986, the effluent from the tower was diverted to the sanitary sewer and ultimately to the Hampton Roads Sanitation District (HRSD). Currently, the impoundment collects only surface runoff from the area between Buildings 109 and 110 (Building 109 pipes and trenches have been identified in the FFA for additional RI/FS activities).

Site 6 also includes a small excavation area north of the impoundment and northwest of Building 1249. This previously excavated area has been identified via aerial photography. It is currently wooded, but concrete rubble and miscellaneous debris are evident.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 6, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 6 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 6 (Versar, 1991).

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with the consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Felgates Creek which is adjacent to Site 6. The results of the biota sampling indicated that contaminants from WPNSTA Yorktown have not bioaccumulated in significant quantities in the fish and shell fish of Felgates Creek to pose a significant risk to individuals fishing from these water bodies (Baker and Weston, 1993b).

Round One RI A Round One RI was performed June to October 1992 and was based on the recommendations made in the Interim RI Report. The objectives of the RI were to assess the nature and extent of contamination and to perform human health and ecological risk assessments to evaluate the impacts on human health and the environment. Results of the Round One RI conducted at Site 6 indicated the organic and inorganic compounds were detected in all media sampled. As only one groundwater monitoring well was installed at Site 6, the Round One RI provided limited information on the subsurface conditions, including both subsurface soil and groundwater. Nitramine compounds and VOCs were detected in surface water and sediment; however, insufficient data existed to determine the extent of this contamination. Because previous surface water and sediment data exceeded applicable criteria and standards, benthic macroinvertebrate and fish population data were deemed necessary to

evaluate the potential risk to the environment. As such, the nature and extent of the contamination at Site 6 was not completely defined by the results of the Round One RI. Additional sampling was recommended for all media to better define the nature and extent of contamination at Site 6 (Baker and Weston, 1993a).

Habitat Evaluation The Habitat Evaluation Report included Site 6 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species supported, and a record of any animal species encountered or suspected to be present or using IRP site habitats (Baker, 1995d).

Round Two RI A Round Two RI was conducted during 1994 and 1996 at Site 6 to assess the nature and extent of contamination at the site and to address potential data gaps observed following the Round One RI. The media sampled during this investigation included surface and subsurface soils, groundwater, surface water, and sediment. No organics were identified in surface soil samples. VOCs in subsurface soil identified as chlorinated solvents were detected approximately halfway between Building 109 and the drainage/discharge area to the wastewater impoundment area. Concentrations and the number of compounds increased with depth. Chlorinated solvents (VOCs) and explosive constituents were detected in the groundwater samples. Surface water samples indicated the presence of VOCs within the impoundment area. Sediment samples only indicated the presence of SVOCs within the drainage ways to the impoundment area and VOCs, SVOCs and nitramine compounds within the impoundment area (Baker, 1998b).

Ecological Toxicity Study for Site 6 The purpose of this study was to further define the extent of explosive contamination in the flume area (drainage area), and to establish toxicity-based, site-specific cleanup goals for the explosive contaminants. The results indicated that concentrations of TNT above a range of 68,000 µg/kg can have a potential effect on invertebrates living in the sediment of the Site 6 drainage flume area. The results of this study are presented and discussed in the Site 6 Round Two RI (Baker, 1998b).

Additional Studies/Investigations The following additional studies/investigations occurred at Site 6:

Soil Characterization Study. A Soil Characterization Study was conducted in December 1995. It focused on the Site 6 discharge point of two concrete drainage channels, which formerly conveyed waste water from Buildings 109 and 110 and was suspected of having high concentrations of nitramines. The purpose of the study was to characterize the nitramine-contaminated soil and to collect representative soil samples for a treatability study. Nitramines were detected at Site 6. Specific results from this study were presented and discussed in the Round Two RI.

Supplemental Investigation A Supplemental Investigation to the Round Two RI was conducted in February 1996 at the Site 6 impoundment area to define the extent of contamination within the impoundment.

RCRA Sampling Investigation at Site 6 The FFA identified two RCRA concerns associated with Site 6. Building 109 was labeled a RCRA area of Concern "C." The trenches and piping associated with and adjacent to Building 109 were identified as RCRA SWMU 179. It was determined that these two RCRA sites did not contribute to contamination of Site 6.

Site 6 Sediment Toxicity Study In October 1996, additional sampling was conducted to confirm the results of the previous RCRA sampling at Area of Concern "C" and SWMU 179. Based on

this study, the concerns at these two RCRA sites appeared to be addressed. No further actions or investigations were recommended for these specific RCRA units.

Site 6 Flume Area Composite Sample On February 11, 1998, a composite soil sample was collected from the drainage flume area (near the concrete flumes). VOCs, SVOCs, explosives and inorganics were detected in the composite sample.

FS The FS for Site 6 presented the following remedial action alternatives: No Action; No Action with Monitoring and Sludge Removal; In Situ Biological Treatment, Soil Cover, and Sludge Removal; Ex Situ Biological Treatment, Limited Excavation and Off-Site Disposal and Sludge Removal; Excavation with Thermal Treatment and Sludge Removal; and Ex Situ Biological Treatment, Soil Cover, Limited Excavation and Sludge Removal (Baker, 1998d).

Proposed Plan The Proposed Plan for Site 6 was released to the public in May 1998 for a 30-day review and comment period. In addition, a public meeting was held on March 26, 1998 to provide the community information about the preferred remedial alternative under consideration and to seek public comments. The preferred alternative for Site 6 was the removal of contaminated soil and sediment from the flume area and on-site biological treatment, backfilling of the flume area and the Site 6 excavated area (north of the impoundment), and long-term monitoring of the groundwater, impoundment area surface water, and sediment (Baker, 1998f).

ROD The ROD for Site 6 was signed in October 1998. It specified the removal and treatment of soil/sediment and Building 109 residue at the Flume Area and soil cover at the Excavated Area to address the principal threat to human health and the environment by eliminating source materials and potential release of these contaminants to the environment. The selected remedy prohibited residential use because the site would be cleaned up to commercial/industrial level-use. In addition, the selected remedy specified long-term monitoring of surface water, sediment, and groundwater at the Impoundment Area, but noted that this was not the final remedy for groundwater at Site 6 (Baker, 1998g).

Remedial Action A remedial action at the Site 6 Impoundment Area was started in 1999 and is on-going. It includes the excavation and ex-situ bioremediation of contaminated soil at the biocell near Site 24 and excavation and in-situ bioremediation of contaminated soil in the treatment cell at the Impoundment Area.

Long-Term Monitoring LTM for VOCs, nitramine compounds, and TAL inorganics (including cyanide) of the Impoundment Area surface water and sediment and Site 6 groundwater began in May 2000. Following the baseline round of sampling, LTM at Site 6 was suspended pending completion of the remedial action. A discussion of the Site 6 baseline round of LTM sampling will be included in the LTM report for Sites 1, 3, and 7 that will be submitted in the fall of 2005.

Five-Year Review Site 6 was included in the first five-year review conducted at WPNSTA Yorktown. This review was conducted in June 2002. The report concluded that the completed remedial action is protective of human health and the environment. No issues or deficiencies were identified at Site 6 during the five-year review (Baker, 2002b).

Remedial Design for Land Use Controls A draft remedial design for Site 6 is in progress. The Site 6 remedial design specifies land use control implementation and maintenance actions, including periodic inspections and long-term groundwater monitoring (Baker, 2005g).

GWOU I Round One RI Groundwater at Site 6 is being addressed under GWOU I. A draft Round One RI for GWOU I is currently being developed. Groundwater samples were collected from Site 6 as part of this RI.

Status: The remedial action is on-going. Institutional controls and long-term monitoring are in place. The draft remedial design, LTM report, and GWOU I Round One RI are in progress. The next five-year review at Site 6 is due in 2007.



Site 7 – Plant 3 Explosives-Contaminated Wastewater Discharge Area

Site Description:

Site 7 is an approximately 300-foot long drainage area located adjacent to wetlands along a small tributary to Felgates Creek, approximately one mile upstream from the confluence of Felgates Creek and the York River. This drainage area received nitramine-contaminated wastewater from Loading Plant 3 between the years 1945 and 1975. In 1975, a carbon adsorption tower was installed to treat the contaminated wastewater prior to discharge into the drainage way. A National Pollutant Discharge Elimination System (NPDES) permit was granted by the USEPA Region III to allow this discharge. In 1986, the effluent from the tower was diverted to the sanitary sewer and ultimately to the Hampton Roads Sanitation District (HRSD). The site reverted to a natural drainage area and received no discharge from the Plant 3 complex after 1986.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 7, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 7 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 7 (Versar, 1991).

Focused Biological Sampling and Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report summarized the results of a limited biological tissue, surface water and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with the consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Felgates Creek, which is adjacent to Site 7. The results of the biota sampling indicated that contaminants from WPNSTA Yorktown have not bioaccumulated in significant quantities in the fish and shell fish of Felgates Creek to pose a significant risk to individuals fishing from this water body (Baker and Weston, 1993b).

Round One RI A Round One RI was performed June to October 1992 and was based on the recommendations made in the Interim RI Report. The objectives of the RI were to assess the nature and extent of contamination and to perform human health and ecological risk assessments to evaluate the impacts on human health and the environment. Results of the Round One RI conducted at Site 7 indicated organic and inorganic compounds were detected in all media sampled. As only one groundwater monitoring well was installed at Site 7, the Round One RI provided limited information on the subsurface conditions, including both subsurface soil and groundwater. Nitramine compounds and VOCs were detected in surface water and sediment; however, insufficient data existed to determine the extent of this contamination. Because previous surface water and sediment data exceeded applicable criteria and standards, benthic macroinvertebrate and fish population data were deemed necessary to evaluate the potential risk to the environment. As such, the nature and extent of the contamination at Site 7 was not completely defined by the results of the Round One RI. Additional sampling was recommended for all media to better define the nature and extent of contamination at Site 7 (Baker and Weston, 1993a).

Habitat Evaluation The Habitat Evaluation Report included Site 7 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species supported, and a record of any animal species encountered or suspected to be present or using IRP site habitats (Baker, 1995d).

Round Two RI A Round Two RI was conducted between 1994 and 1996 at Site 7 to assess the nature and extent of contamination at the site and to address potential data gaps observed following the Round One RI. The media sampled during this investigation included surface and subsurface soils, groundwater, surface water, and sediment. VOCs and nitramine compounds were detected in groundwater with the highest concentrations observed in the general area around the explosives-contaminated wastewater discharge area. VOCs were detected in the surface and subsurface sediment samples at Site 7. There were no SVOCs or nitramine compounds detected in the surface water or sediment samples collected during the Round Two RI at Site 7 (Baker, 1998b).

Field Scale Pilot Study A field-scale pilot study to treat explosives-contaminated soil at Site 7 was conducted between September and December 1996. Approximately 770 cubic yards of soil were excavated from the drainage area leading to the tributary at Site 7. Soil with TNT concentrations exceeding 30 ppm was excavated and sent to the newly-constructed biocell at Site 22. The TNT concentrations in the soil entering the biocell averaged over 1000 ppm. After treatment, the TNT concentrations ranged from less than 1 ppm to 4 ppm. At the completion of this pilot study, Site 7 was considered to have been remediated (Baker, 1997i).

Soil Characterization Study A Soil Characterization Study was conducted in December 1995. It focused on the Site 7 drainage area from Building 375, which was suspected of having high concentrations of nitramines. The purpose of the study was to characterize the nitramine-contaminated soil and to collect representative soil samples for a treatability study. Nitramines were detected at Site 7. Specific results from this study were presented and discussed in the FS.

FS An FS was developed for Site 7 in May 1998. Based on the final remediation goals for the contaminants of concern presented in the FS, Site 7 was not identified as a Site Area of Concern because all of the contaminated sediment was removed to be used in the Field Scale Pilot Study conducted for evaluating biological remediation of explosives contaminated soils. As result, Site 7 media no longer pose a potential threat to human health or the environment (Baker, 1998d).

Proposed Plan The Site 7 Proposed Plan was released to the public in May 1998 for a 30-day review and comment period. In addition, a public meeting was held on March 26, 1998 to provide the community information about the preferred remedial alternative under consideration and to seek public comments. The preferred alternative for Site 7 was no further action, as contaminated soil and sediment from Site 7 was excavated and sent to the biocell at Site 22 for biological remediation as part of a pilot study (Baker, 1998f).

ROD The ROD for Site 7 was signed in October 1998 and specified no additional action because the removal of contaminated soil and sediment for use in the bioremediation full-scale pilot study conducted in 1996 mitigated potential human health risks and ecological concerns. However, the selected remedy outlined in the ROD was no further action with the implementation of institutional controls since contaminated soil was removed to industrial remediation levels. The selected remedy also included long-term monitoring of groundwater, but noted that this was not the final remedy for groundwater at Site 7 (Baker, 1998g).

Long-Term Monitoring LTM for nitramine compounds and TAL inorganics (including cyanide) of the groundwater at Site 7 began in May 2000 and continues. Following the baseline round of sampling, LTM at Site 7 was altered slightly to include the collection and analysis of surface and sediment for nitramine compounds and TAL inorganics (including cyanide) analysis from three locations along the unnamed tributary downgradient of the Site 7 drainage area. Following the fifth round of LTM sample collection in July 2005, an LTM report summarizing the results will be submitted.

Five-Year Review Site 7 was included in the first five-year review conducted at WPNSTA Yorktown. This review was conducted in June 2002. The report concluded that the completed remedial action is protective of human health and the environment. No issues or deficiencies were identified at Site 7 during the five-year review (Baker, 2002b).

Remedial Design for Land Use Controls A draft remedial design for Site 7 is in progress. The Site 7 remedial design specifies land use control implementation and maintenance actions, including periodic inspections and long-term groundwater monitoring (Baker, 2005h).

GWOU I Round One RI Groundwater at Site 7 is being addressed under GWOU I. A draft Round One RI for GWOU I is currently being developed. Groundwater samples were collected from Site 7 as part of this RI.

Status: Institutional controls and long-term monitoring are in place. The draft remedial design, LTM report, and GWOU I Round One RI are in progress. The next five-year review at Site 7 is due in 2007.



Figure 2-8
Site 7-Plant 3 Exposives Contaminated
Wastwater Discharge Area
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 8 - NEDED Explosives-Contaminated Wastewater Discharge Area

Site Description:

Site 8 is a 300-foot long drainage way located along the eastern branch of Felgates Creek, approximately 1.5 miles from the confluence of the creek and the York River. This area received wastewater from the Naval Explosives Development Engineering Department (NEDED) complex (Building 456) from 1940 to 1975. The wastewater reportedly contained unspecified solvents, spent/neutralized acids, and nitramine compounds. In 1974, a carbon adsorption tower was installed to treat the contaminated wastewater prior to discharge into the drainage area. An NPDES permit was granted by USEPA Region III to allow this discharge. In 1986, the effluent from the tower was diverted to the sanitary sewer and ultimately to HRSD. The site has reverted to a natural drainage area.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 8, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 8 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 8 (Versar, 1991).

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek (Baker and Weston, 1993b).

Round One RI A Round One RI was conducted at Site 8 in 1992 based on the recommendations made in the Interim RI Report. The objectives of the RI were to assess the nature and extent of contamination and to perform human health and ecological risk assessments to evaluate the impacts on human health and the environment. Results of the Round One RI conducted at Site 8 indicated the presence of explosives and volatile organics, which were present in both surface soil and groundwater. Additional field action was recommended to define the extent of the volatile organic compounds and explosives (Baker and Weston, 1993a).

Habitat Evaluation The Habitat Evaluation Report included Site 8 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species supported, and a record of any animal species encountered or suspected to be present or using IRP site habitats (Baker, 1995d).

Round Two RI The Round Two RI for Site 8 was conducted to: (1) develop an RI report based on evaluation of Round One and Round Two field investigation results; (2) assess the nature and extent of contamination at Site 8 and/or identify data gaps preventing an adequate understanding of site conditions; and (3) assess potential human health and ecological risks associated with any contamination at Site 8.

The initial Round Two RI field investigation was conducted in 1997 and included surface and subsurface soil sampling, groundwater sampling, sediment sampling, a surface water tidal study and aquifer testing. During analysis of these results, additional data gaps were revealed; therefore, additional well installation and groundwater sampling occurred in 2000. The surface water and sediment at Site 8 and SSA 14 were investigated together because the two sites are located close together. Data from Site 8 and SSA 14 were combined and risks evaluated for the combined data set to more accurately assess impacts from the sites. The results of the Round Two RI for Site 8 indicated that unacceptable total site risks exist for current/future recreational users and trespassers, future construction workers, and future residents (Baker, 2004a).

Pre-Removal Characterization of Soil The soil sampling event was conducted in June 2005. The purpose of this study was to recharacterize the soil conditions at Site 8 to support a planned removal/remedial action at the site. As a result of this supplemental field sampling, it was necessary to conduct an ecological re-evaluation to incorporate new data. The primary field investigation objective was to gather surface and subsurface soil information to determine the extent of chemicals identified as either human health or ecological COCs in the area immediately surrounding the Site 8 drainage ditch (Baker, 2005f).

Status: The draft EE/CA for Site 8 and SSA 14 is currently in progress. Following completion of the EE/CA, a removal action at Site 8 will be conducted. Groundwater will be addressed under GWOU IV.

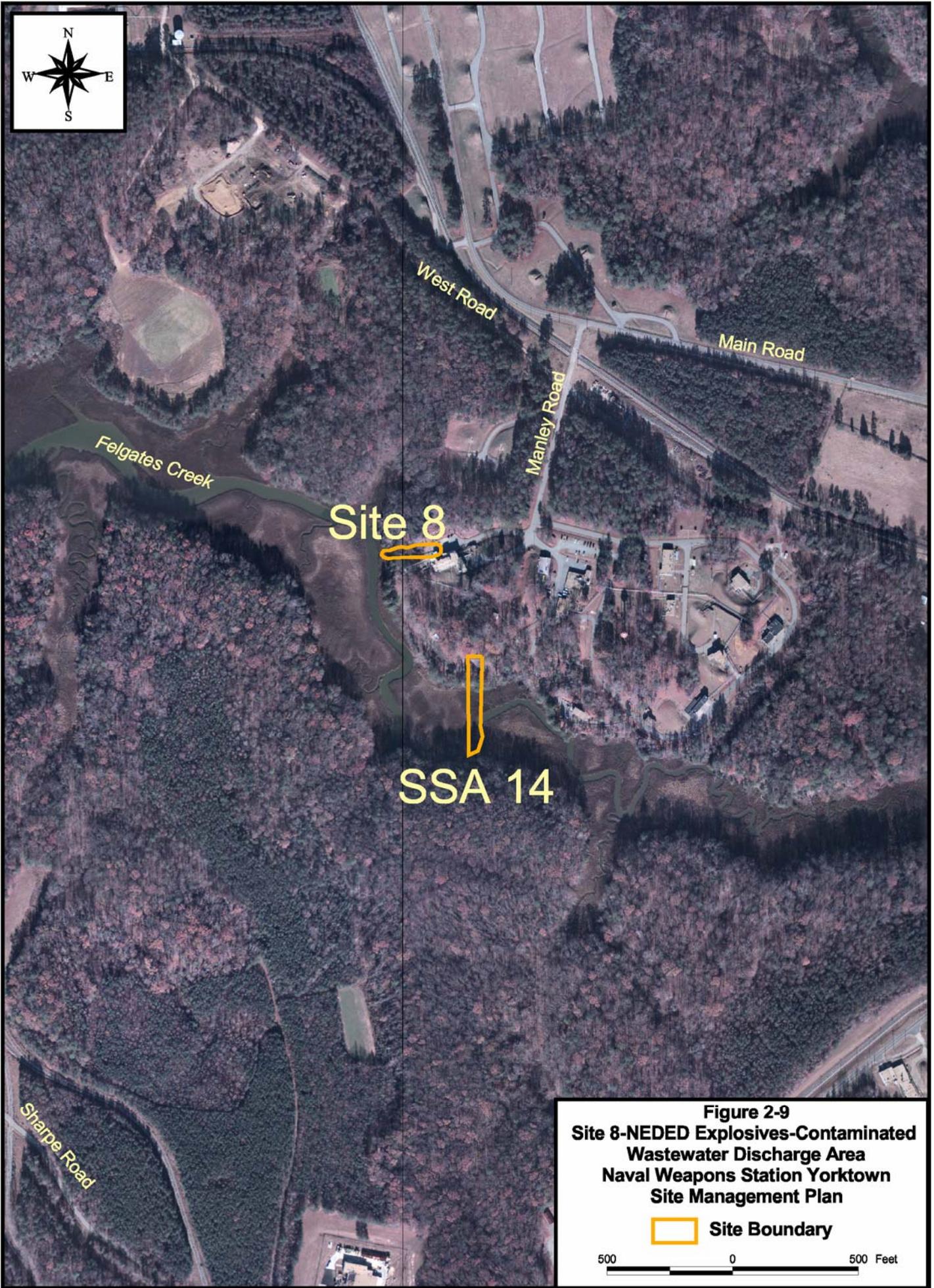


Figure 2-9
Site 8-NEDED Explosives-Contaminated
Wastewater Discharge Area
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 9 – Plant 1 Explosives-Contaminated Wastewater Discharge Area

Site Description:

Site 9 is a 600-foot drainage ditch located just east of Lee Pond (which empties into the eastern branch of Felgates Creek) and topographically downgradient of Site 19. This area was reportedly in use from the late 1930s to 1975. Contaminants in the wastewater from Plant 1 (Building 10) included nitramine compounds as well as organic solvents. During the more than 40 years that the drainage area was used, an estimated 6,800 pounds of nitramine- and solvent-contaminated material may have been discharged to the area. A carbon adsorption tower was installed in 1974 to treat the contaminated wastewater prior to discharge into the drainage area. An NPDES permit was granted by USEPA Region III to allow this discharge. In 1986, the effluent from the tower was diverted to the sanitary sewer and ultimately to HRSD. Currently, the site has reverted to a natural drainage way for surface runoff from surrounding areas and receives no discharge from the Plant 1 complex.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 9, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 9 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 9 (Versar, 1991).

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek (Baker and Weston, 1993b).

Round One RI The media sampled during this investigation included surface soils, groundwater, surface water and sediments. The results of the Round One RI indicated the presence of PAHs and explosive constituents within the surface soils collected. Results from the groundwater investigation indicated one SVOC and several explosive constituents present within the groundwater. Explosive constituents along with two VOCs were detected in the surface water samples. Sediment samples showed the presence of several SVOCs, and in one sediment sample, inorganic concentrations were above the NOAA Effects Range-Low guidelines for arsenic lead, mercury, copper, and zinc (Baker and Weston, 1993a).

1994 Removal Action A limited removal action was conducted for hard waste present at Site 9 in the natural drainage way between Bollman Road and Lee Pond during the summer and early fall of 1994. Two types of wastes were removed from Site 9: ordnance, which consisted primarily of depth charges, and railroad ties. The removal action was performed at the lower end of the drainage way in the vicinity of the Round One RI sampling locations. Six confirmatory samples were collected. Results indicated the presence of several SVOCs and one VOC (IT Corporation, 1995).

Habitat Evaluation The Habitat Evaluation Report included Site 2 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species supported, and a record of any animal species encountered or suspected to be present or using IRP site habitats (Baker, 1995d).

Round Two RI The Round Two RI was conducted at Site 9 to assess the nature and extent of contamination at the site and to address data gaps observed after the Round One RI. The media sampled at Site 9 included surface and subsurface soils, groundwater, surface water, and sediment. Results from this RI were similar to those from the Round One RI. Explosive constituents and SVOCs were detected within the surface soil samples. Elevated inorganic concentrations were detected in the surface soil. Subsurface soil results indicated the presence of only one explosive constituent (TNT).

A soil characterization study was conducted to support a treatability study for explosive-contaminated soil at WPNSTA Yorktown. Representative surface soil composites were collected from Site 9 for the characterization study. The samples were analyzed for nitramine compounds. The results were presented in the Round Two RI Report (Baker, 1997a).

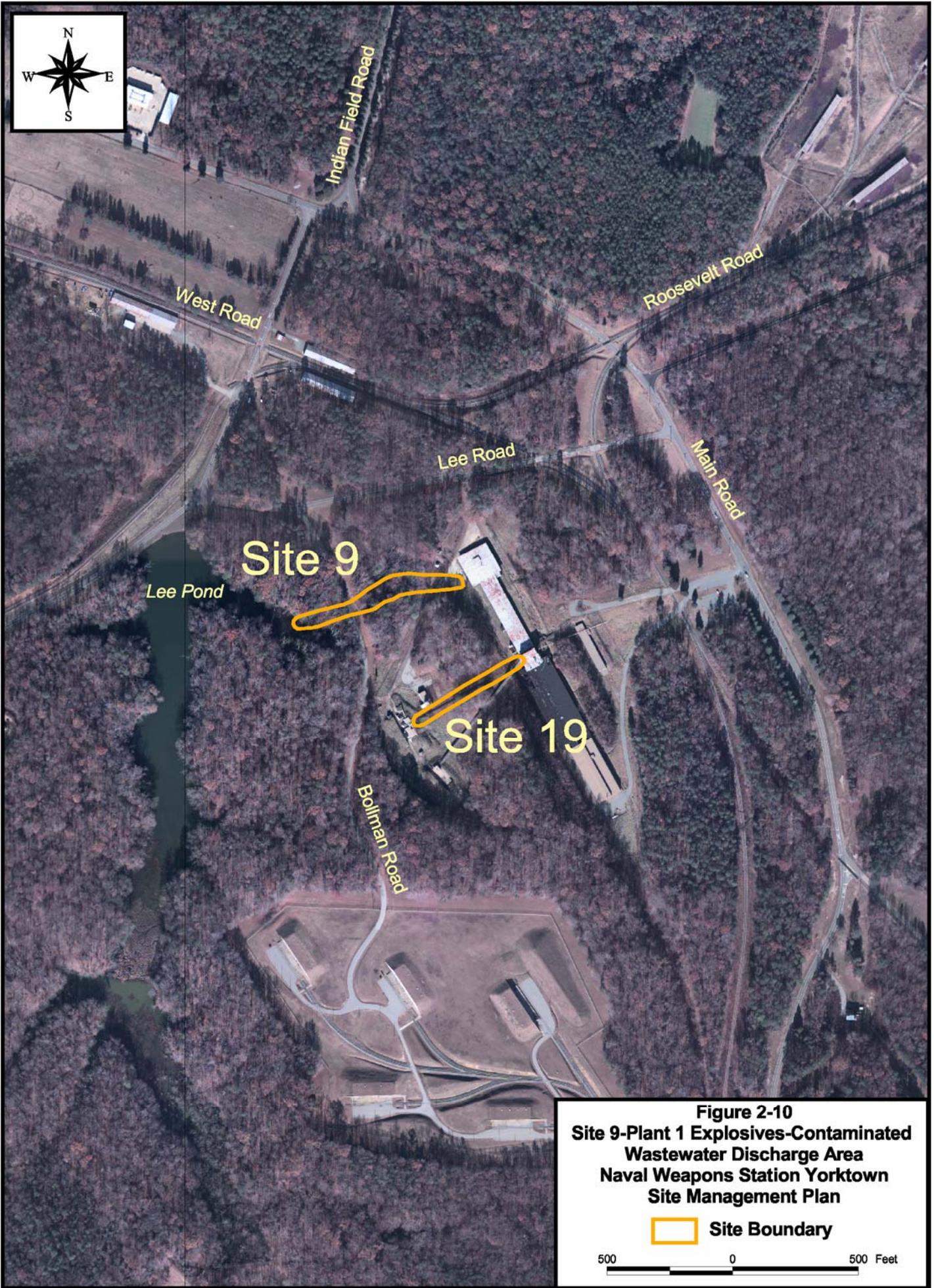
FS In May 1996, Baker collected soil samples at Site 9 to evaluate the extent of explosive contamination at the sites in support of the Feasibility Study. Significant levels of TNT, and to a lesser extent RDX and HMX, were found at the site. The results of the field sampling and laboratory analysis are presented in Appendix A of the Site 9 FS.

The Site 9 FS concluded no further action was required at Site 9, as it was decided that no action was necessary to protect human health and remediation of the low levels of inorganics would be more detrimental to the environment than leaving them in place (Baker, 1997f).

Proposed Plan The Proposed Plan for Site 9 was released to the public in June 1997 for a 30-day review and comment period. In addition, a public meeting was held on July 21, 1997 to provide information to interested members of the community about the preferred remedial alternative under consideration and to seek public comments. The preferred alternative identified in the Proposed Plan was No Action (Baker, 1997g).

ROD The Final ROD for Site 9 was signed in March 1998. The selected remedy for Site 9 was the no action alternative (Baker, 1998h).

Status: Groundwater will be addressed under GWOU VII.



Site 11 – Abandoned Explosives Burning Pits

Site Description:

Site 11 is an approximate 0.5-acre area located south of Dudley Road, east of Main Road, west of Site 1, and north of a drainage channel leading to Indian Field Creek. This area was used from 1930 to 1950 for burning ordnance and ordnance-contaminated waste. Ashes and residues from the open burning of nitramine-containing wastes and sludges were potentially present at the site. During the 20 years that the pits were used, approximately 200 pounds of nitramine waste residues may have been deposited. The area was thickly vegetated.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 11, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/Remedial Investigative Interim Report Site 11 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 11 (Versar, 1991).

Round One RI The Round One RI at Site 11 was conducted in 1993. The results indicated that subsurface soil had not been significantly impacted as only limited inorganics were detected. In groundwater, a few nitramine constituents were detected in a shallow monitoring well. The surface water samples associated with Site 11, which were collected from the tributary branching west from Indian Field Creek, served to characterize the off-site impacts from Site 11. Detections of one nitramine constituent and several inorganics were found in surface water samples. Sediment samples contained detections of several inorganics. Based on the results, site-related contamination was not detected in the subsurface soil, or sediment at the site, and only a minimal amount of explosives were detected in surface water and groundwater (Baker and Weston, 1993a).

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek (Baker and Weston, 1993b).

Habitat Evaluation The Habitat Evaluation Report included Site 11 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA Yorktown. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species supported, and a record of any animal species encountered or suspected to be present or using IRP site habitats (Baker, 1995d).

Round Two RI To fill data gaps in the Round One RI, a Round Two RI was conducted in 1996. The field activities included surface soil, subsurface soil, and groundwater sampling. In addition, sediment samples were collected. Low concentrations of pesticides and nitramines, and inorganic concentrations slightly exceeding the maximum Station-wide background levels were detected in the surface soil samples. Low concentrations were found at similar levels in the subsurface soil samples (Baker, 1997b).

Results of the risk assessments conducted as part of the RI indicated that there were no unacceptable human health risks. However, there was the potential for adverse ecological effects due to exposure.

FS The FS for Site 11 presented the following remedial action alternatives: No Action; No Action with Institutional Control; Soil Cover; On-Site Treatment; and Soil Excavation with Off-Site Disposal (Baker, 1999a).

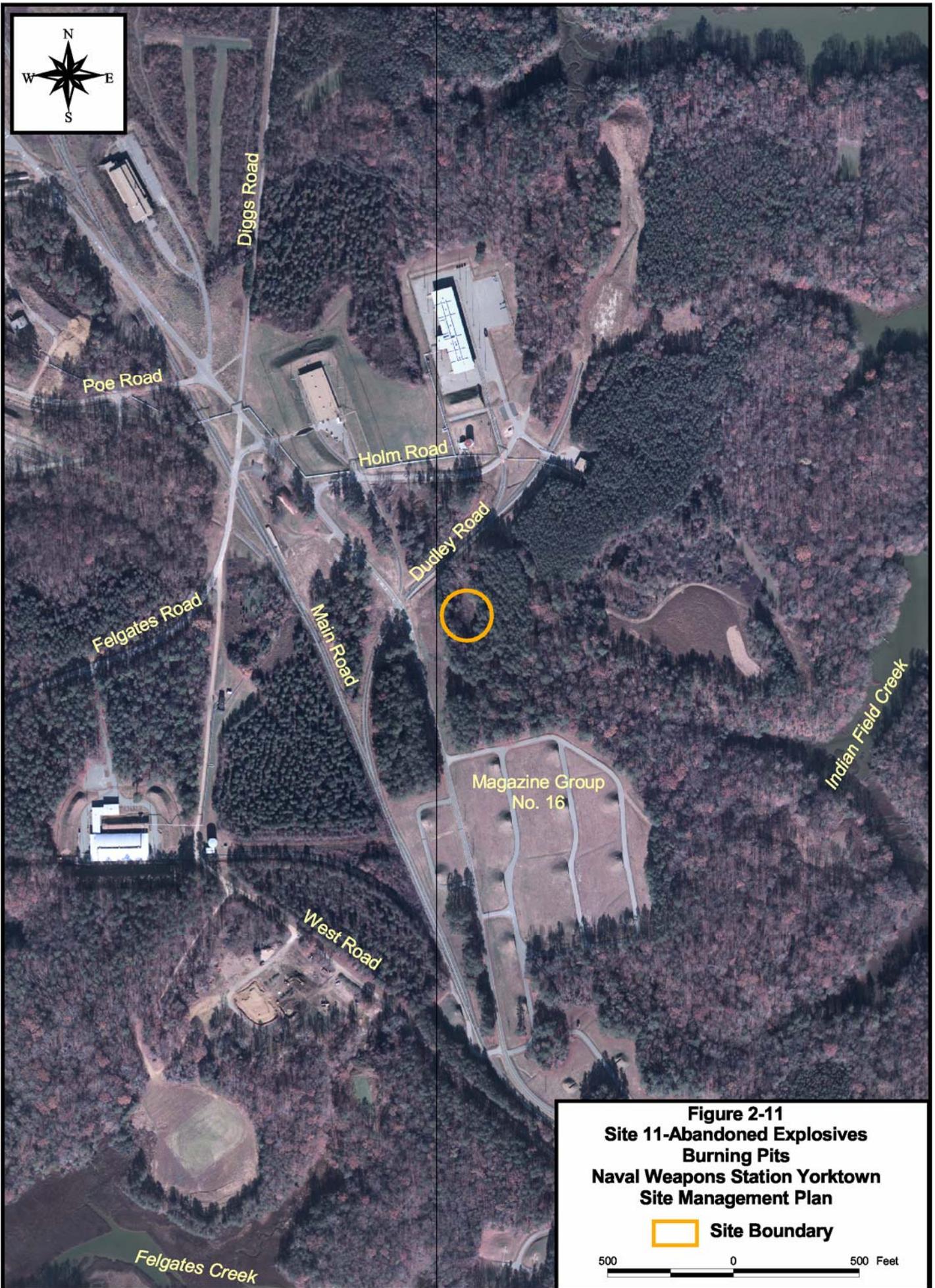
Proposed Plan The Proposed Plan for Site 11 was released to the public in May 1999 for a 30-day review and comment period. In addition, a public meeting was held on May 19, 1999 to community information about the preferred remedial alternative under consideration and to seek public comments. The preferred alternative remedy was identified as Excavation with Off-Site Disposal (Baker, 1999b).

ROD The ROD for Site 11 was signed in October 2000. Because no unacceptable human health risks were identified for Site 11 and actions were taken to reduce the potential for adverse ecological effects, no land use controls are necessary for the site (Baker, 2000b).

2000 Remedial Action The remedial action at Site 11 was conducted from May to August 2000. It consisted of the removal and off-site disposal of approximately 655 tons of copper and mercury-contaminated waste, along with ash material discovered during the excavation; collection and analysis of confirmation samples; placement of clean fill and topsoil; and establishment of vegetative cover (OHM, 2001b).

GWOU I Round One RI Groundwater at Site 11 is being addressed under GWOU I. A draft Round One RI for GWOU I is currently being developed. Groundwater samples were collected from Site 11 as part of this RI.

Status: The draft GWOU I Round One RI is in progress.



Site 12 – Barracks Road Landfill

Site Description:

Site 12 is a four-acre landfill located east of Barracks Road and northwest of the Colonial National Historical Park along a drainage swale leading to Ballard Creek. This area was in operation from approximately 1925 to the mid-1960s. Wastes reported to have been disposed in the landfill (designated as Area A) include refuse, scrap wood, and nitramine-contaminated packaging. Because this facility was the predecessor to the Dudley Road Landfill (Site 1), it is likely that wastes similar to those identified at Site 1, including solvents, also were disposed in this area. The landfill received an estimated 1,400 tons of waste during the time the site was in use. Adjacent to the landfill were two incinerators used to burn a variety of waste, both industrial and nonindustrial. Incineration ash was disposed on the hillside behind the incinerator buildings. Scrap metal, charred wood and cloth, and medicine bottles were observed in the ash.

Another former disposal area at Site 12, designated as Area B/C, covers approximately 1.6 acres. A portion of Area B/C is an open field, while the rest of it is wooded and contains steep slopes and ravines. Miscellaneous debris at Area B/C was removed in May and June of 1998. A third former disposal area at Site 12 is the Wood/Debris Disposal Area, which is approximately 3.3 acres in size and located east of Area A. This area consists of a steep ravine in which wooden pallets and construction debris were disposed. A ditch with an intermittent stream channel that drains toward Ballard Creek is located adjacent to the Wood/Debris Disposal Area. The debris in this area remains in place.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 12, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 12 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 12 (Versar, 1991).

Round One RI A Round One RI was performed in 1992 and was based on the recommendations made in the Interim RI Report. The field investigation included the collection of surface soil, subsurface soil, groundwater, surface water, and sediment samples. Contaminants were detected in all media sampled at the site. Several inorganic compounds were detected in soil samples at concentrations exceeding site-specific background levels. VOCs were detected in the groundwater samples. With respect to the surface water samples, concentrations of several inorganic compounds were detected above surface water criteria. Sediment samples contained levels of certain pesticides, PCBs, and inorganic compounds which exceeded the NOAA sediment quality values and site specific background concentrations. As a result of the Round One RI field investigation, the Wood/Debris Disposal Area was identified as a potential area of contamination. The Round One RI identified data gaps with respect to potential impacts to ecological receptors, and to the nature and extent of the contamination at Site 12. Therefore, the Round One RI recommended additional sampling for all environmental media at Site 12 (Baker and Weston, 1993a).

Habitat Evaluation The Habitat Evaluation Report included Site 12 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species

supported, and a record of any animal species encountered or suspected to be present or using IRP site habitats (Baker, 1995d).

Round Two RI The Round Two RI report for Site 12 was completed in 1994 and included surface soil, subsurface soil, surface water, sediment and biota sampling. The purpose of the Round Two RI was to assess the nature and extent of contamination and address any data gaps observed after the Round One RI and the habitat evaluation. Results of the Round Two RI indicate that the Site 12 surface soil was impacted by past site operations. Area A was most affected as indicated by the presence of PAHs, PCBs, and inorganic analytes. Low levels of TCE, pesticides, and nitramine compounds were also detected. PAHs, inorganic analytes and low levels of pesticides were detected in Area B/C. Low levels of PAHs and inorganic contamination were identified at the Wood/Debris Area (Baker, 1996a).

FS An FS for Site 12 presented the following remedial action alternatives: No Action; Institutional Controls, Monitoring, and Erosion Control; Soil and Clay Cover; Excavation and Landfill Disposal; In situ Solidification/Stabilization; and Excavation and Soil Washing (Baker, 1996d).

Proposed Plan The Proposed Plan for Site 12 was released to the public in July 1996 for 30-day review and comment. In addition, a public meeting was held on July 26, 1996 to provide the community information about the preferred remedial alternative under consideration and to seek public comments. The preferred alternative identified in the Proposed Plan included Soil/Clay Cover for Area A soil, No Action for Area B/C and the Wood/Debris Disposal Area soils, and a Sediment Monitoring Plan for the groundwater and Ballard Creek surface water and sediment (Baker, 1996e).

ROD The ROD Site 12 was signed in April 1997. The selected remedy for Site 12 included: construction of a soil/clay (or clay equivalent) cover for contaminated soils (i.e., lead greater than 400 milligrams per kilogram at Area A; No Action for Area B/C and Wood Debris Area soils; and property use restrictions and long-term monitoring for the Site 12 groundwater and Ballard Creek surface water and sediments. In addition, erosion control and long-term monitoring, as required by the NCP, would be conducted at Area A to ensure the effectiveness of the remedy. Because of the restrictions on future land use associated with contaminated groundwater, the site groundwater will be monitored and evaluated at a minimum every five years as per the NCP. Monitoring surface water and sediment of Ballard Creek will be conducted as agreed to by the parties (Baker, 1997h).

1997 Remedial Action The remedial action at Site 12 began in July 1997 and was completed in November 1997. It consisted of: well abandonment; building demolition (i.e., old incinerator); debris removal; erosion and sediment controls; geosynthetic clay layer placement; protective cover and topsoil placement; installation of surface drainage channel (i.e., Tri-Lock Block); and site revegetation and restoration (OHM, 1998).

Long-Term Monitoring LTM for at Site 12 began with the baseline round of sample collection in August 1998, which included Site 12 groundwater and Ballard Creek sediment sample collection (surface water collection was determined to be unnecessary by the Yorktown Partnering Team). Following the baseline round, the Yorktown Partnering Team reevaluated the Site 12 LTM Program and changed it to: (1) one year of quarterly sampling of six wells around Area A for inorganics analysis, followed by two of semi-annual sampling of same wells for inorganic analysis, then one additional round half-way through the third year; and (2) four years of annual sampling of 10 Site 12 wells for VOC analysis and approximately 14 (number varied per year) Ballard Creek sediment locations for RCRA metals analysis. After the annual sampling event had occurred five times (including the baseline round), an LTM report was prepared which summarized the results for all of the rounds of sampling and proposed recommendations for future LTM sample collection at Site 12. The LTM report is in the draft phase. Navy and regulator reviews are complete and the final document preparation is pending. Sampling for

LTM at Site 12 is scheduled to every other year, with the next round of sample collection due in late Spring/early Summer 2005 (Baker, 2004f).

Five-Year Review Site 12 was included in the first five-year review conducted at WPNSTA Yorktown. This review was conducted in June 2002. The report concluded that the completed remedial action is protective of human health and the environment. No issues or deficiencies were identified at Site 12 during the five-year review (Baker, 2002b).

Remedial Design for Land Use Controls A draft remedial design for Site 12 is in progress. The Site 12 remedial design specifies land use control implementation and maintenance actions, including periodic inspections and long-term groundwater monitoring (Baker, 2005i).

GWOU III Round One RI Groundwater at Site 12 is being addressed under GWOU III. The work plan and field investigation for the GWOU III Round One RI are pending.

Status: Institutional controls and long-term monitoring are in place. The draft remedial design and LTM report are in progress. The work plan and field investigation for the GWOU III Round One RI are pending. The next five-year review at Site 12 is due in 2007.

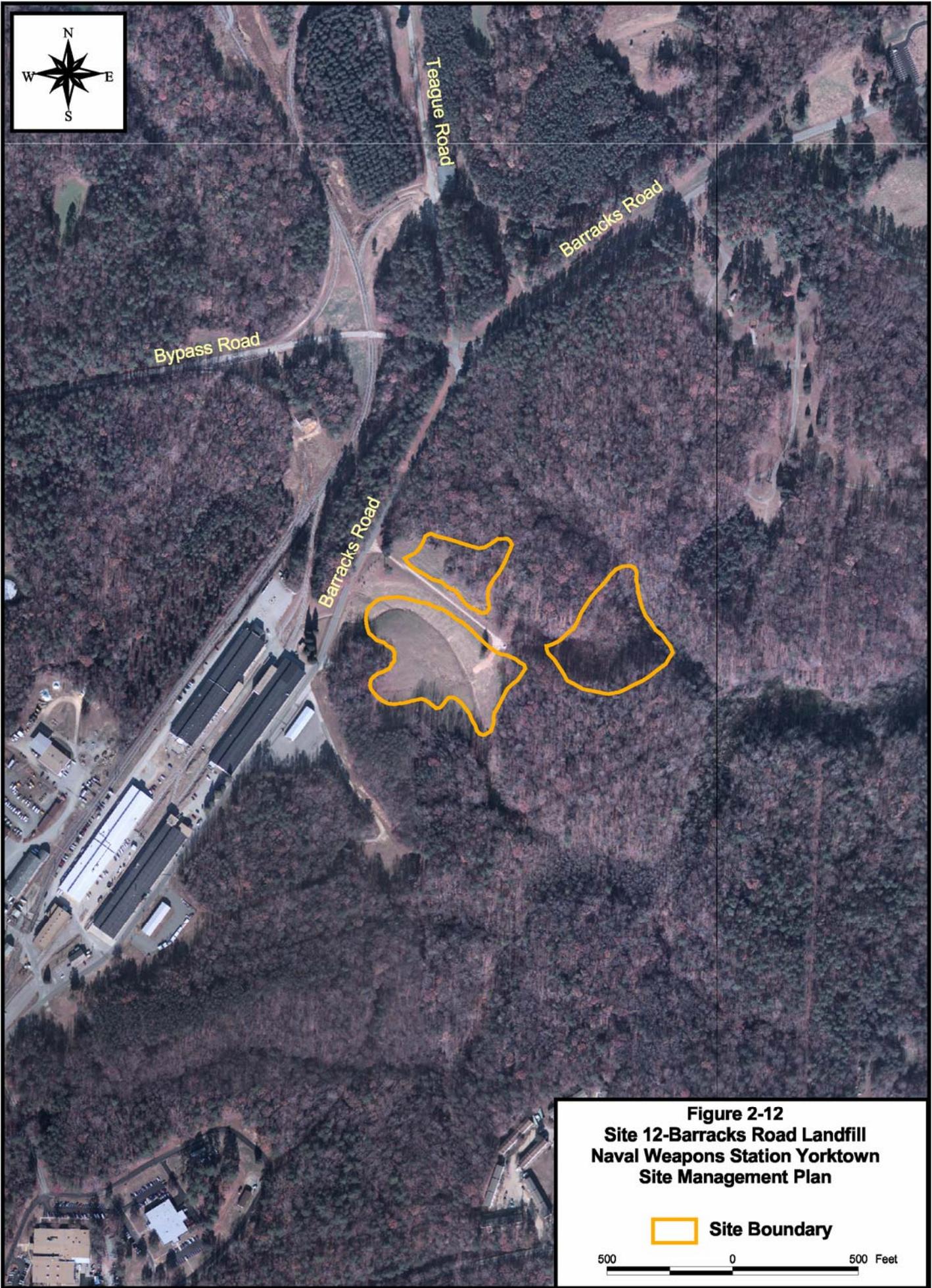


Figure 2-12
Site 12-Barracks Road Landfill
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 16 – West Road Landfill

Site Description:

Site 16 is a 5-acre area located adjacent to West Road near Indian Field Road. This site was operated from the early 1950s to the early 1960s. Wastes reported to have been disposed include dry carbon-zinc (Leclanche) batteries, banding materials, pressure transmitting fluid, unknown types of chemicals, and 55-gallon drums (contents unknown). An investigation at this site in 1992 confirmed the presence of drums, scrap metal, batteries, mine casings, and construction debris. Another waste area was also identified beneath one of the drum piles. This waste area consisted of glass containers, cans, and newspapers. The landfill boundaries were not evident from visual observation of the area. The site is wooded, except for the northern portion along West Road, which is covered with grasses.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 16, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/Remedial Investigative Interim Report Site 16 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 16 (Versar, 1991).

Round One Remedial Investigation The Round One Remedial Investigation was completed in 1994. Results from the Round One Remedial Investigation indicated that further investigations were needed to better understand the nature and extent of contamination at the site (Baker and Weston, 1993a).

1994 Removal Action The Navy conducted a removal action at Site 16 in the Spring of 1994 to remove the surface debris which could have been a potential source of contamination. This effort included removing approximately 420 tons of batteries, 60 tons of debris (cables, ordnance, etc.) and 125 tons of silica gel from the surface of the site. Confirmation samples taken after the removal action was complete indicated that the removal was successful.

Round Two Remedial Investigation The media sampled during the Round Two RI included surface soils, subsurface soils, groundwater, surface water, sediment and biological samples to supplement the Round I Remedial Investigation samples and the Removal Action confirmation sampling. The results of these samples were utilized to develop Human Health and Ecological Risk Assessments. Low levels of PCBs were detected in the surface soil and sediment. VOCs were identified in the shallow groundwater. The risk assessment determined that the levels do not pose an immediate threat to human health or the environment. Risk to future residents was identified (Baker, 1995a).

Proposed Plan The Proposed Plan for Site 16 was released to the public for review and comment in August 1995. In addition a public meeting was held on August 23, 1997 to provide the community information about the preferred remedial alternative under consideration and to seek public comments. The selected remedy was identified as “No Further Remedial Action with Institutional Controls.” No further remedial actions are necessary because the removal action was successful in removing the source of potential contamination at the site. Institutional controls, such as land use restrictions, will be used to prevent residential use of the area at Site 16. These controls will also be used to prevent the use of shallow groundwater in this area by restricting installation of water supply wells (Baker, 1995b).

ROD The Site 16 ROD was signed in September 1995. The ROD specified no further remedial action with the implementation of institutional controls (Baker, 1995c).

Five-Year Review Site 16 was included in the first five-year review conducted at WPNSTA Yorktown. This review was conducted in May and June 2002. No issues or deficiencies were identified at Site 16 during the five-year review (Baker, 2002b).

Remedial Design for Land Use Controls A draft remedial design for Site 16 is in progress. The Site 16 remedial design specifies land use control implementation.

Status: Institutional controls are in place. The draft remedial design is in progress. The next five-year review is due in 2007. Groundwater will be addressed under GWOU IV.

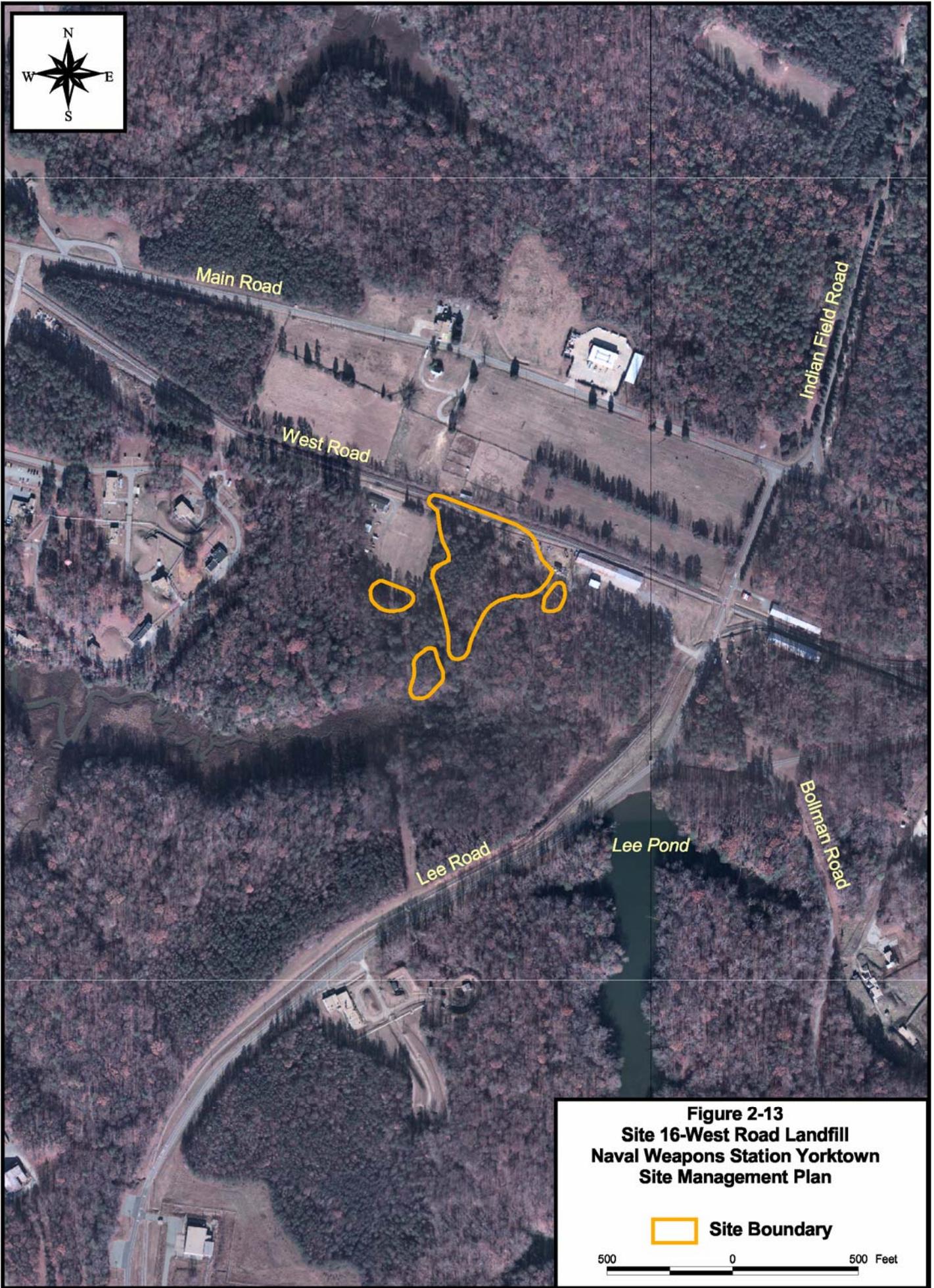


Figure 2-13
Site 16-West Road Landfill
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 17 – Holm Road Landfill

Site Description:

Site 17 is a two-acre disposal area located south of Holm Road and east of Main Road. The site was operated for approximately 10 years, from the 1950s to the 1960s. Wastes reportedly disposed included acid batteries from underwater weapons, hydraulic fluids (Dolconik) from the demilling of torpedoes, other types of hydraulic fluids, drums from the Public Works Department and ordnance production shops, and scrap metal. An estimated 60 tons of waste were deposited in the landfill while in use. The site was overgrown with mature trees, and no evidence of surface waste was apparent. Results from the geophysical investigation of this site during the Round One RI did not indicate any evidence of buried material.

Summary of Studies Completed:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 17, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 17 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 17 (Versar, 1991).

Round One RI The results of the Round One RI at Site 17 indicated that the surface soil contained various organic compounds and low levels of SVOCs and inorganic contaminants that appear to be due to railroad track runoff or spraying for pest control. Subsurface soil did not appear to have been impacted by site activities. Inorganics were prevalent, among the potential contaminants in groundwater throughout the site. The Round One RI concluded that the soil and groundwater at Site 17 did not appear to have been impacted by past waste management activities, but may have been impacted by non-site-related sources (such as the railroad track runoff or spraying for pest control) (Baker and Weston, 1993a).

Focused Biological Sampling and Preliminary Risk Evaluation The Focused Biological Sampling and Preliminary Risk Evaluation Report summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek (Baker and Weston, 1993b).

Habitat Evaluation The Habitat Evaluation Report included Site 17 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA Yorktown. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species supported, and a record of any animal species encountered or suspected to be present or using IRP site habitats (Baker, 1995d).

Round Two RI To fill data gaps in the Round One RI, Baker conducted a Round Two RI in 1996. The field activities included surface soil, subsurface soil, and groundwater sampling for both sites. In addition, test pits were excavated at Site 17. Media sampled during the Round Two RI for Site 17 included surface soil, subsurface soil, and groundwater. In surface soil, low concentrations of SVOCs mainly comprised of PAHs were detected. At five locations, the PAH concentrations exceeded USEPA

Region III RBCs. The occurrence of PAHs constituted a hot spot that was delineated as the Site 17 Soil Area of Concern. The remainder of the site was called Site 17 Proper. Concentrations of copper, mercury, selenium, zinc, and cyanide exceeded Station-wide background concentrations. Arsenic and beryllium did not exceed Station-wide background but did exceed the residential Region III RBC. Arsenic exceeded the industrial Region III RBC (Baker, 1997b). Results of the risk assessments conducted as part of the RI indicated that there were no unacceptable risks to ecological receptors. However, there was the potential for unacceptable risks to human health from exposure to cPAHs.

FS The FS for Site 17 presented the following remedial action alternatives: No Action; No Action with Institutional Control; Soil Cover; On-Site Treatment; and Soil Excavation with Off-Site Disposal (Baker, 1999a).

Proposed Plan The Proposed Plan for Site 17 was released to the public in May 1999 for a 30-day review and comment period. In addition, a public meeting was held on May 19, 1999 to community information about the preferred remedial alternative under consideration and to seek public comments. The preferred alternative remedy was identified as Excavation with Off-Site Disposal (Baker, 1999b).

ROD The ROD for Site 17 was signed in October 2000. The selected remedy was identified as Excavation with Off-Site Disposal. Because the remedy at Site 17 would result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow unlimited use and unrestricted exposure, the ROD specified that a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment (Baker, 2000b).

2000 Remedial Action The remedial action at Site 17 was conducted from May to August 2000. It consisted of the excavation and off-site disposal of approximately 940 tons of PAH-contaminated soil; collection and analysis of confirmation samples; placement of clean fill and topsoil; and establishment of vegetative cover (OHM, 2001b).

Explanation of Significant Differences (ESD) The remedial action for Site 17 cleaned the site to residential levels, instead of the industrial levels presented in the ROD. Therefore, an ESD for the Site 17 ROD is necessary.

Five-Year Review Because the remedial action for Site 17 cleaned the site to residential levels, it was not included in the first five-year review conducted at WPNSTA Yorktown.

GWOU I Round One RI Groundwater at Site 17 is being addressed under GWOU I. A draft Round One RI for GWOU I is currently being developed. Groundwater samples were collected from Site 17 as part of this RI.

Status: The draft GWOU I Round One RI is in progress. An ESD for the ROD is pending.

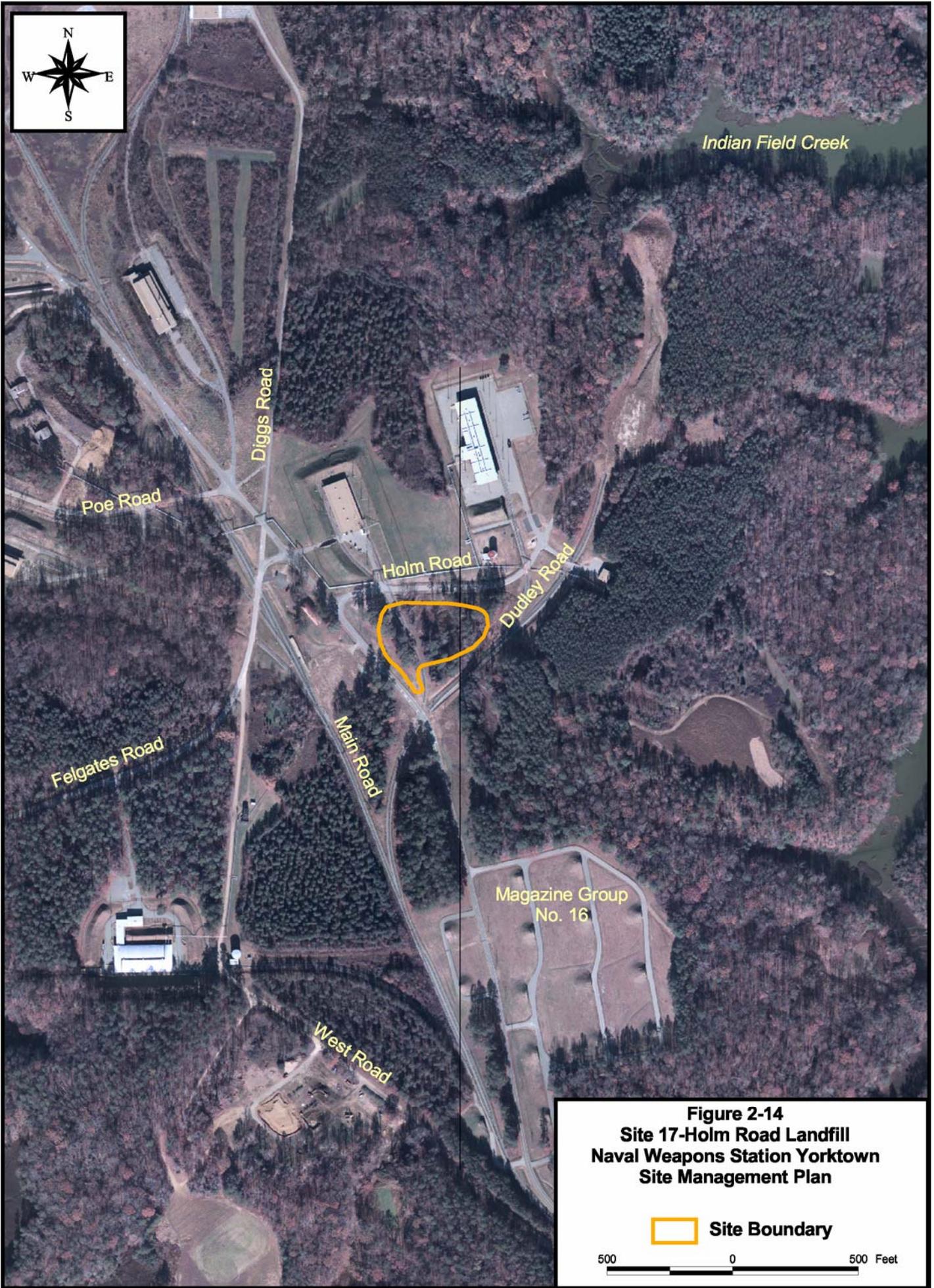


Figure 2-14
Site 17-Holm Road Landfill
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 18 – Building 476 Discharge Area

Site Description:

Site 18 is a one-quarter mile long drainage ditch located north of Building 476 in the southeastern area of the installation along a small tributary leading to Lee Pond, approximately one mile downstream. This area was in use from the 1940s to the 1960s. The discharge into the ditch reportedly contained battery acid waste, consisting of hydrochloric acid or calcium hydroxide and dissolved metals such as lead, cadmium, nickel, and antimony. An estimated 100 to 200 pounds of metals may have been discharged. Battery acid waste no longer discharges from Building 476 into this drainage way. Currently, Site 18 is a drainageway that appears to be a natural stream in some areas and an excavated trench in others. From the amount of erosion present in portions of the drainageway, a good deal of water appears to flow through the area during storms.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 18, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/Remedial Investigation Interim Report Site 18 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 18 (Versar, 1991).

Round One Remedial Investigation The Round One RI at Site 18 was conducted in 1993 based on the recommendations in the Interim RI Report. The results indicated that soil samples contained arsenic and zinc at concentrations above Round One background levels at four sample locations, lead at two locations, and copper at three locations. Groundwater samples showed that no filtered samples contained inorganic concentrations that exceeded State or Federal criteria. Copper and zinc in surface water exceeded the State and Federal criteria, but not at the farthest downstream sampling point or in the branch northeast of Building 476. Sediment samples in the ditch also exceeded background inorganic concentrations for beryllium at only one location. Based on the results of the Round One RI, a human health and ecological risk screening was recommended (Baker and Weston, 1993a).

Habitat Evaluation The results of the habitat evaluation performed at Site 18 in 1995 indicated that Site 18 was located in the Lee Pond Watershed (Baker, 1995d).

Round Two RI During the Round Two RI conducted in 1997, additional data were collected to provide information necessary to characterize potential human health effects and ecological impacts resulting from previous site activities. Samples of surface and subsurface soil, groundwater, surface water, and sediment were collected. No organic contaminants were detected in the surface or subsurface soil, groundwater, or sediment. Inorganic contaminants were detected in the soil; no inorganic contaminants were detected in the filtered groundwater samples. The results of the Human Health Risk Assessment and the ecological risk assessment completed as part of the Round Two RI confirmed that there are no unacceptable human health or ecological risks at Site 18 (Baker, 2004a).

Proposed Plan The Proposed Plan for Site 18 was released to the public for review and comment in February 2005. A public meeting was held on February 16, 2005 to provide information to interested members of the community about the preferred remedial alternative under consideration and to seek public comments. The Preferred Alternative identified in the Proposed Plan was No Action (Baker, 2005b).

ROD A No Action ROD for soil, groundwater, surface water, and sediment has been finalized and is currently awaiting signature (Baker, 2005d).

Status: Signature of the No Action ROD is pending.



Figure 2-15
Site 18-Building 476 Discharge Area
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 19 – Conveyor Belt Soils at Building 10

Site Description:

Site 19 is a 500-foot long soil strip located beneath and around Building 10, approximately 300 feet from Site 9 and connected to Site 9 via a drainage channel. Nitramine-contaminated soil was reported beneath the conveyor belt between Buildings 10 and 98. In 1973/1974, soil below the conveyor belt was removed; however, later tests indicated that contamination remained.

Studies Completed to Date:

IAS The IAS was completed in 1984 to identify and assess sites posing a potential threat to human health and the environment due to contamination from past operations. The IAS concluded that 15 of 19 sites, including Site 19, were of sufficient threat to human health or the environment to warrant Confirmation Studies (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984).

Confirmation Study/RI Interim Report Site 19 was included in the “Confirmation Study Step IA (Verification), Round One” (Dames & Moore, 1986a) and “Confirmation Study Step IA (Verification), Round Two” (Dames & Moore, 1988b). Results of the two investigations were presented in the Draft RI Interim Report. This report was revised in 1991 to incorporate comments from regulatory agencies. The Interim RI Report recommended further investigation of Site 19 (Versar, 1991).

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek (Baker and Weston, 1993b).

Round One RI During the Round One RI for Site 19, surface and subsurface soils, groundwater, and sediment samples were collected. The results of the Round One RI indicated that SVOCs, explosive constituents, and one VOC were present in the surface soils. SVOCs were identified in the subsurface soils. The groundwater investigation contained two explosive components. The sediment investigation identified several SVOCs and elevated inorganics (Baker and Weston, 1993a).

Habitat Evaluation The Habitat Evaluation Report included Site 9 and was a characterization of the aquatic and terrestrial habitats supported at WPNSTA. The evaluation included a description and aerial characterization of major habitat types on or surrounding each site, an inventory of vegetative species supported, and a record of any animal species encountered or suspected to be present or using IR Program site habitats (Baker, 1995d).

Round Two RI The media sampled during the Round Two RI included surface soils, subsurface soils, and groundwater. Results indicated two SVOCs and one explosive constituent in the surface soil samples. Elevated inorganic concentrations were detected in the surface soil. Subsurface soil results indicated the presence of one explosive constituent, and some elevated inorganic concentrations. During the groundwater investigation, several explosive constituents were detected in addition to elevated inorganic concentrations.

A soil characterization study was conducted to support a treatability study for explosive-contaminated soil at WPNSTA Yorktown. Representative surface soil composites were collected from both sides of the conveyor belt along its length and along the railroad tracks adjacent to the conveyor belt. TNT was

detected in 13 of the 32 composite samples. The results were presented in the Round Two RI Report (Baker, 1997a).

FS In May 1996, Baker collected soil samples at Site 19 to evaluate the extent of explosive contamination at the sites in support of the Feasibility Study. Significant levels of TNT, and to a lesser extent RDX and HMX, were found at three site areas of concern including the conveyor belt at Site 19. The results of the field sampling and laboratory analysis are presented in Appendix A of the Site 19 FS. The Site 19 FS identified six remedial alternatives to address contaminated soil at Site 19: No Action; No Action with Institutional Controls; Capping; Excavation/Biological Treatment/Reuse-Recycle; Excavation/Soil Washing/Incineration; and Excavation/Off-Site Incineration (Baker, 1997f).

Proposed Plan The Proposed Plan for Site 19 was released to the public for 30-day review and comment on June 30, 1997. In addition, a public meeting was held on July 21, 1997 to provide the interested members of the community information about the preferred remedial alternative under consideration and to seek public comments. The selected remedy was identified as Excavation/Biological Treatment of the contaminated soils as this alternative provided maximum short term and long-term protection of human health and the environment with the least expenditure of funds (Baker, 1997g).

ROD The Final ROD for Site 19 was signed by the Navy and USEPA Region III in February and March, 1998, respectively. The selected remedy outlined in the ROD for Site 19 involved the dismantling and disposal of the conveyor belt, removing soil containing concentrations of explosives exceeding remediation levels beneath the belt, and transporting the soil to a biocell for treatment (Baker, 1998h).

1998 Remedial Action The remedial action at Site 19 was conducted in 1998. The conveyor belt was dismantled and the metallic components were decontaminated to remove residual explosives. Asbestos components of the conveyor belt were double bagged and sent to a special waste landfill. Soil from beneath the conveyor belt (approximately 1000 cubic yards) was excavated and treated at the Site 22 biocell using J.R. Simplot's SABRE[®] technology. The former site of the conveyor belt has been revegetated (OHM, 2000). Aluminum-contaminated soil around Building 527 was also removed and the area was backfilled with clean soil. The aluminum-contaminated soil from around Building 527 was placed in the bottom of the conveyor belt trench excavation. Since contaminated soil was removed to industrial remediation levels institutional controls have been implemented at Site 19.

Five-Year Review Site 19 was included in the first five-year review conducted at WPNSTA Yorktown. This review was conducted in May and June 2002. The report concluded that the completed remedial action is protective of human health and the environment. No issues or deficiencies were identified at Site 19 during the five-year review (Baker, 2002b).

Remedial Design for Land Use Controls A draft remedial design for Site 19 is in progress. The Site 19 remedial design specifies land use control implementation to prohibit residential development on the site. Groundwater land use restrictions are not included in this design. Plans for future groundwater restrictions may be developed in the future (Baker, 2005j).

Status: Institutional controls restricting residential use of the site have been implemented. The draft remedial design is in progress. The next five-year review at Site 19 is due in 2007. Groundwater will be addressed under GWOU VII.

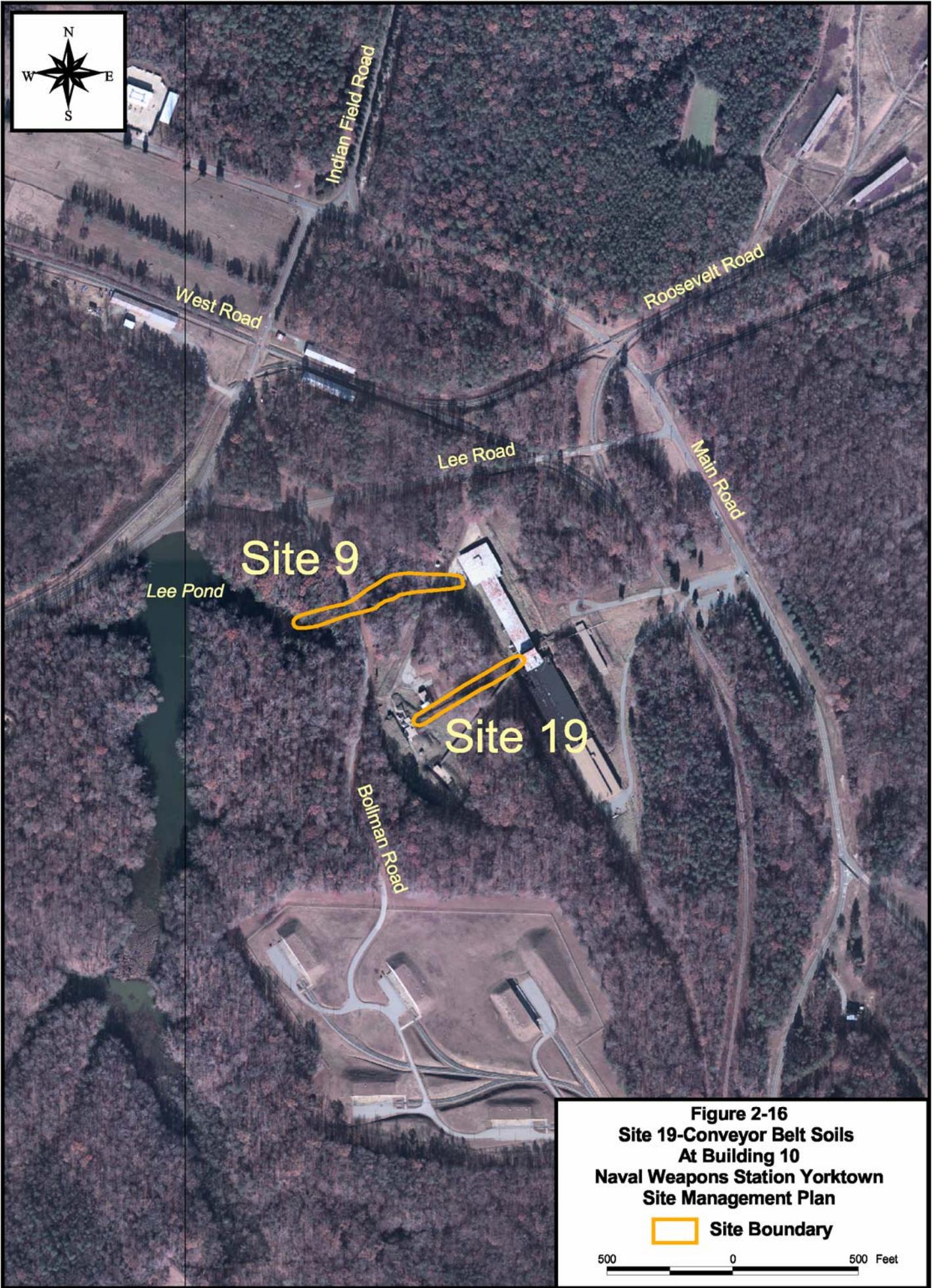


Figure 2-16
Site 19-Conveyor Belt Soils
At Building 10
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 21 – Battery and Drum Disposal Area

Site Description:

Site 21 is approximately one acre in size and is located in close proximity to Sites 4 and 22. Site 21 was used as a land disposal area in the 1950s during which it received an estimated 7,000 tons of waste. The landfill was backfilled three to four times a week. Materials disposed at the Site included carbon-zinc batteries from underwater weapons, and during the site investigation, a large battery disposal area was identified in the southeast portion of the site. In addition, construction debris, pipes, glass, concrete, bottles, cans, and drums were disposed at various locations within the site boundary.

Studies Completed to Date:

Site Investigation A Site Investigation was conducted at Site 21 in October 1991. Waste was noted throughout the site area with several areas of concentrated waste dumping. Based on a geophysical investigation, the fill area was estimated to be approximately 200 feet by 200 feet, with apparently well-defined boundaries. As part of this study, three monitoring wells were installed and sampled, and surface and subsurface soil samples were collected. TPH was detected in all three wells indicating a possible fuel-related source; cadmium and zinc levels in the groundwater indicated potential leaching of battery fluids at the site. Additional investigation of the groundwater directly downgradient of Site 21 was required to determine whether contamination had been released from the site; SVOCs were detected in the down-slope surface soil samples. The exact source of the SVOCs was not identified. The inorganics from the surface soil samples suggest that leaching of metals from batteries and other metal-containing material might have occurred at the site (Baker and Weston, 1992).

Round One RI A Round One RI was conducted from June 1, 1992 to October 30, 1992. This Round One Investigation was based on the recommendations from the Site 21 SI. This study included a geophysical investigation to estimate the extent of buried waste material. Groundwater samples were collected from four monitoring wells, and a total of ten surface soil samples and two subsurface soil samples were also collected. Samples were analyzed for VOCs, SVOCs, pesticides, PCBs, inorganics, and nitramine/nitroaromatic compounds. PAHs and inorganics were detected in the soil, surface water, and sediment samples (Baker and Weston, 1993a).

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report (Baker and Weston, 1993b) summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek.

Habitat Evaluation A habitat evaluation was conducted in 1995 at 15 sites at WPNSTA including Site 21. The objectives of the study were to: identify potential aquatic and terrestrial receptors for the ecological risk assessment; identify habitats within the study areas; identify existing wetland areas and sensitive environments; and identify any endangered species in the study areas (Baker, 1995d).

At Site 21, two terrestrial habitats were present. Upland forest was present in the general area. This upland forest had been replaced by a mixed forest over the disposal area. In fact, the general disposal area could almost be delineated by the difference in vegetation. Several common birds were observed and a box turtle was found at the site. In addition, signs of several mammals were observed, including white-tailed deer, grey squirrel, striped skunk, raccoon, and fox.

The aquatic habitat associated with Site 21 included one small stream. The west side of Site 21 slopes steeply to the southwest and makes up the headwaters to an unnamed tributary to Felgates Creek.

Subsurface Study A subsurface study was performed by IT Corporation in December 1992. This investigation indicated the presence of approximately 5 to 8 inches of topsoil under which batteries were present at thicknesses of 2 to 6 feet. The batteries were a carbon-zinc dry chemistry type, consistent with the type observed on the surface.

1994 Removal Action An EE/CA was conducted in 1994 to evaluate removal alternatives for removing waste and debris from Site 21. The EE/CA recommended the excavation and disposal of contaminated soil and debris. A NTCRA was conducted during the summer of 1994. Wastes encountered during this removal action included surface debris consisting of empty drums, empty containers, and batteries. A total of 6,070 tons of batteries, 650 tons of surface debris drums, and 90 tons of affected soil were removed and disposed as non-hazardous wastes. The contents of the drums were disposed as a hazardous waste because the lead concentration exceeded the federal hazardous waste threshold. Following the removal action, the area was regraded and revegetated.

Round Two RI The Round Two RI report combined the analytical results from the Round One RI, post removal confirmation sampling (from the 1994 NTCRA), and additional surface soil, subsurface soil, groundwater, surface water, and sediment data that had been collected in 1996 to further assess the nature and extent of contamination. There were no unacceptable human health risks associated with Site 21 under current-or future-potential exposure scenarios. However, several inorganics posed unacceptable risks to terrestrial ecological receptors.

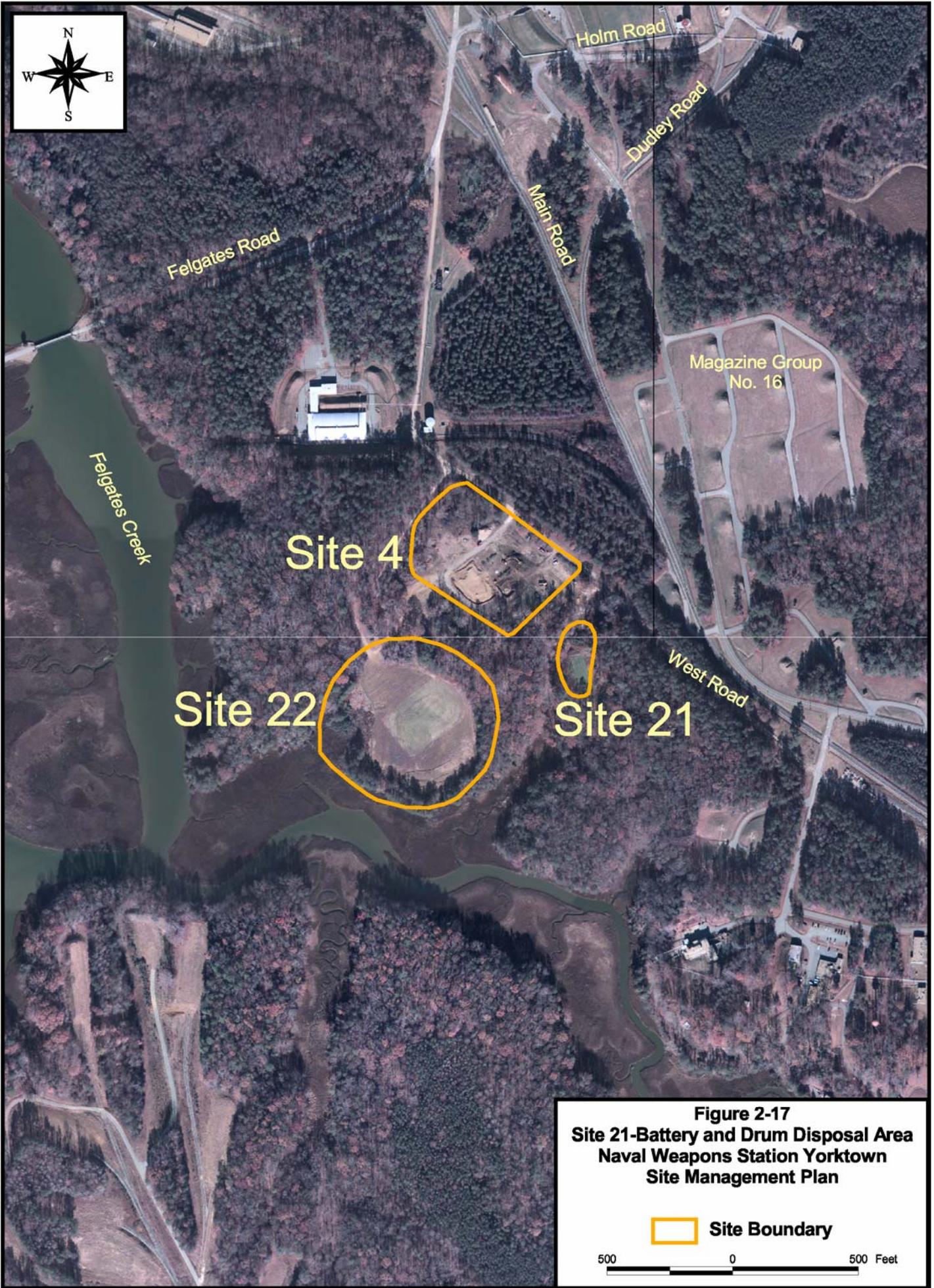
Feasibility Study A Feasibility Study was developed in April 2001 and identified remedial action technologies for Site 21 including: No Action, Capping, Ex-Situ Phytoremediation, Excavation with Off-Site Disposal, and Soil Washing (Baker, 2001c).

Proposed Plan The Proposed Plan was released to the public for review and comment in January 2001. A public meeting was also held on February 21, 2001 to provide information to interested members of the community about the preferred remedial alternatives under consideration and to seek public comments. The Preferred Alternative identified in the Proposed Plan was Excavation with Off-Site Disposal (Baker, 2001d).

2002 Removal Action A second removal action was completed in the fall of 2002. This removal action included the excavation and off-site disposal of approximately 145 cubic yards of contaminated soil exceeding remediation levels (Shaw, 2003).

ROD An NFA ROD for soil at Site 21 was signed in September 2003. No further remedial action for soil was required since post-excavation sampling, conducted as part of the 2002 removal action, confirmed that the soil poses no threat to ecological receptors (Baker, 2003a).

Status: Groundwater at the site will be addressed under GWOU IV.



Site 22 – Burn Pad

Site Description:

Site 22 covers approximately nine acres and is located south of Site 4. Site 22 was used for burning waste explosives and spent solvents from loading operations. Burning was conducted at the site from the early 1940s until 1995 when disposal by open burning ceased. Because of past operations, the site was used for a treatability study for the treatment of explosive-contaminated soil and sediment in 1996. As part of the treatability study, a biocell was constructed which measured approximately 150-feet long by 90-feet wide by 7-feet deep. The cell was completed in 1996 and was used to remediate soil from other sites at WPNSTA Yorktown. The use of the Site 22 biocell ended in 1998 and the biocell was demolished.

Studies Completed to Date:

Habitat Evaluation A habitat evaluation was conducted in 1995 at 15 sites at WPNSTA including Site 22. The objectives of the study were to: identify potential aquatic and terrestrial receptors for the ecological risk assessment; identify habitats within the study areas; identify existing wetland areas and sensitive environments; and identify any endangered species in the study areas (Baker, 1995d).

Round Two RI During preparation of the Round Two RI Work Plan, Site 22 was identified by USEPA, the Commonwealth of Virginia, and the Navy as an Installation Restoration site. The Round Two RI for Site 22 was completed in January 2001. Results of the investigation indicated the presence of PAHs, 2,4,6-TNT, RDX, and HMX in Site 22 surface soil. Aluminum, cadmium, chromium, copper, iron, lead, mercury, selenium, silver, vanadium, and zinc were also detected in surface soil samples. Subsurface soil samples contained lower concentrations of the same contaminants identified in the corresponding surface soil samples. There were no human health risks presented by contaminated soil at the Site. However, unacceptable risks to ecological receptors were identified (Baker, 2001a).

Dioxin Investigation In July 2000, soil samples were collected from Site 22 and analyzed for dioxins and dibenzofurans. This site was identified as a candidate site for dioxin and dibenzofuran analysis because of the past burning of explosives and waste materials that may have contained residual chlorinated solvents such as TCE. Results indicated that dioxin and dibenzofuran concentrations were similar to WPNSTA Yorktown background concentration.

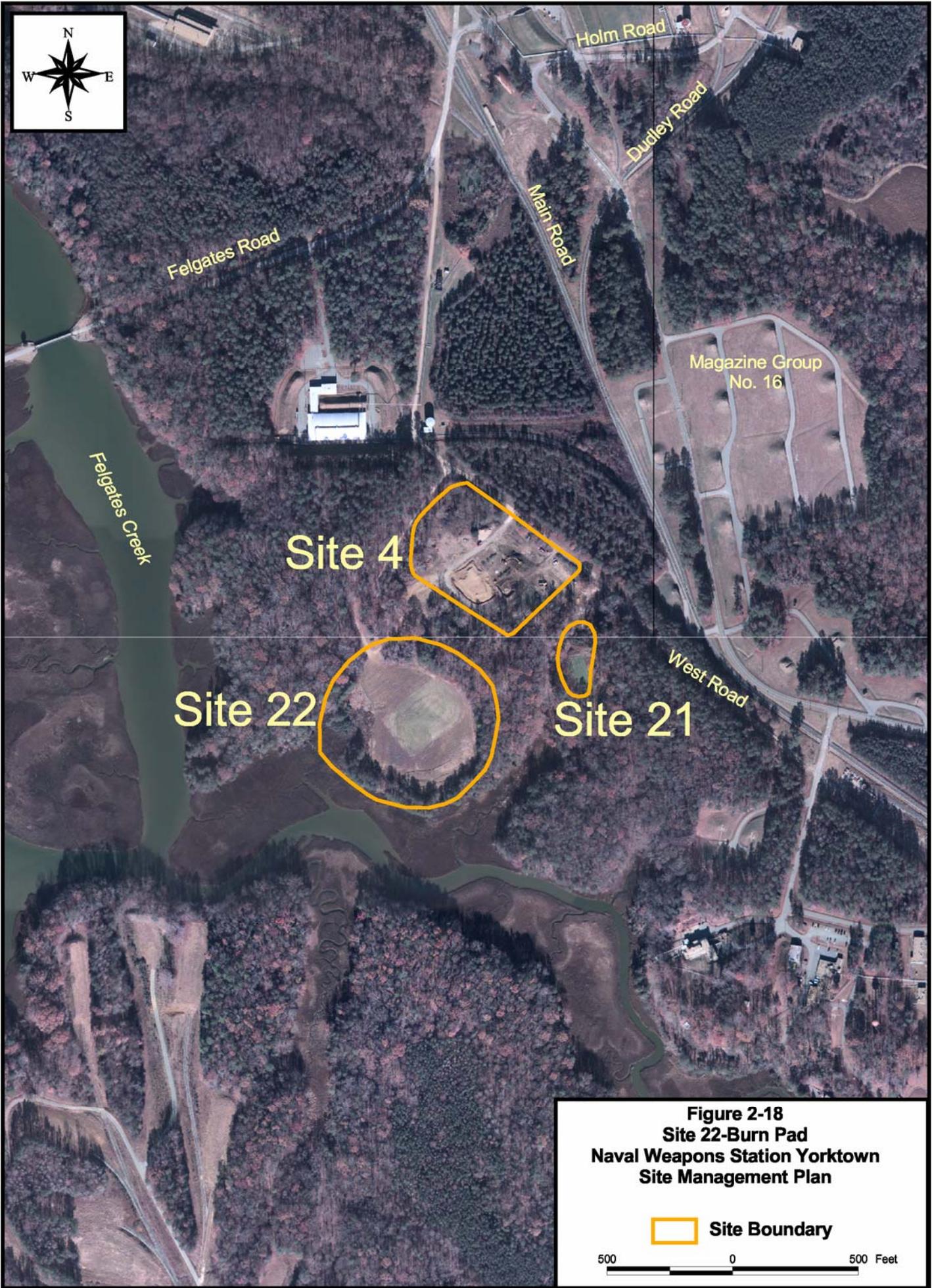
Feasibility Study A Feasibility Study was developed in April 2001 and identified remedial action technologies for Site 22 including No Action, Capping, Hot Spot Removal and Off-Site Disposal with Ex-Situ Phytoremediation, Excavation with Off-Site Disposal, and Soil Washing (Baker, 2001c).

Proposed Plan The Proposed Plan for Site 22 was released to the public for review and comment in June 2001. A public meeting was also held on February 21, 2001 to provide information to interested members of the community about the preferred remedial alternatives under consideration and to seek public comments. The Preferred Alternative identified in the Proposed Plan was Excavation with Off-Site Disposal (Baker, 2001d).

2002 Removal Action A removal action was completed in the spring of 2002. This removal action included the excavation of approximately 3,450 cubic yards of contaminated soil exceeding ecological remediation levels (Shaw, 2003).

ROD An NFA ROD for soil at Site 22 was signed in September 2003. No further remedial action for soil was required since post-excavation sampling, conducted as part of the 2002 removal action, confirmed that the soil poses no threat to ecological receptors (Baker, 2003b).

Status: Groundwater at the site will be addressed under GWOU IV.



Site 23 – Building 428 Teague Road Disposal Area

Site Description:

Site 23, the Building 428 Teague Road Disposal Area (formerly SSA 1), is located northeast of Building 428 in the eastern portion of the Installation along its property boundary. The York River is located to the north of Site 23 and Roosevelt Pond is located to the west-northwest. Teague Road is located to the southwest. The site area (approximately 10.5 acres) is wooded and bisected by a railroad track. The railroad track was constructed in 1919 and operated until 1989. The railroad track has since been removed and only the rail ballast remains.

Disposal activities reportedly began at the site in 1940 and ceased in 1960. A pier fire occurred in the mid 1950s, and debris from this fire may have been disposed in this area (1955 to 1957). Aerial photography suggests that past waste storage practices occurred at Site 23 (primarily in 1945). From 1960 to the present, there is no evidence of additional waste storage or release. A land survey conducted in the fall of 1993 indicated discrete piles of debris, which appear to have been dumped on top of the native soil and other areas of debris, which appear to be partially buried. The debris was identified as concrete rubble; scrap metal; wooden pilings and railroad ties; empty fuel cans; empty, open, and corroded drums; asbestos pipe insulation; and shingles.

Studies Completed to Date:

Soil Characterization Investigation Surface soil characterization sampling was completed in September 1993 by Baker. Seven surface soil samples were collected from the site area. The samples were analyzed for full Toxicity Characteristic Leachate Procedure (TCLP) constituents including VOCs, SVOCs, pesticides, herbicides, and metals and other TCLP analytes including corrosivity, reactive cyanide, reactive sulfide, and flashpoint. The samples were also analyzed for PCBs. The resulting TCLP concentrations were less than the RCRA regulatory limits governing the identification and listing of hazardous waste. The detected PCB concentrations were below the Toxic Substance Control Act clean soil action level of 1 mg/kg.

1994 Removal Action A removal action was conducted during the summer and early fall of 1994 by OHM Remediation Services Corporation (OHM) to address surface debris present at the site (OHM, 1996). The Action Memorandum documenting the removal of surface debris was signed in July 1994. Items removed from the site during the removal action included two 55-gallon drums of paint cans/spilled paint; 443 tons of wooden creosote timbers (remains of the burnt pier); 763 tons of ordinary nonhazardous debris; 1,119 tons of debris containing non-friable asbestos; 1,680 pounds of pipe wrapped with friable asbestos; 31 tons of recyclable metal; and two truck batteries. Approximately 5,815 tons of TNT- and trinitrobenzene-contaminated ash/soil were also removed from an area north of the railroad tracks at the northeast portion of the site. Confirmation surface and subsurface soil samples were collected as part of the removal action. A total of 54 surface soil samples (including duplicate samples) and 24 subsurface soil samples (including duplicate samples) were collected during the removal action. The soil samples were analyzed for Target Compound List (TCL) organics, nitramine compounds, and Target Analyte List (TAL) inorganics. Following the completion of the excavation activities at the northeast corner of the site, nine post-excavation subsurface soil samples were collected. The post-excavation subsurface soil samples were analyzed for TCL organics, nitramine compounds, and TAL inorganics.

SSP Investigation Site 23 initially was investigated as SSA 1 as part of a SSP investigation conducted by Baker in October 1994, which included the collection of subsurface soil, groundwater, surface water, and sediment samples. Surface soil samples were not collected during the SSP investigation since surface soil data was obtained during the 1994 removal action. Samples were analyzed for TCL organics, nitramine

compounds, and TAL inorganics (total and dissolved for groundwater). The SSP investigation also included a human health and ecological risk screening. The human health and ecological risk screening determined that there was potential risk to future potential residents and aquatic receptors. The results of the SSP investigation indicated that additional RI/FS efforts at Site 23 were warranted (Baker, 1996b).

Round One RI Baker conducted the Round One RI field investigation at Site 23 in 1997 and 1998. The activities conducted during the Round One RI field program at Site 23 consisted of a soil investigation including drilling and sampling; a groundwater investigation including monitoring well installation and development, groundwater sampling, and hydrologic measurements; and a sediment investigation. Surface water samples were not collected during the Round One RI since the unnamed tributary on the site was dry during the time of the investigation. A baseline human health risk assessment was conducted at Site 23 to evaluate the potential risks associated with exposure to environmental media resulting from existing conditions at the site. There were potential noncarcinogenic adverse health effects estimated for the future child resident. An ecological risk assessment was conducted to evaluate whether past operations at the site have, or potentially may, adversely affect the terrestrial and/or aquatic communities at or adjacent to the sites. Based on a screening of soil concentrations against flora/fauna toxicity values, the terrestrial environment at Site 23 potentially may be adversely impacted by soil concentrations. The aquatic assessment was conducted in the unnamed tributary that passes through the site and ultimately discharges to the York River. The four sediment samples collected from the unnamed tributary exceeded benchmark toxicity values. The Round One RI has not been finalized. Based on the potential risk to human health and ecological receptors, the Partnering Team determined that a second removal action would be conducted to mitigate potential risk from soil (Baker, 2002a).

2003 Removal Action Soil cleanup goals were developed for human health and ecological contaminants of concern. Soil cleanup goals were based on negotiations with USEPA Region III and have not been formally documented. The Revised Draft Round One RI Report for Sites 23, 24, 25, and 26 will include a screening-level ecological risk assessment and Step 3a refinement. J.A. Jones conducted a second removal action in the spring of 2003. The removal action included the excavation and off-site disposal of approximately 1,025 tons of contaminated soil and buried debris. Confirmation samples were collected prior to backfilling the excavated areas. J.A. Jones submitted a closeout report in October 2003 (J.A. Jones, 2003). At the Navy's request, Baker reviewed the closeout report and determined that the closeout documentation and confirmation samples did not adequately document the extent and completeness of the removal action in some areas. In addition to the lack of closeout documentation, J.A. Jones used an incorrect cleanup goal for mercury, 24.0 mg/kg instead 0.24 mg/kg. Therefore, J.A. Jones left soil in place that was above the cleanup goal for mercury. Also, the closeout report states that the top six inches of topsoil were removed and stockpiled prior to excavation. This stockpiled topsoil was later reused at the site following backfill of the excavation areas. While J.A. Jones had a sample of the topsoil analyzed, it is not clear that the topsoil was analyzed for all of the contaminants of concern. Therefore, the topsoil may contain contaminants exceeding the site cleanup goals. In addition, analytical results of a backfill sample taken by J.A. Jones from an Installation source indicated a mercury concentration greater than the cleanup goal. Based on these uncertainties, recharacterization of soil at the site was necessary.

2004 Removal Action A third removal action was conducted in January 2004 by UNITEC, Inc. to excavate and dispose of zinc-contaminated soil south of the railroad tracks. The confirmation sampling data for this area indicated that three of the six grids excavated exceeded the cleanup goal of 200 mg/kg. These grids were excavated to depths of four to six feet below ground surface and backfilled with clean material. Given a minimum of two feet of clean fill, the Partnering Team determined that there are no current unacceptable ecological risks presented by soil in this area. A closeout report documenting the removal of zinc-contaminated soil has not been submitted.

Recharacterization of Soil and Sediment Work Plan A draft work plan for the recharacterization of soil and sediment has been developed and is currently in review. Additional soil sampling will be conducted to determine the extent of any remaining contamination at the site following the 2003 soil removal action. Sediment samples will be collected to further characterize potential contamination. Results of the soil sampling will be included in an EE/CA that will be prepared in support of a soil removal action, if necessary. Sediment data will be presented in the Revised Draft Round One RI Report for Sites 23, 24, 25, and 26 (Baker, 2005k).

Status: Review of the draft Recharacterization Work Plan is pending. The revised RI for Sites 23, 24, 25, and 26 is in progress. Groundwater will be addressed under GWOU II.



York River

Roosevelt Pond

Teague Road

Barracks Road

By-Pass Road

Figure 2-19
Site 23-Building 420
Teague Road Disposal Area
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet



Site Description:

Site 24 (formerly SSA 6) is approximately 15 acres and is located around the helicopter-landing pad. Bounded by Bellfield Road to the north, railroad tracks to the east, Main Road to the south, and storage areas to the west, the site is an open grassy area around the helicopter-landing pad where mine components coated with Aroclor-1254 containing antifoulant were discovered in the subsurface soil. Historically, the area was used as an aviation field until 1927, after which it was used for storage of munitions in underground caches. Aerial photography indicates that peak storage activity on the ground surface occurred in 1968. No storage of liquid or hazardous waste was reported or observed. In addition, this area may also have been used briefly as an explosives burning area, although available data do not indicate the presence of nitramines/nitroaromatics. The helicopter pad and an air control tower are still present on the aviation field. In addition, a Daramend[®] greenhouse/biocell was constructed in 1999 at the north end of Site 24 to treat Site 6 soil and sediment.

Studies Completed to Date:

Geophysical Survey The geophysical survey was conducted in January 1994 to identify areas of buried debris and fill material. The survey was conducted over the area which is now primarily considered as Site 24. An interpretation of the geophysical data suggested that four areas of disposal were present at the site. These four areas are located around the helicopter pad.

SSP Investigation An SSP investigation was conducted at Site 24 (SSA 6) by Baker in 1994 which included the collection of surface soil, subsurface soil, groundwater samples, and the performance of a human health and ecological risk screening. The subsurface soil investigation included collecting samples from test pits from areas with geophysical anomalies. The results of the SSP investigation indicated that the subsurface soil within the area around the helicopter landing pad had concentrations of PCBs that could potentially cause risk to human health. These concentrations appear to be associated with antifoulants that were used to coat mine components. The SSP report recommended that additional RI/FS efforts be conducted for the portion of SSA 6 which is now considered to be Site 24 to define the extent of potential soil and groundwater contamination (Baker, 1996b).

Round One Remedial Investigation The Round One Remedial Investigation at Site 24 consisted of a surface soil investigation to obtain information to be used in the baseline human health and ecological risk assessments and to determine the surface soil contamination at the site. Five surface soil samples and one duplicate sample were collected at Site 24 during the Round One RI in September 1997. The results of the sampling indicated that no discernable patterns or hot spots of organic or inorganic contamination were identified in the surface soil. In general, the PAHs detected in the surface soil samples were located in a sample collected north of the helicopter pad and a sample located to the northwest of the helicopter pad. The results of the human health risk assessment indicated that the only risk values of USEPA acceptable target risk criteria were estimated for the future adult construction worker (Baker, 2002a). The Round One RI has not been finalized. Both the human health and ecological risk assessments will be updated based on more current guidance.

GWOU I Round One RI A draft Round One RI for GWOU I is currently being developed. Groundwater samples were not collected from Site 24 as part of this RI. The Navy plans to remove debris and potential source areas. If post-debris removal soil sampling shows that contaminated soil remains at the site, or if there is an indication that contamination has reached the groundwater table, consideration will be given to collecting groundwater samples at that time.

Status: The revised RI for Sites 23, 24, 25, and 26 is in progress. The draft GWOU I Round One RI is in progress.



Site 25 – Building 373 Rocket Plant

Site Description:

Site 25 (formerly SSA 7) is approximately 0.14 acres and is located immediately northwest of Building 373. A small area of woods to the west separates the site area from the main branch of Felgates Creek. Site 25 consists of the area around a former 500-gallon underground storage tank (UST) and its associated cast iron piping. The UST was a precast concrete pipe installed vertically into the ground with a bottom section cast in the concrete pipe.

Prior to the 1960s, wash/rinse water from the cleanup of formulation/pouring equipment drained into a settling basin within the building for removal of suspended solids. The solids were open burned at Site 4 (Burning Pad Residue Landfill). The wash/rinse water subsequently was discharged into Felgates Creek. The discharge line to the creek was replaced in the early 1960s by a 500-gallon UST installed to contain the wash/rinse water. From the 1960s to 1980s, the UST received batch wastes from NEDED assembly operations of 2.75-inch rockets as well as the wash/rinse waters. Once the tank was filled, the water was filtered through a carbon unit and discharged to the sanitary sewer system. The UST was closed in the early 1980s when the current aboveground storage tank (AST) was installed. Materials contained within the tank consisted of binders, curatives, catalysts, stabilizers, and explosives.

Studies Completed to Date:

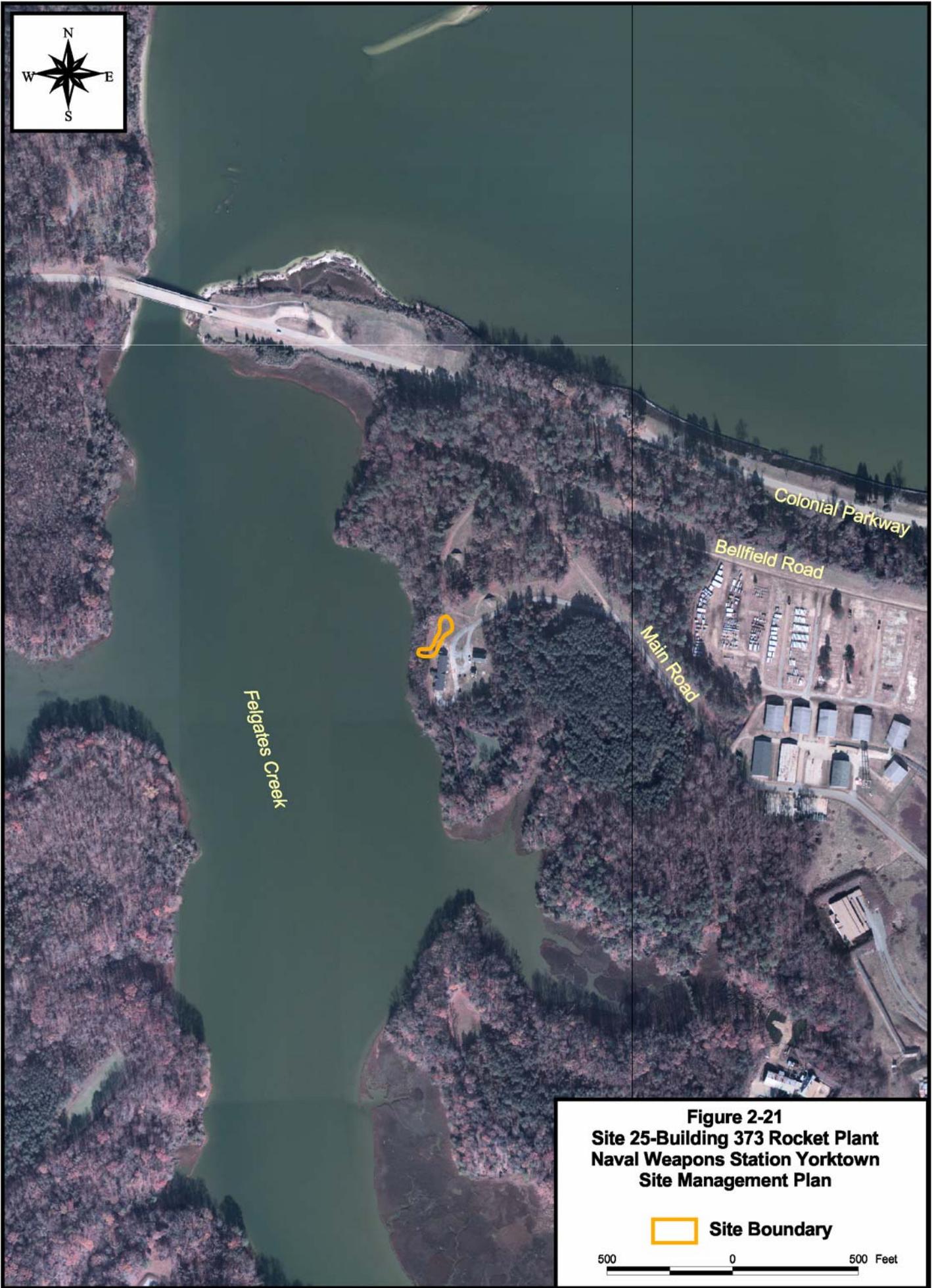
SSP Investigation A SSP Investigation was conducted at SSA 7 (Site 25) in the fall of 1994. The SSP investigation focused on four areas within the SSA: the Group 18 Magazine Area, the Main Road Disposal Area, the Building 373 Rocket Plant Area, and the Building 373 UST. Soil, groundwater, surface water, and sediment were investigated. A risk screening was also included under the SSP investigation. Results of the SSP investigation indicated that the area around Building 373 and piping was a potential area of concern (this is the area now called Site 25). The SSP investigation report recommended additional RI/FS activities for the UST area.

Removal Action A removal action was conducted at in June and July of 1996 by OHM. The purpose of the removal action was to remove the 500-gallon UST and associated piping. During the removal action, the bottom section, which had been cast to the concrete pipe, was heavily stained. The soil from beneath and around the UST was removed. Confirmation sampling conducted indicated the presence of VOCs, nitramine compounds, and inorganic compounds in the soil remaining after the tank was removed.

Round One RI Surface soil, subsurface soil, groundwater, and sediment samples were obtained during the Round One RI. Risk calculations performed on the SSP Investigation data, the confirmation sample results, and the Round One RI data indicate that no unacceptable risks or hazards were present at Site 25. With respect to human health, it was determined that no additional investigations or remediation are warranted for Site 25. Based on a screening of soil concentrations against flora/fauna toxicity values, the terrestrial environment at Site 25 potentially may be adversely impacted by soil concentrations of aluminum, chromium, copper, iron, vanadium and zinc. Furthermore, the surface water potentially may cause adverse impacts to the aquatic environment from concentrations of 3-nitroaniline, aluminum, cobalt, copper, cyanide, iron, and manganese (Baker, 2002a). The Round One RI has not been finalized. Both the human health and ecological risk assessments will be updated based on more current guidance.

GWOU I Round One RI A draft Round One RI for GWOU I is currently being developed. Groundwater samples were collected from four of the monitoring wells and analyzed for explosives and TAL inorganics. Results of the sampling event will be included in the draft RI.

Status: The revised RI for Sites 23, 24, 25, and 26 is in progress. The draft GWOU I Round One RI is in progress.



Falgates Creek

Colonial Parkway

Bellfield Road

Main Road

Figure 2-21
Site 25-Building 373 Rocket Plant
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 26 – Building 1816 Mark 48 Waste Otto Fuel Tank

Site Description:

Site 26 (formerly SSA 18) is approximately 6.7 acres and is located in the central portion of the WPNSTA at Building 1816, north of Sharpe Road and west of the intersection of Sharpe Road and Lee Road. A 2,500-gallon concrete UST and network of ancillary drain pipes that were formerly used to store waste Otto fuel were found within this area. This fuel consisted of a mixture of Otto fuel and water, which may have also contained oil, denatured ethyl alcohol, detergent, and trace amounts of cyanide, halogenated hydrocarbons, and heavy metals. In late 1987, waste Otto fuel was discovered leaking from the tank. The fuel was removed, the tank was cleaned, and a RCRA closure permit was filed. In March 1995, the 2,500-gallon waste Otto fuel UST and an 8,000-gallon UST located in the vicinity were removed. Site 26 has been retained as an IRP site because of chlorinated volatiles detected in shallow groundwater.

Studies Completed to Date:

Contamination Assessment A three-phase contamination assessment was conducted at Site 26 (SSA 18) in 1986 and 1987 by Dames & Moore, Inc. to satisfy the requirements of the Navy Assessment and Control of Installation Pollutants (NACIP) Program. During the investigation, soil borings were advanced, groundwater monitoring wells were installed, and subsurface soil samples and groundwater samples were collected. PGDN was detected in soil and groundwater samples; oil and grease and purgeable organics were also identified in the samples.

Soil Assessment Investigation In April 1994, Baker conducted a soil assessment at SSA 18 related to an expansion of Building 1816. The purpose of the investigation was to determine if the soil near the expansion area was potentially hazardous. The investigation included the collection of one subsurface soil sample from seven soil borings. The samples were analyzed for full TCLP analysis, PGDN, cyanide, and/or Target Compound List (TCL) VOCs. PGDN, cyanide, and TCL VOCs were not detected in the soil samples.

SSP Investigation SSA 18 (Site 26) was part of an SSP investigation conducted in February 1995. The investigation included collection of surface soil and groundwater samples and the performance of a human health and ecological risk screening. The results of the SSP indicated that additional RI/FS efforts at SSA 18 were warranted. The human health risk screening determined that the surface soil and groundwater samples produced an unacceptable risk (Baker, 1996c).

Round One RI Surface soil, subsurface soil, and groundwater samples were collected from Site 26. No significant organic contamination was detected in the surface soil samples. Inorganic compounds were detected in all surface soil samples at low concentrations. No discernable patterns or hot spots of inorganic compounds were identified. Similarly, subsurface contamination was not significant; organics and inorganics identified were detected at low levels. The human health risk assessment performed as part of the Round One RI indicated that there are no unacceptable risks or hazards at Site 26. With respect to human health, no additional investigations or remediation are warranted for the site. The ecological risk assessment results indicated that inorganics such as aluminum, chromium, iron, lead, mercury, and vanadium may adversely impact the environment at Site 26 (Baker, 2002a). The Round One RI has not been finalized. Both the human health and ecological risk assessments will be updated based on more current guidance.

Status: The revised RI for Sites 23, 24, 25, and 26 is in progress. Based on the recommendations of the final RI, groundwater at the site may be addressed under GWOU V.



Figure 2-22
Site 26-Building 1816 Mark 48
Waste Otto Fuel Tank
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet



Site 27 – Building 1751 Chemistry Laboratory Neutralization Unit and Drainage Area

Site Description:

Site 27 (formerly SSA 9) is approximately 1.9 acres and is located adjacent to Building 1751 in the north central portion of the Station near Site 8 (the NEDED Explosives-Contaminated Wastewater Discharge Area). Site 27 consists of a below-grade cylindrical unit into which acids from the Chemistry Lab are discharged for neutralization. Because it is below the ground, the integrity of the unit is unknown. The unit was used from 1969 to early 1995. The discharge was diverted to the sanitary sewer and ultimately to HRSD in 1995. In addition, there are four underground septic tanks in the area. Historical records indicate that industrial waste may have been stored in these tanks.

Studies Completed to Date:

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report (Baker and Weston, 1993b) summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek.

Relative Risk Ranking A Relative Risk Ranking Data Collection Investigation was conducted in October 1995. The objective of this effort was to gather contaminant, pathway, and receptor information to be used in the Navy's Relative Risk Ranking System. Included in the investigation was the collection of subsurface and groundwater samples and one sediment sample from the neutralization tank. The samples were analyzed for TAL inorganics and nitramine compounds. The inorganic concentrations in the subsurface soil samples were within the range of Station-wide background levels. Nitramine compounds were not detected in the subsurface soil samples. Inorganics and nitramine compounds were detected in the groundwater samples. Results of the sediment sample analysis indicated 9 of 19 inorganics were detected. Nitramine compounds were not detected within this sample (Baker, 1995e).

SSP Investigation The SSP investigation was completed in September 1997 and focused on potential ecological impacts. Surface water and sediment samples were collected from the area of discharge, which includes groundwater and runoff from the former drainage area. These samples provided the basis for the ecological risk screening. Soil and groundwater samples were not collected from this SSA; therefore, a human health risk screening was not conducted. Surface water samples contained limited organic compounds while sediment samples contained a VOC, PAHs, and two pesticides. Due to the number of inorganics detected in the surface water above screening levels and background, and the presence of high concentrations of inorganics detected in the sediment (specifically silver), it was determined that additional investigation was required; therefore this site was included in the RI/FS evaluation process (Baker, 2001b and 2004d).

Round One RI Additional samples were collected during the Round One RI in 2000 to delineate the vertical extent of contamination in sediment and to determine the source of contamination. Samples of subsurface soil, groundwater, surface water, and sediment were collected and evaluated along with data from the SSP Investigation. Analytical results of the samples were used in the risk assessments. The results of the human health and ecological risk assessments completed as part of the Round One RI confirmed that there are no unacceptable human health or ecological risks from exposure to soil, groundwater, surface water, or sediment at Site 27 (Baker, 2005a).

Status: The draft Proposed Plan for Site 27 is currently in progress. Following completion of the Proposed Plan, a No Action ROD will be developed.

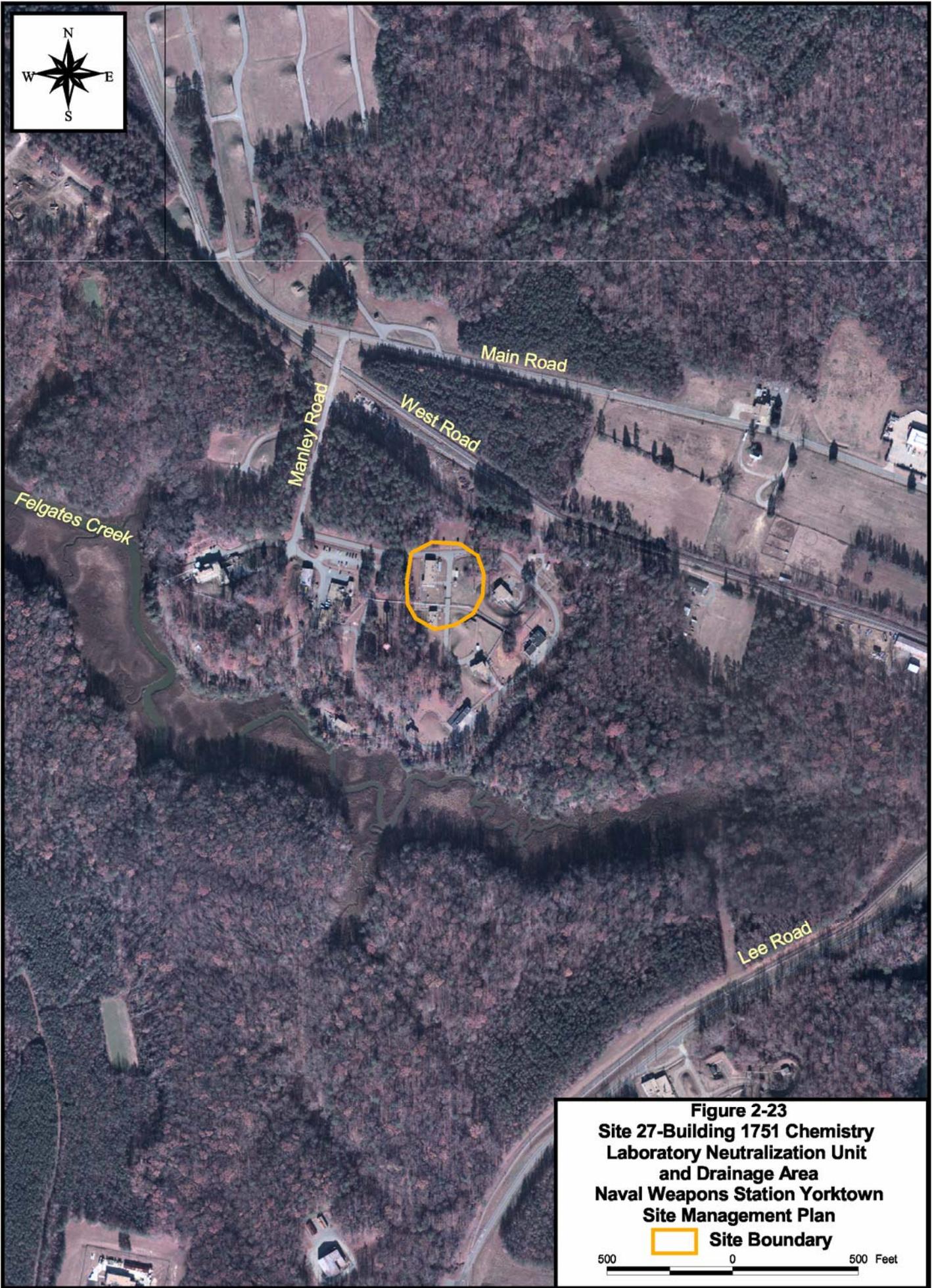


Figure 2-23
Site 27-Building 1751 Chemistry
Laboratory Neutralization Unit
and Drainage Area
Naval Weapons Station Yorktown
Site Management Plan
Site Boundary

500 0 500 Feet

Site 28 – Building 28 X-Ray Facility Tank Drain Field

Site Description:

Site 28 (formerly SSA 10) is located at Building 28 in the south central portion of the WPNSTA and occupies an area of approximately 5.8 acres. Site 28 consists of a septic tank drain field that received sanitary wastewater from the X-Ray Facility at Building 28. The X-ray process began in the late 1960s. Before silver recovery units were installed, the tanks may have stored hazardous wastes. In the later part of 1998, this wastewater was diverted to the sanitary sewer and ultimately to HRSD.

Studies Completed to Date:

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report (Baker and Weston, 1993b) summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek.

Relative Risk Ranking A Relative Risk Ranking Data Collection Investigation was conducted in October 1995. The objective of this effort was to gather contaminant, pathway, and receptor information to be used in the Navy's Relative Risk Ranking System. Included in the investigation was the collection of subsurface soil and groundwater samples. Three soil borings were advanced to facilitate the installation of temporary piezometers at SSA 10. The samples (subsurface soil and groundwater) were analyzed for TAL inorganics. Low concentrations of 12 of 19 inorganics were detected in the groundwater samples.

SSP Investigation An SSP investigation was completed in September 1997 and focused on potential ecological impacts. Surface soil, surface water, and sediment samples were collected from the area of discharge around the former leach field. The samples provided the basis for the ecological risk screening and provided data for the human health risk screening. Surface soil samples contained limited concentrations of organic compounds. Inorganic analytes were more commonly detected, with the highest concentrations generally occurring near the drainage discharge lines near the tributary. In surface water, inorganic analytes were more abundantly detected than organic compounds. Concentrations of inorganic analytes in sediment were similar to those detected in surface soil. The human health risk screening estimated potential risk from the exposure to inorganics in surface soil. Ecological risk screening estimated potential risk to aquatic receptors through exposure to inorganics in surface water and sediment. Based on potential threats to the ecological environment, SSA 10 was recommended for the RI/FS process (Baker, 2001b and 2004d).

Round One RI Samples were collected during the Round One RI in 2000 to delineate the extent of contamination in soil, groundwater, surface water, and sediment. Also, it was verified that the drain field is no longer a source of the silver in surface water and sediment. The results of the RI indicate that there are potential human health risks at Site 28. Silver was identified as a potential risk driver for aquatic lower trophic level populations and communities. Additional evaluation of silver was recommended in Step 3b of a terrestrial and aquatic baseline ecological risk assessment. No risk drivers were identified for upper trophic level consumers and further investigation was not recommended. No significant data gaps were identified requiring further investigation or evaluation prior to proceeding to a baseline risk assessment for Site 28. Additional data collection was recommended for surface waters of the unnamed tributary prior to Step 3b, however, given the age of the current data set and the dynamic nature of the water body (Baker, 2005a).

Status: A Baseline Ecological Risk Assessment investigation is planned for Site 28. Groundwater will be addressed under GWOU VI.



Figure 2-24
Site 28-Building 28 X-Ray Facility
Tank Drain Field
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site Description:

Site 29 (formerly SSA 20) is an approximately 4.1 acre pond located in the east central portion of WPNSTA. The pond receives stormwater runoff from Building 10 at Site 9 located due east of the pond. The Site 9 drainage area is approximately 500 to 600 feet in length and a limited removal action was conducted at Site 9 in 1994. Site 29 also receives stormwater runoff from the industrial area and Sites 18 and 19 and SSAs 8 and 22, located within the industrial area. Lee Pond empties into a channel, which in turn flows around the Site 16/SSA 16 study area into Felgates Creek. Water levels in Lee Pond are raised and lowered during summer and winter respectively for support of the local ecology.

Studies Completed to Date:

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report (Baker and Weston, 1993b) summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek.

SSP Investigation Surface, subsurface, groundwater, surface water, and sediment samples were collected at SSA 20 during the SSP investigation completed in September 1997. A human health and ecological risk screening process was done in accordance with the Site Screening Process Guidelines (Baker, 1994d). Potential risks to humans were demonstrated by contaminant concentrations detected in the groundwater and subsurface soil. Potential ecological risks to the aquatic environment are likely due to inorganics and explosives detected in the surface water and pesticides and explosives detected in the sediment. Based on results of the risk screening, SSA 20 was recommended for further evaluation in the RI/FS process (Baker, 2001b and 2004d).

Focused Biota Study The focused Biota Study was conducted to evaluate risks from human consumption of fish in the pond. Samples of fish, shellfish, surface water, and sediment were collected and analyzed for TCL semivolatiles, pesticides, PCBs, TAL inorganics, and TOC. Low levels of pesticides were detected in the fish and shellfish and low levels of SVOCs were detected in the sediment.

Round One RI No additional samples were collected as part of the Round One RI conducted in 2000. Analytical results from previous investigations were used in the human health and ecological risk assessments. The human health risk assessment showed potential noncarcinogenic adverse health effects for future child residents at Site 29. Aluminum, iron, and zinc were conservatively identified as risk drivers for aquatic lower trophic level populations and communities from surface water exposures. However, given uncertainty in this conclusion related to the relationship between each metal concentration with source areas, additional sampling of surface water was recommended prior to Step 3b of a baseline ecological risk assessment. No risk drivers were identified for terrestrial upper trophic level consumers and no further investigation of Lee Pond sediments was recommended (Baker, 2005a).

Status: A Baseline Ecological Risk Assessment investigation is planned for Site 2. Groundwater will be addressed under GWOU VII.



Figure 2-25
Site 29-Lee Pond
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 30 – Bracken Road Incinerator and Environs

Site Description:

Site 30 (formerly SSA 24) is approximately 0.1 acres and is located north of Site 5 (Surplus Transformer Storage Area), northeast of a cooling pond (76A), and south of railroad tracks. The incinerator was used to burn unknown waste for an unknown period of time. Historical information was found which documents the burning of Venezuelan crude oil in the mid-1970s.

Studies Completed to Date:

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report (Baker and Weston, 1993b) summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek.

EPA Sample Collection USEPA Region III oversight contractors collected surface soil and sediment samples in February 1996 from the areas around the former incinerator. The samples were analyzed for pesticides, PCBs, nitramine compounds, and inorganics. PCBs were not detected. Hexahydro-1,3,5-trinitro-1,2,5-triazine (RDX) was detected in one sample below screening levels. The results indicated that detected inorganics (mainly lead and vanadium) exceeded regulatory screening levels. Additional investigations were deemed necessary to determine potential human health risks and ecological concerns associated with this site.

SSP Investigation Surface soil, subsurface soil, and groundwater samples were collected at SSA 24 as part of the SSP investigation in September 1997. The human health risk screening process was performed in accordance with the SSP Guidelines (Baker, 1994d). No surface water or sediment samples were collected; therefore, an ecological risk screening was not conducted. Due to unacceptable human health risks in surface soil, SSA 24 was recommended for further evaluation in the RI/FS process (Baker, 2001b and 2004d).

Round One RI The Round One RI was conducted in 2000 and consisted of collecting surface soil, subsurface soil, and sediment samples. The human health risk assessment conducted as part of the Round One RI indicated that potentially unacceptable risks exist for on-site commercial/industrial workers and future adult and child residents exposed to surface soil at Site 30. Based on results of the ecological risk assessment, additional evaluation was recommended in Step 3b of a terrestrial baseline ecological risk assessment (Baker, 2005a). Given the small size of the site, a removal action may be conducted as a more cost-effective approach.

Status: Further investigation may be required prior to an EE/CA. Groundwater will be addressed under GWOU II.



SSA 2 – Former EOD Burning/Disposal Area

Site Description:

SSA 2 is an irregular, U-shaped area located at the north end of the existing Explosives Ordnance Disposal (EOD) range and occupies an area of approximately 400 feet by 450 feet. The area was wooded and strewn with non-explosive arming devices, MK 46 shipping containers, various types of scrap metal, and debris. Numerous earthen berms and depressions indicate that bulldozers and other earth-moving equipment were used throughout the SSA. Demolition records indicate that the area was the original site of the EOD range for WPNSTA Yorktown and was actively used throughout the 1950s and 1960s for routine destruction of ordnance material. The area was closed in 1970 and operations were moved south to the present EOD range location. Anecdotal information indicates that the move was prompted by growing concerns that range operations might cause forest fires in the wooded areas bordering the SSA.

Studies Completed to Date:

1994 Removal Action A removal action was conducted at SSA 2 during the summer and early fall of 1994 to remove three dump truck loads of scrap metal, 14 containers of lead, and 11 live ordnance pieces. The scrap metal included torpedo casings, bomb casings, powder cans, used detonation devices, tractor parts, marsh matting and other miscellaneous debris.

SSP Investigation The SSP investigation included the collection of surface soil, subsurface soil, and groundwater samples. As part of the SSP, human health and ecological risk screenings were conducted. ICR values for surface soil, subsurface soil, and groundwater are within USEPA's generally acceptable target risk range. HI values indicate that potential noncarcinogenic adverse health effects will not occur subsequent to exposure. As a result, no further RI/FS efforts or remedial actions are necessary for SSA 2. A No Further Action Decision Summary was signed in March 1996 (Baker, 1996c).

Status: No further action for soil. Groundwater to be investigated as part of GWOU X.

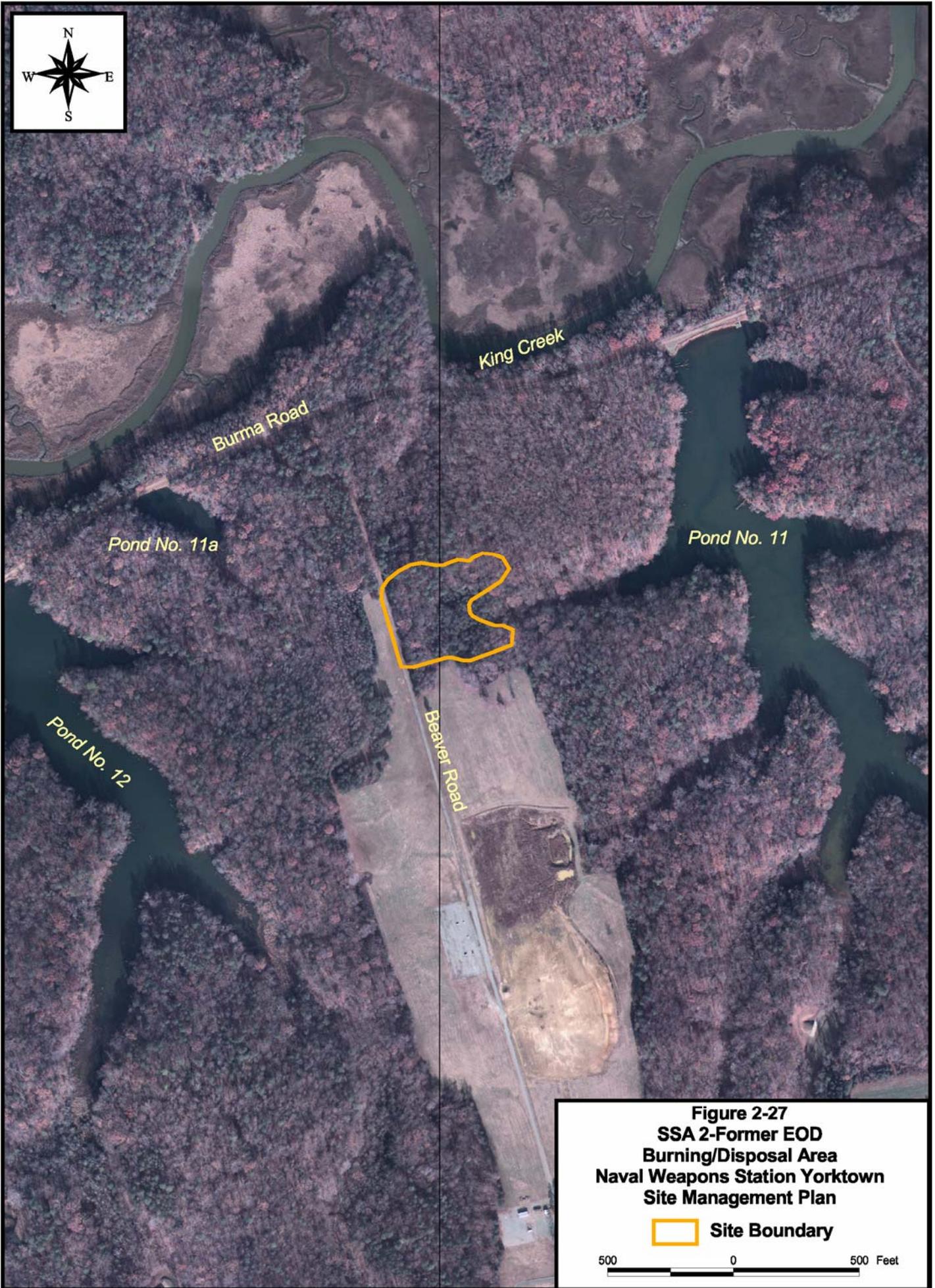


Figure 2-27
SSA 2-Former EOD
Burning/Disposal Area
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

SSA 3 – Fire Training Pits and Vicinity

Site Description:

SSA 3 occupies an area of approximately 2.7 acres and is located just north of Main Road and Site 16 in the north central portion of WPNSTA. The area consisted of three concrete oil pits; one was T-shaped and the other two were rectangular. One rectangular pit was located at the eastern end of the field, the second rectangular pit was located in the western end of the field, and the T-shaped pit was located in the central section of the field, where a patch of stressed vegetation was evident. Berms were built around each of the pit areas in 1986 and a roof was added to each area in 1991. Debris was reportedly placed in each pit, doused with jet fuel and set on fire. In addition, in the vicinity of the pits, there appeared to be portions of a tanker trailer that was formerly used for confined space entry training. The trailer was open on the bottom and placed directly on the soil. The inside of the trailer was blackened and burned.

Studies Completed to Date:

1996 EE/CA and Action Memorandum As part of an EE/CA and Action Memorandum, subsurface soil samples were collected around the fire training pits to determine the extent of possible subsurface soil contamination for the removal of the pits. The soil samples were analyzed for total petroleum hydrocarbons. The results indicated all samples, except one, had TPH contamination above the VDEQ action level of 100 milligrams per kilogram for the removal of soil (Baker, 1996f).

1996 Removal Action During the summer of 1996, OHM Remedial Services Corporation completed a removal action to include the removal of three fire training test pits, a tanker trailer, and an area of burnt surface soil. Soil was excavated to depths ranging from 1 to 8 feet bgs within these areas. Confirmation samples indicated the presence of TCL organics, TPH, oil and grease, and TAL organics.

SSP Investigation Subsurface soil, surface water, and groundwater were sampled as part of the SSP investigation. Results of the investigation indicated that the subsurface soil at SSA 3 was not significantly impacted by site operations. There was no apparent discernable pattern of contamination within this media. Results of groundwater sampling indicate that inorganic concentrations detected are similar to Station-wide background conditions. Although organic compounds were detected, they have not adversely impacted groundwater and do not appear to be associated with past SSA operations. Two surface water samples were collected from the tributary leading to Indian Field Creek and were analyzed for VOCs and SVOCs. There were no detections of VOCs or SVOCs. The human health risk assessment performed on the data indicated that human exposure to COPCs in groundwater and soil was negligible. Ecological risk was determined to be acceptable; therefore, SSA 3 was not recommended for additional RI/FS efforts. Groundwater will not be investigated as part of GWOU I since the human health and ecological risk screening did not indicate unacceptable risks from exposure to groundwater. A No Further Action Decision Summary was signed in May 2004 (Baker, 2001b and 2004d).

Status: No further action.



Figure 2-28
SSA 3-Fire Training Pits
and Vicinity
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

SSA 4 – Weapons Casing/Drum Disposal Area

Site Description:

SSA 4 occupies approximately 0.5-acre between Main Road and Bypass Road at the headwaters of a tributary leading to Roosevelt Pond. The area consists of a ravine in which debris, including weapons casings and drums, was deposited. A flat, grassy area just along the roadway indicates that this area may have been an old landfill. Some of the material in the ravine may have been present as a result of landfilling activities.

Studies Completed to Date:

1994 Removal Action A removal action was conducted at SSA 4 during the summer and early fall of 1994 by IT Corp. to remove surface debris in the ravine. The debris included various types of ordnance, miscellaneous construction/demolition debris, fire extinguishers, and nominal amounts of paint wastes and paraffin wax. Eight (including one duplicate) confirmatory surface soil samples were collected after the removal of surface debris and analyzed for TCL organics, nitramine compounds, and TAL inorganics. Results indicate the presence of SVOCs, pesticides, and inorganics within surface soil. VOCs, nitramine compounds, and PCBs were not detected in the samples (IT Corporation, 1995x).

SSP Investigation The SSP investigation at SSA 4 included the collection of surface and subsurface soil samples, groundwater samples, and surface water and sediment samples. The samples were analyzed for TCL organics, explosives, and TAL inorganics. Results of the sample analysis indicate that SVOCs and pesticides were detected in surface soil, and VOCs, SVOCs, and pesticides were detected in subsurface soil. A VOC was detected in surface water and VOCs, SVOCs, pesticides, and an explosive were detected in sediment. Inorganics were detected within all media. Human health and ecological risk screenings were conducted based on these contaminant concentrations. SSA 4 was not recommended for additional RI/FS efforts even though unacceptable cumulative human health risks were estimated for surface soil and subsurface soil. In addition, inorganics detected in surface and subsurface soil were similar to background levels. The individual risks generated from these media were within the acceptable limits. PAHs, pesticides, and inorganics were identified as ecological COPCs in a conservative risk evaluation. The potential for ecological risk was determined to be acceptable, however, and no further investigation is required. Groundwater will not be investigated as part of GWOU II since the human health and ecological risk screening did not indicate unacceptable risks from exposure to groundwater. A No Further Action Decision Summary was signed in May 2004 (Baker, 2004d).

Status: No further action.

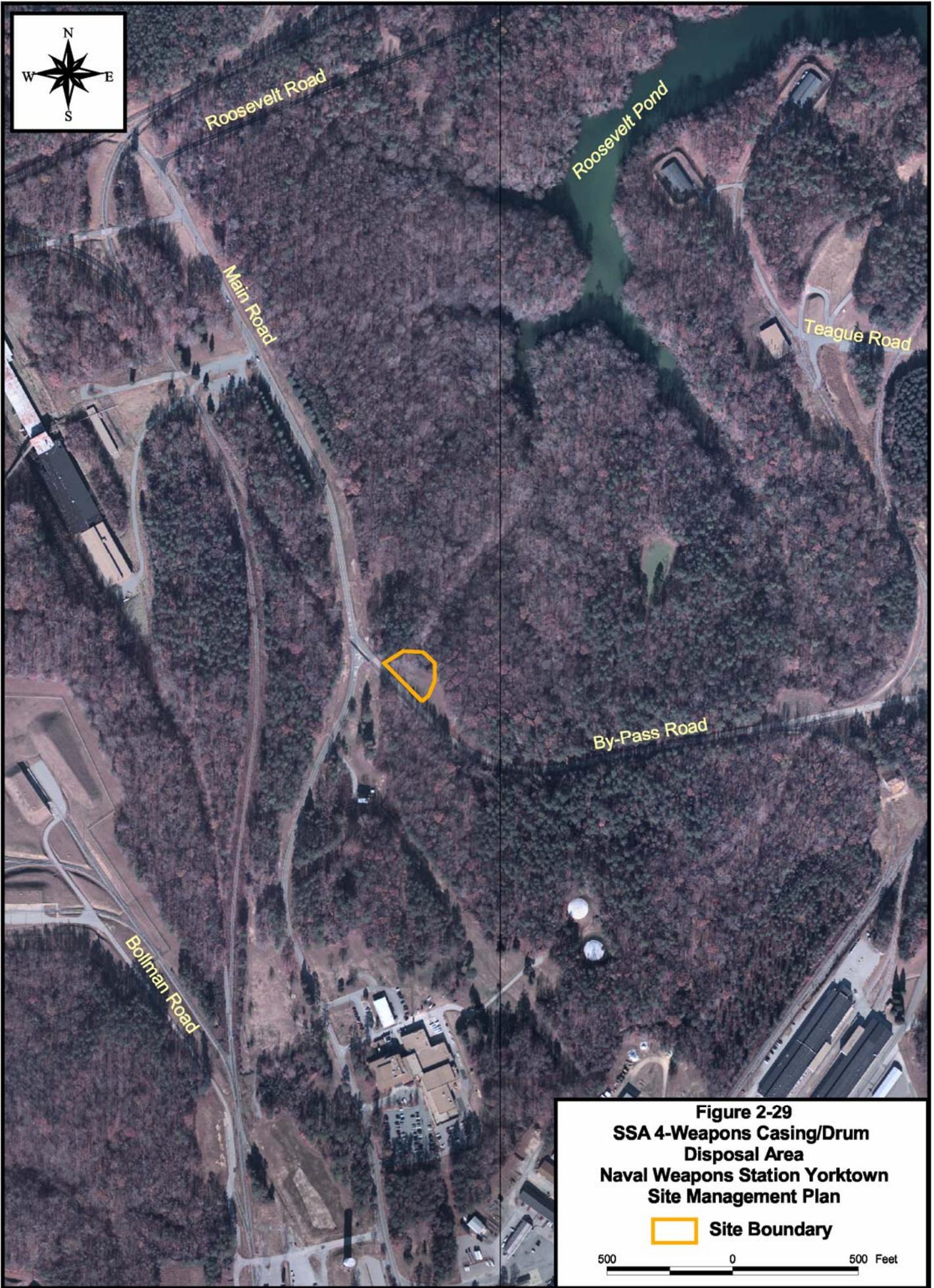


Figure 2-29
SSA 4-Weapons Casing/Drum
Disposal Area
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

SSA 5 – Bypass Road Landfill

Site Description:

SSA 5 is located just north of Bypass Road and covers approximately 0.9 acres. This area consists of a ravine in which debris is evident. A small stream passes through the site and exits from a culvert that begins south of Bypass Road. The small stream is the second tributary which flows into Roosevelt Pond. Both Bypass Road and the railroad system were constructed in 1919 and are still in use.

Studies Completed to Date:

1994 Removal Action A removal action was conducted at SSA 5 during the summer of 1994 to remove the small amount of debris including empty drums, pipes, scrap metal, and rubble. Confirmatory surface soil samples were collected after the removal of surface debris and analyzed for TCL organics, nitramine compounds, and TAL inorganics. VOCs, SVOCs, pesticides, PCBs, and nitramine compounds were not detected in the samples. Positive detection results indicated concentrations of the inorganics (arsenic, beryllium, and manganese) exceeded USEPA Region III Screening criteria.

SSP Investigation The SSP investigation at SSA 5 included the collection of surface and subsurface soil, groundwater, surface water, and sediment samples. The samples were analyzed for TCL organics, explosives, and TAL inorganics. Results of the sample analysis indicate that SVOCs, a pesticide, and a nitramine compound were detected in surface soil, and SVOCs and pesticides were detected in subsurface soil. Analysis of groundwater samples indicated that an SVOC and a nitramine compound were detected. VOCs, SVOCs, and pesticides were detected in sediment. Inorganics were detected in all media including surface water. Potential human health risks were due to concentrations of arsenic and iron detected in subsurface soil. The arsenic concentrations were similar to background levels. Phenol, tetryl, PAHs, pesticides, and inorganics were identified as ecological COPCs in a conservative risk evaluation. The potential for ecological risk was determined to be acceptable, however, and no further investigation is required. Groundwater will not be investigated as part of GWOU II since the human health and ecological risk screening did not indicate unacceptable risks from exposure to groundwater. A No Further Action Decision Summary was signed in May 2004 (Baker, 2004d).

Status: No further action.



Roosevelt Pond

Teague Road

Barracks Road

By-Pass Road

Figure 2-30
SSA 5-By-Pass Road Landfill
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

SSA 8 – Building 350 Rail Roundhouse Maintenance Area Trench Outfall

Site Description:

SSA 8 occupies an area of approximately 0.4 acres and is located outside Building 350, on the western side of the railroad tracks, in the southeastern corner of WPNSTA Yorktown. Within Building 350 is one concrete trench, which is used during train maintenance for access to train engines from below. There are no records of any releases from the trench. Liquid may have dripped during maintenance activities into the trench, but it was covered with absorbent material that was put into drums for disposal. The floor of the trench appears heavily stained; however, the trench drain has been plugged. The drain pipe from the trench leads to a catch basin approximately 100 yards south of the locomotive repair building. The outfall associated with the catch basin extends under the railroad tracks toward Bollman Road. Natural surface drainage (overland flow) extends under Bollman Road toward the wooded area east of Site 18.

Studies Completed to Date:

Confirmation Study Round Two for Site 18 Two surface water and two sediment samples were collected during the Confirmation Study Round Two for Site 18. These samples were downgradient of SSA 8 in the tributary leading from the outfall northwest of Bollman Road toward Lee Pond. One volatile organic compound (VOC) was detected and three metals were identified in the surface water samples.

Round One RI for Site 18 Three surface water and three sediment samples were collected as confirmation samples during the Round One RI for Site 18. These samples were also downgradient of SSA 8 in the tributary leading from the outfall northwest of Bollman Road toward Lee Pond. Inorganics were identified in the surface water samples and the sediment samples (Baker and Weston, 1993a).

SSP Investigation SVOCs and relatively low concentrations of pesticides were detected within the surface drainage area of the SSA. All of the drainage from the railroad tracks drains to this low lying area. The PAH detections may be related to railroad activity since the boring was in close proximity to the railroad tracks. Based on an elevation of catch basin results and downgradient environmental sample results, there does not appear to be a source of contamination at SSA 8. ICR values for surface soil, subsurface soil, and filtered groundwater are within USEPA's generally acceptable target risk range. The HI values exceed one for surface soil only. These exceedances are attributable to the presence of inorganic constituents in soil samples that are similar to Station-wide background concentrations. Furthermore, catch basin samples indicate no potential source of future contamination and the outfall pipe from SSA 8 has been plugged and grouted. As a result, no further RI/FS efforts or remedial actions are necessary for SSA 8 (Baker, 1997c). Groundwater will not be investigated as part of GWOU IV since the human health and ecological risk screening did not indicate unacceptable risks from exposure to groundwater.

Status: No further action.

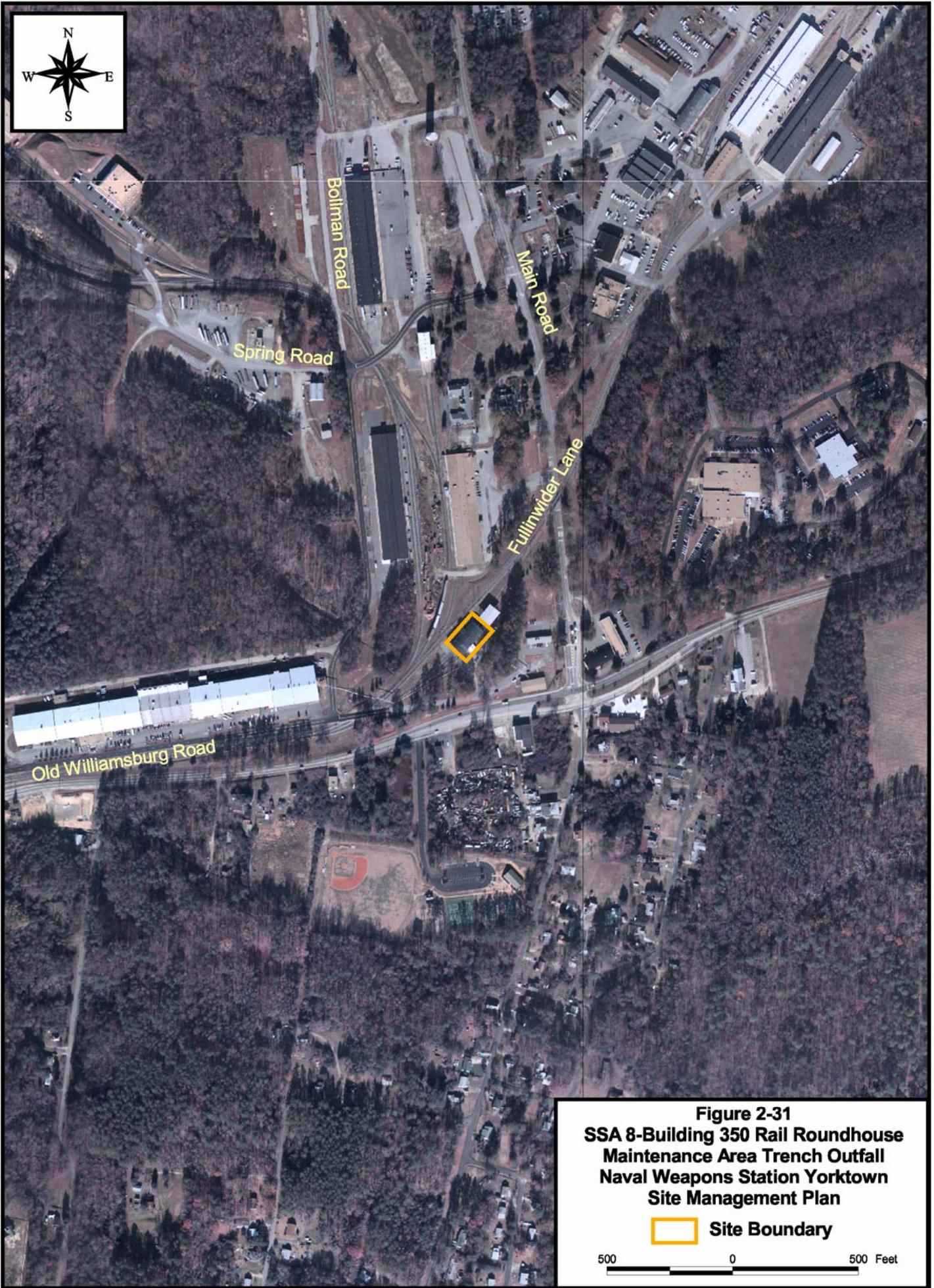


Figure 2-31
SSA 8-Building 350 Rail Roundhouse
Maintenance Area Trench Outfall
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet



SSA 11 – Building 3 Neutralization Unit

Site Description:

SSA 11 is located at the southeast corner of Building 3 in the eastern section of WPNSTA Yorktown (southwest of Site 12 near SSAs 12 and 13) and occupies an area of approximately 0.2 acres. SSA 11 consists of an open, metal tank (approximately 3 feet by 5 feet by 3 feet deep) and associated trench and sump. This tank was apparently used for neutralization of wastes from an unknown process, but has been inactive for at least 15 years. Chipping and pitting are evident in the trench and sump. The trench drains to the storm sewer system. The outfall from the SSA 11 storm sewer system is located in the vicinity of the headwaters of Ballard Creek.

Studies Completed to Date:

SSP Investigation The SSP investigation completed in 1996 included collecting surface water and sediment samples. TCE was detected in the surface water sample obtained at the headwater of Ballard Creek, but the detected concentration was below Commonwealth and Federal criteria. Organic compounds were detected in the corresponding sediment samples. Cadmium in surface water was the only inorganic to exceed the maximum detected background surface water samples. All of the detected concentrations for the sediment samples were below the maximum background sediment samples presented in the Station-wide Background Report. The ecological index value slightly exceeded one for surface water only. This exceedance is attributable to the presence of potentially non-site related contaminants (i.e., cadmium) or the detection of inorganic constituents in surface water samples similar to concentrations detected in Station-wide background sampling and analysis. As a result, no further RI/FS efforts or remedial actions are necessary for SSA 11 (Baker, 1997c). Groundwater will not be investigated as part of GWOU III since the human health and ecological risk screening did not indicate unacceptable risks from exposure to groundwater.

USEPA Sampling Event USEPA surface water and sediment samples were collected from within the stormwater sewer system directly below the drainage pipe from the Acid Neutralization Room. Volatiles were not detected in the samples. Based on a review of the SSP data and the USEPA sampling investigation, there does not appear to be a source of contamination at SSA 11.

Status: No further action.

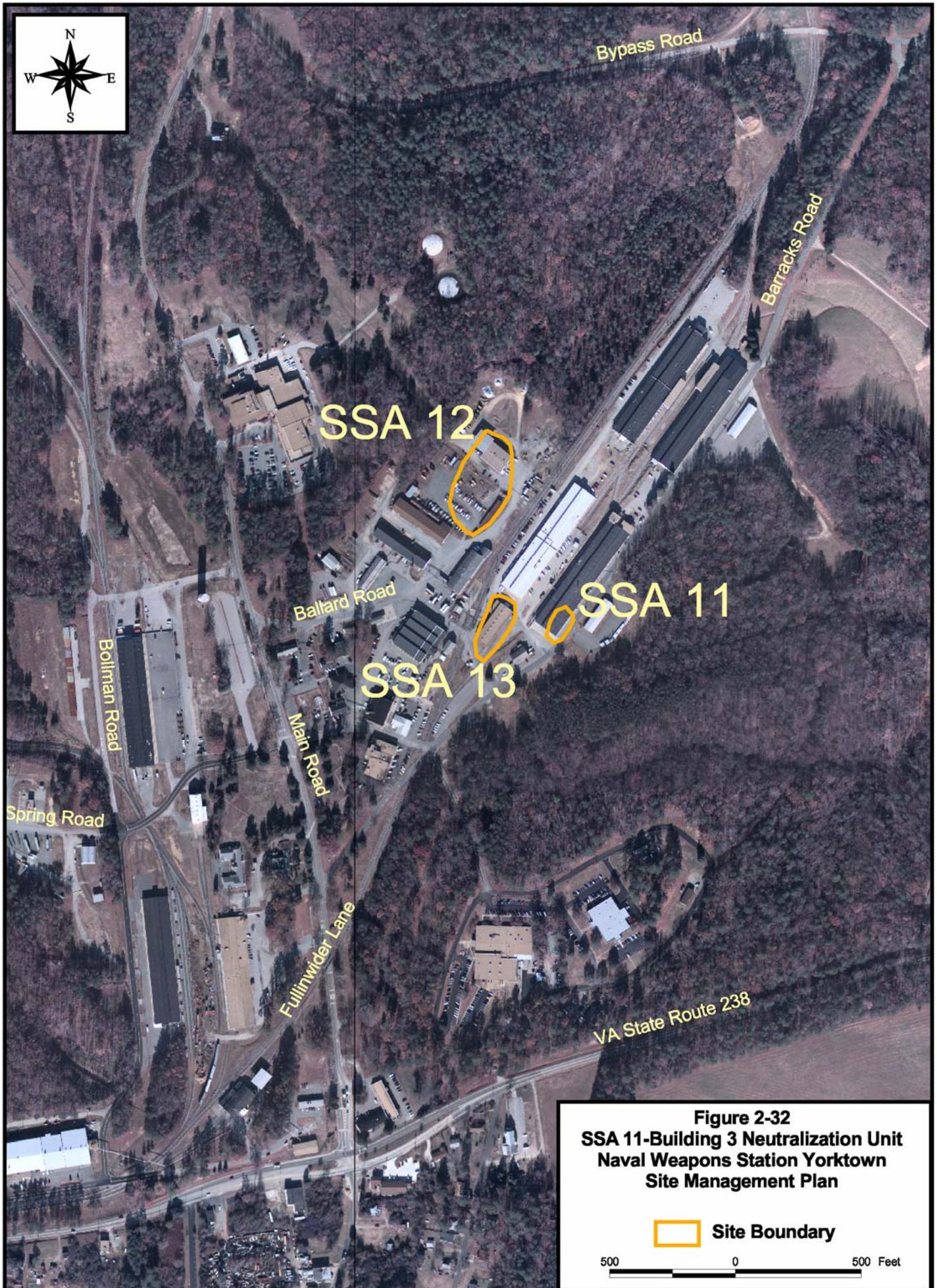


Figure 2-32
SSA 11-Building 3 Neutralization Unit
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

SSA 12 – Public Works Storage Yard/Building 683 Vicinity

Site Description:

SSA 12 is approximately 1.5 acres and is located in the Public Works storage yard and the surrounding area in the eastern portion of WPNSTA Yorktown near Site 12 and SSAs 11 and 13. Surface water bodies are not located near this SSA. One area consists of a field, approximately 150 feet by 300 feet, in which waste generated by the Public Works Department is stored. Drums of used motor oil and used batteries were observed on pallets and directly on the ground. Historically, the area stored old tires. Another area, controlled by Building 645, consists of a fenced yard used to store new electrical transformers and other electrical equipment. Used or damaged transformers were not stored at SSA 12. The new transformers were staged on pallets before installation. Historical records indicate that wastes may have been stored in this area in the past. In addition, concrete debris is visible at the edge of a formerly wooded area where demolition debris was reportedly deposited. Currently, approximately one-half of the area is used for vehicle storage.

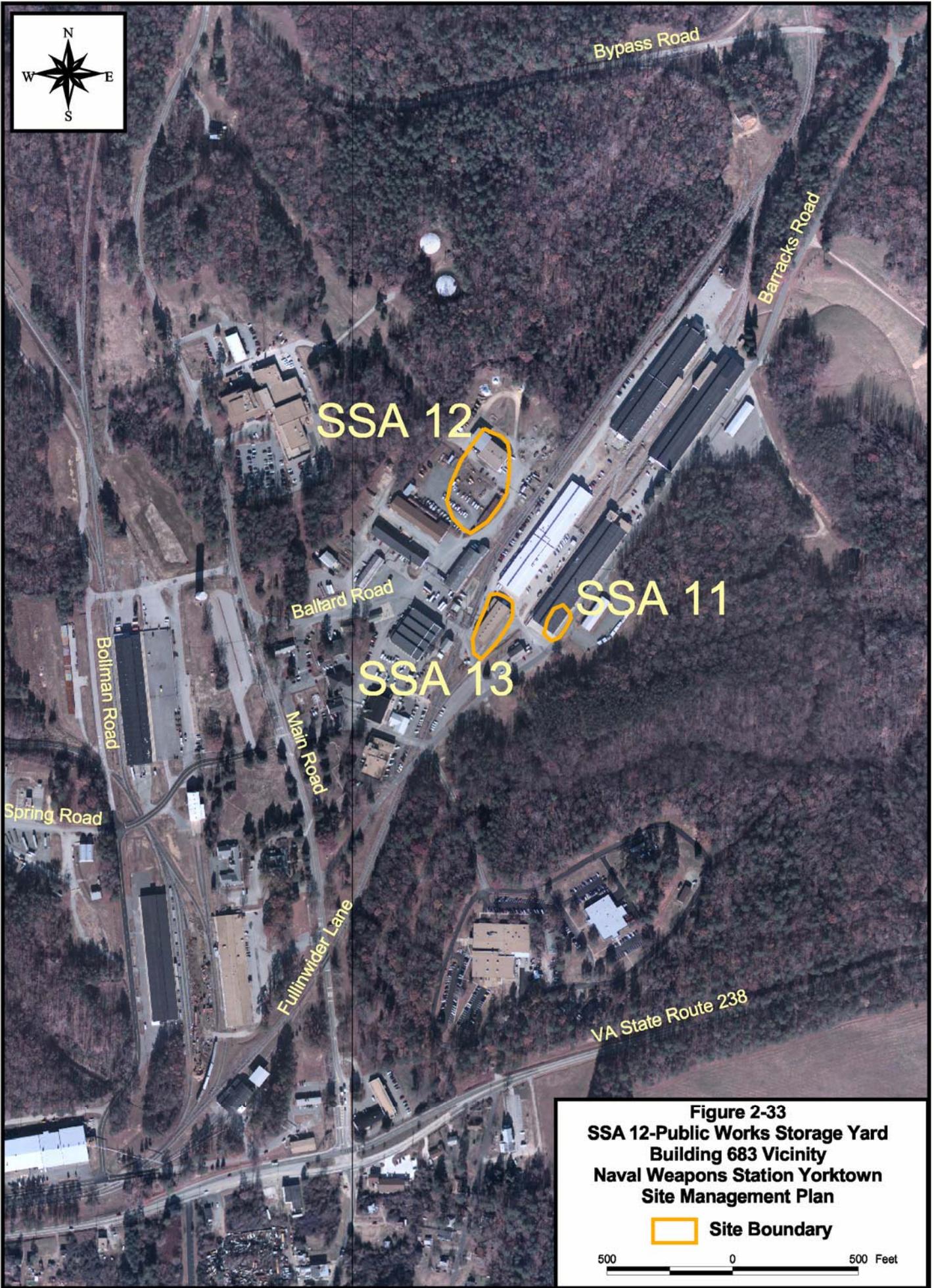
Studies Completed to Date:

1994 Soil Investigation A soil investigation was performed to evaluate soil at SSA 12. The assessment was conducted to determine the presence of hazardous contaminants or oily waste products within the soil at SSA 12 with respect to planned construction of Building P-518. The soil investigation included collecting one surface soil sample from 35 sampling stations and collecting one subsurface sample from 11 of the 35 sampling stations. SSA 12 contains three areas; Area A, Area B, and Area C. Sampling was conducted in each of these areas and in the drainage pathways from these areas toward Roosevelt Pond. Results of the field investigation concluded that arsenic and PAHs exceeded the screening values for the industrial land use scenario. In this study, dermal contact and accidental ingestion by construction workers and commercial workers not involved in excavation activities were evaluated. Incremental lifetime cancer risks were derived for construction workers and commercial workers. The values were within USEPA's generally acceptable target risk range (Baker, 1995f).

Potential UST Investigation In February 1996, a potential UST was discovered during site reconnaissance when a partially buried pipe was discovered in the area. It is reported that the UST may have been a gasoline tank that was removed prior to any formal UST program; therefore, records of the removal are not available.

SSP Investigation Subsurface soil and groundwater samples were taken at SSA 11 to determine whether additional RI/FS efforts should be conducted at this site. Results of the sampling indicate that although some compounds reported higher concentrations when compared to background conditions, their difference was within an order of magnitude. Dissolved inorganic concentrations were generally within the limits of background conditions. These observations and the results of subsurface soil samples suggest that groundwater has not been impacted by operations performed at SSA 12. ICR values for surface soil, subsurface soil, and groundwater are within USEPA's generally acceptable target risk range. The HI value exceeds one for subsurface soil only. These exceedances are attributable to naturally occurring inorganic constituents in soil which are similar to Station-wide background concentrations. As a result, no further RI/FS efforts or remedial actions are necessary for SSA 12 (Baker, 1997c). Groundwater will not be investigated as part of GWOU VII since the human health and ecological risk screening did not indicate unacceptable risks from exposure to groundwater.

Status: No further action.



SSA 12

SSA 11

SSA 13

Figure 2-33
SSA 12-Public Works Storage Yard
Building 683 Vicinity
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

SSA 13 – Building 529 Battery Drainage Area

Site Description:

SSA 13 occupies an area of approximately 0.5 acre and is located outside Building 529 in the eastern portion of WPNSTA Yorktown near Site 12 and SSAs 11 and 12. The area consists of pavement where neutralized battery washwater, created from washing the external portion of the batteries and neutralizing the washwater with baking soda, was released and migrated to a storm drain approximately 100 feet away. The storm drain is located below the southeastern corner of the concrete platform of Building 529. The pavement on the western side of Ballard Road and the eastern side of Building 529 is sloping on all sides toward the storm drain. The surface water is channeled to the storm sewer system and eventually to the Ballard Creek headwaters. The entire area is asphalt covered. The pavement is currently worn, but intact, with some vegetation apparent.

Studies Completed to Date:

Two Site Visits Two site visits were conducted for SSA 13 prior to the initiation of SSP field activities. The first site visit was conducted in February 1995. During this visit, the battery wash procedures and neutralization process were determined and that battery washing occurred until 1987. Because of the nature of past practices at SSA 13, it was unlikely that any additional environmental releases were possible. The battery wash area has been underlain by 6-inches of concrete since operations at Building 529 began in the 1940s. The pavement on the western side of Ballard Road and the eastern side of Building 529 sloped toward the storm drain and surface water runoff was channeled to the sewer system and out to the Ballard Creek headwaters. The second site visit was conducted in November 1995. It was confirmed that the drain was connected to a storm sewer line at this time.

SSP Investigation Subsurface soil and groundwater samples were collected from the area near the storm water drain near the concrete platform of Building 529. Subsurface soil and groundwater samples were collected from the area near the storm water drain near the concrete platform of Building 529. VOCs were detected in the subsurface soil directly above the groundwater and in the groundwater. The VOCs in the subsurface soil are most likely due to the groundwater contamination and the fluctuation in groundwater levels that occur seasonally or after significant precipitation events. Elevated levels of inorganics detected in groundwater, which were not detected in subsurface soil, were within the range of background concentrations. Results of the human health and ecological risk screening conclude that no further RI/FS efforts or remedial actions are necessary for SSA 13 (Baker, 1997c). Groundwater will not be investigated as part of GWOU III since the human health and ecological risk screening did not indicate unacceptable risks from exposure to groundwater.

Status: No further action.

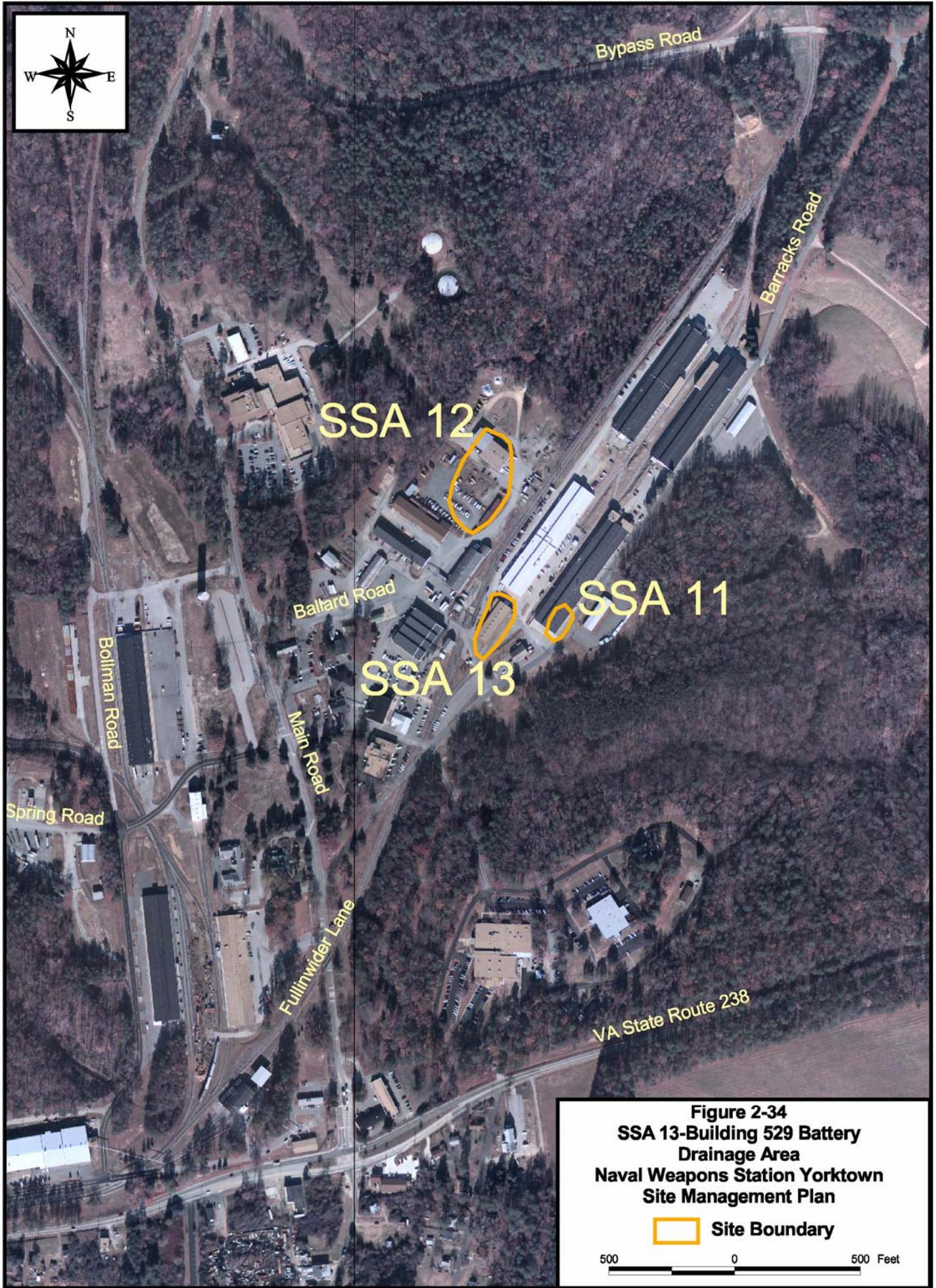


Figure 2-34
SSA 13-Building 529 Battery
Drainage Area
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

SSA 14 – Building 537 Discharge to Felgates Creek

Site Description:

SSA 14 occupies an area of approximately 0.4 acres, and is located outside of Building 537 and upstream of Site 8 (NEDED Explosives-Contaminated Wastewater Discharge Area) in the north central portion of the facility. This SSA consists of a pipe leading from the building, through which nitramine-contaminated wastewater was reportedly discharged to Felgates Creek.

Summary of Studies Completed:

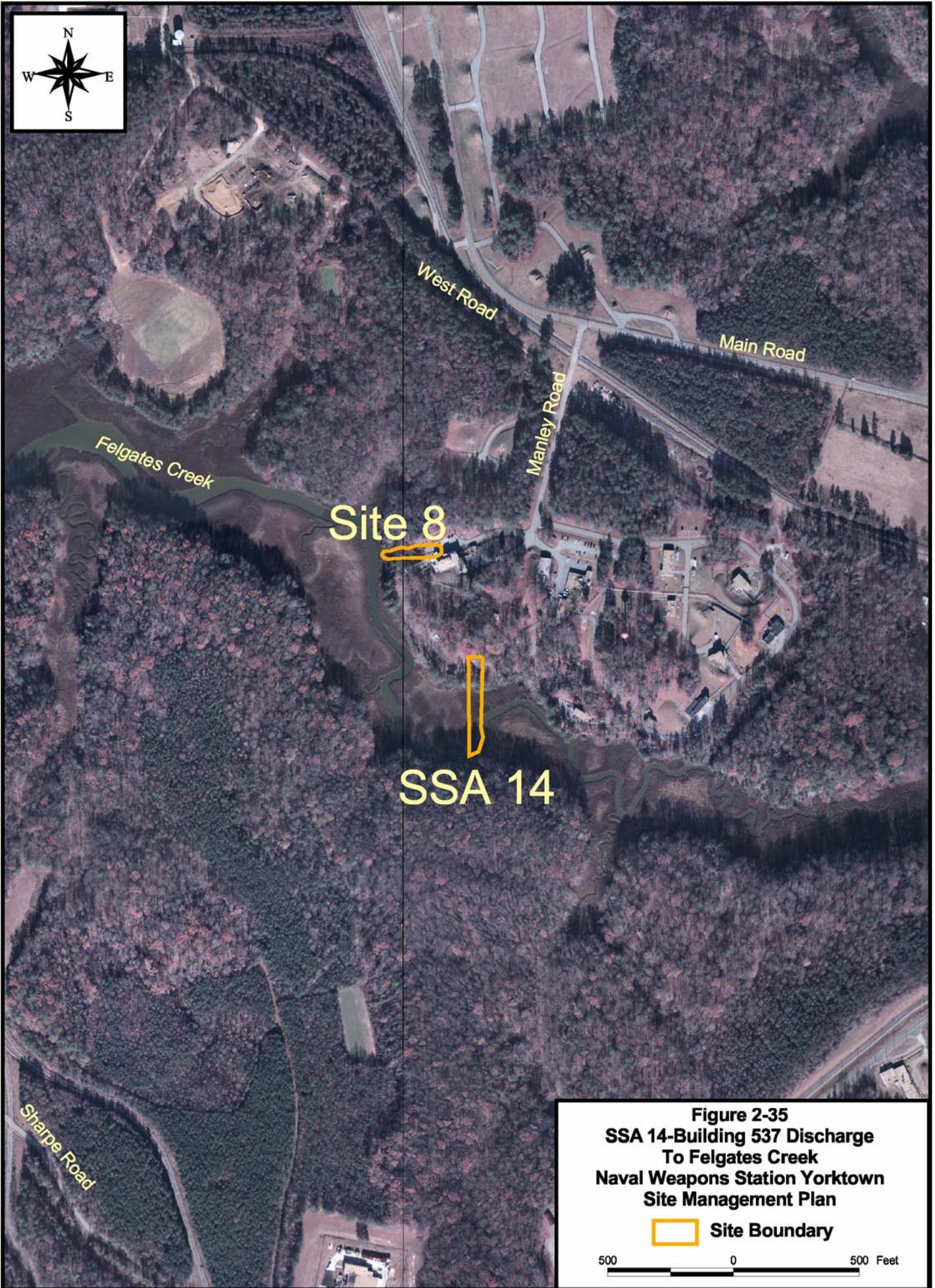
Relative Risk Ranking A Relative Risk Ranking Data Collection Investigation was conducted at SSA 14 during late October 1995. The objective of this effort was to gather contaminant, pathway, and receptor information to be used in the Navy's Relative Risk Ranking System. Prior to this investigation, no samples had been collected at SSA 14. Surface soil, surface water, and sediment samples were collected, and all samples were analyzed for nitramine compounds. Explosives were detected in one surface soil (HMX and RDX), one surface water sample (HMX, RDX, and amino-dinitrotoluenes [amino-DNTs]), and in one sediment sample (HMX) (Baker, 1995e).

Focused Biological Sampling and Preliminary Risk Evaluation Report The Focused Biological Sampling and Preliminary Risk Evaluation Report summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown, including Lee Pond, Roosevelt Pond, Felgates Creek, and Indian Field Creek (Baker and Weston, 1993b).

Round Two RI The Round Two RI for SSA 14 was conducted to: (1) develop an RI report based on evaluation of Round One and Round Two field investigation results; (2) assess the nature and extent of contamination at SSA 14 and/or identify data gaps preventing an adequate understanding of site conditions; and (3) assess potential human health and ecological risks associated with any contamination at SSA 14. The initial Round Two RI field investigation was conducted in 1997. During analysis of these results, additional data gaps were revealed; therefore, additional well installation and groundwater sampling occurred in 2000. The surface water and sediment at Site 8 and SSA 14 were investigated together because the two sites are located close together. Data from Site 8 and SSA 14 were combined and risks evaluated for the combined data set to more accurately assess impacts from the sites. The results of the Round Two RI for SSA 14 indicated that unacceptable total site risks exist to hypothetical future young child and adult residents (Baker, 2004a).

Pre-Removal Characterization of Soil The soil sampling event was conducted in June 2005. The purpose of this study was to recharacterize the soil conditions at SSA14 to support a planned removal/remedial action at the site. As a result of this supplemental field sampling, it was necessary to conduct an ecological re-evaluation to incorporate new data. The primary field investigation objective was to gather surface and subsurface soil information to determine the extent of chemicals identified as either human health or ecological COCs within the area immediately surrounding the SSA14 drainage tract (Baker, 2005f).

Status: The draft EE/CA for Site 8 and SSA 14 is currently in progress. Following completion of the EE/CA, a removal action at SSA 14 will be conducted. Groundwater will be addressed under GWOU IV.



SSA 15 – Sewage Treatment Plant #1 Sludge Drying Beds and Discharge Area

Site Description:

SSA 15 is comprised of the sewage treatment plant (STP) #1/Sludge Drying Beds and Discharge Area and represents AOCs 5, 6, and 7, which are also former sewage treatment plants. SSA 15 is located in the southeastern corner of the WPNSTA, east of Buildings 3 and 4 and south of Site 12 (Barracks Road Landfill). This site covers approximately 0.3 acres and consisted of an Imhoff tank, a trickling filter, a sludge drying bed, and a chlorination unit. Wastewater reportedly entered the Imhoff tank, which operated as a primary settling basin for the waste. The water then was passed through the trickling filter for biological treatment and pumped back to the Imhoff tank for secondary settling. The water was chlorinated in the chlorination unit and discharged to a tributary of Ballard Creek. Sludge from the Imhoff tank periodically was removed and placed in the sludge drying bed. STP #1 received and managed only sanitary waste from physical plants and the Officer's Club located nearby, but may have treated nitramine-containing and other industrial wastewater. WPNSTA personnel have reported that during the operation of STP #1, a mercury-containing bearing on the trickling filter cracked, allowing mercury to be released. Also, WPNSTA personnel indicated that sludge from SSA 15 was transported to SSA 6 and land farmed.

Studies Completed to Date:

SSP Investigation As part of the SSP investigation, surface soil, subsurface soil, groundwater, surface water, and sediment samples were collected from SSA 15. Results of the SSP investigation determined that SSA 15 does not appear to be the source of contamination to adjacent surface waters and sediment. Therefore, RI/FS activities were not recommended. Sampling at SSA 15 has been conducted in association with continued investigative activities at Site 23, located to the north of the SSA. As part of this investigation, groundwater has been further assessed and surface water samples were collected in the intermittent streams to the west and south of the SSA (Baker, 1996b).

2001 Removal Action Demolition activities of the STP were conducted in 2001. Sediment sampling conducted as part of the removal action indicated that the main bearing of the trickler may have contained elemental mercury. Sampling of sediment in Ballard Creek near STP 2 was conducted in August 2003. Results of the sediment sampling indicate the presence of mercury.

Status: Further investigation may be required.

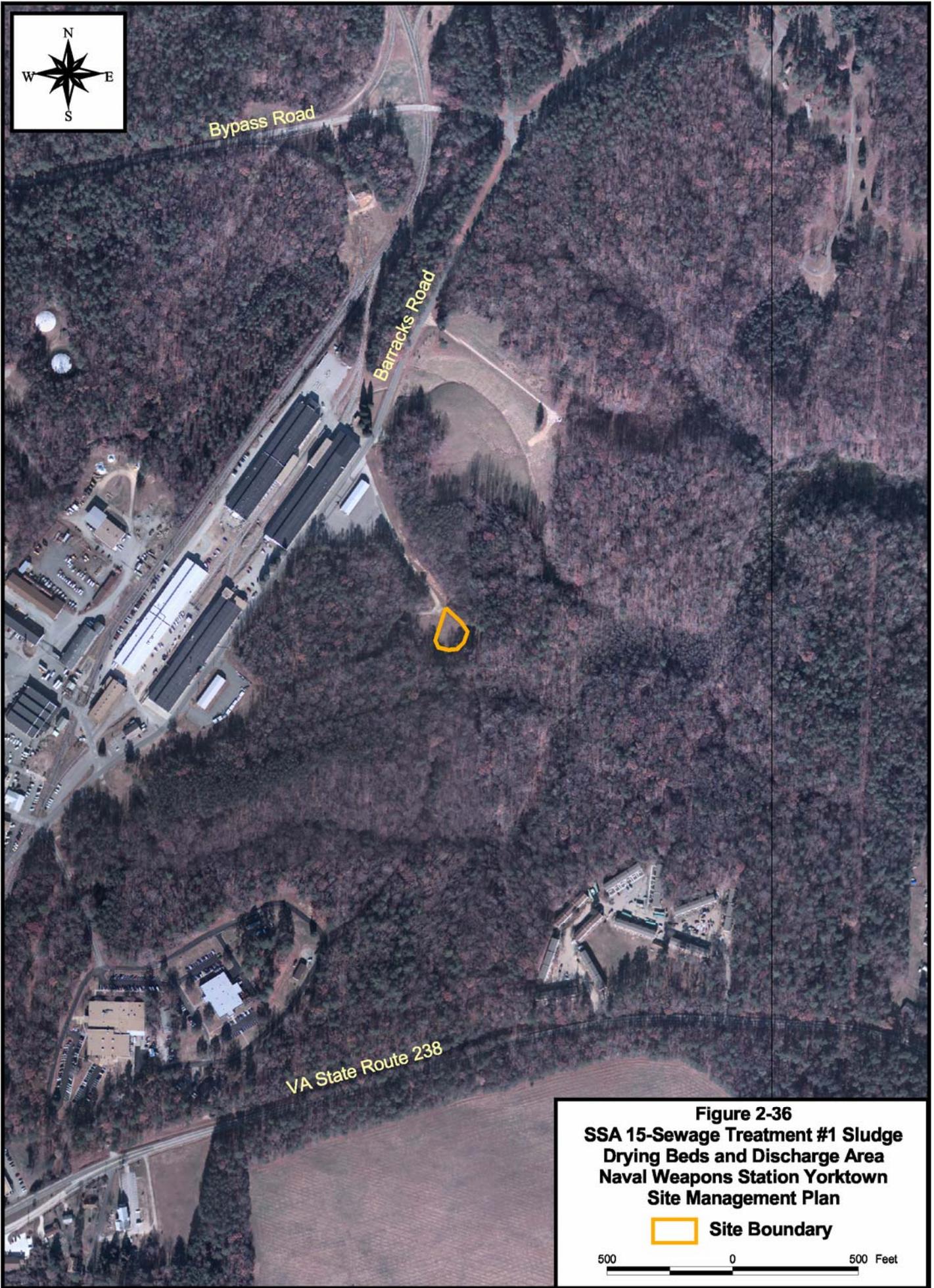


Figure 2-36
SSA 15-Sewage Treatment #1 Sludge
Drying Beds and Discharge Area
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

SSA 16 – Building 402 Metal Disposal Area and Environs

Site Description:

SSA 16 is located between West Road and a set of railroad tracks, just west of Building 402, and encompasses the northern area of Site 16. The area is a large dirt field, approximately 0.4 acres, where scrap metal was stored. Dumpsters containing scrap metal were located on the lower southwest side of the yard; scrap metal and empty drums were also scattered over the ground surface near these dumpsters. This area was reportedly used for scrap metal storage prior to the construction of the Hazardous Waste Storage Facility. SSA 16 was evaluated in conjunction with Site 16 because of its proximity and geophysical data, which indicate overlap between the two areas.

Studies Completed to Date:

Round Two Remedial Investigation The media sampled during the Round Two RI included surface soils, subsurface soils, groundwater, surface water, sediment and biological samples to supplement the Round I Remedial Investigation samples and the Removal Action confirmation sampling. The results of these samples were utilized to develop Human Health and Ecological Risk Assessments. Low levels of PCBs were detected in the surface soil and sediment. VOCs were identified in the shallow groundwater. The risk assessment determined that the levels do not pose an immediate threat to human health or the environment. Risk to future residents was identified (Baker, 1995a).

Proposed Plan The Proposed Plan for SSA 16 was released to the public for review and comment in August 1995. In addition a public meeting was held on August 23, 1997 to provide the community information about the preferred remedial alternative under consideration and to seek public comments. The selected remedy was identified as “No Further Remedial Action with Institutional Controls.” No further remedial actions are necessary because the removal action was successful in removing the source of potential contamination at the site. Institutional controls, such as land use restrictions, will be used to prevent residential use of the area at SSA 16. These controls will also be used to prevent the use of shallow groundwater in this area by restricting installation of water supply wells.

ROD The SSA 16 ROD was signed in September 1995. The ROD specified no further remedial action with the implementation of institutional controls.

Remedial Design for Land Use Controls A draft remedial design for SSA 16 is in progress. The SSA 16 remedial design specifies land use control implementation.

Status: Institutional controls are in place. The draft remedial design is in progress. Groundwater will be addressed under GWOU IV.



Figure 2-37
SSA 16-Building 402 Metal Disposal
Area and Environs
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

SSA 17 – Building 1456 Mark 46 Waste Otto Fuel Tank

Site Description:

SSA 17, which occupies an area of approximately 330 feet by 310 feet, is located approximately 400 feet north of Sharpe Road and approximately 2,000 feet northwest of the intersection of Sharpe and Lee Roads in the central portion of WPNSTA Yorktown. This area previously consisted of an inactive, 5,000-gallon UST and a network of ancillary drain pipes. The tank, located under the parking apron, was used to store waste Otto fuel generated during cleaning of MK 46 torpedoes. Waste Otto fuel is a mixture of Otto fuel and water which potentially contained oil, denatured ethyl alcohol, detergent, and trace amounts of cyanide. In June 1988, a tank integrity test was performed on the waste Otto fuel tank. The tank system failed the hydrostatic integrity test and was subsequently taken out of service. The floor drains leading to the tank were sealed and a RCRA closure and post-closure plan was submitted to VDEQ in November 1988. The 5,000-gallon waste Otto fuel UST system was removed in March 1995. The MK 46 torpedo shop subsequently accumulated waste Otto fuel in compatible, 55-gallon drums, which were stored for less than 90 days prior to transport off-site for disposal. Waste Otto fuel is not currently generated or stored at SSA 17.

Studies Completed to Date:

Site Characterization In 1992, a site characterization of the area surrounding Building 1456 was conducted. This site characterization was performed to determine if activities relating to the waste Otto fuel tank had adversely impacted soil or groundwater.

SSP Investigation The SSP investigation included the collection of surface soil, subsurface soil, and groundwater samples. As part of the SSP, human health and ecological risk screenings were conducted. ICR values for environmental media were within USEPA's target risk range. HI values exceeded one for subsurface soil and unfiltered groundwater only. These exceedances were attributable to naturally occurring inorganic constituents that were detected at SSA 17 within background ranges. As a result, no further RI/FS efforts or remedial actions are necessary for SSA 17. A No Further Action Decision Summary was signed in March 1996 (Baker, 1996c). Groundwater will not be investigated as part of GWOU V since the human health and ecological risk screening did not indicate unacceptable risks from exposure to groundwater.

Status: No further action.



Figure 2-38
SSA 17-Building 1456 Mark 46
Waste Otto Fuel Tank
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

SSA 19 – Beaver Road/Ponds 11 and 12 Drainage Area and Environs

Site Description:

Circumjacent to SSA 2, SSA 19, which occupies an area of approximately 164 acres, is located in the northwestern section of WPNSTA Yorktown and encompasses the area surrounding the EOD range, including drainage into Ponds 11 and 12. A smaller pond, Pond 11A, is situated along its northwest perimeter. The EOD range began operations in 1970 when the former disposal range (SSA 2) was taken out of service.

SSA 19 is used for explosive waste destruction. Soil is mounded approximately 40 feet high, holes are dug about 12 to 20 feet into the mound of soil, and the holes are filled with explosive ordnance, then backfilled. The explosives are detonated; the same soil is used repeatedly. During the winter, this area is covered and grass is grown to prevent erosion. Unlined settling ponds collect runoff through pipes from this area. Effluent from these ponds may discharge to nearby Ponds 11 and 12 and ultimately to King Creek and the York River. In addition, nine metal containers of varying sizes are used for burning explosive waste when hotter burning is required. This type of burning is performed one to two times per year, primarily in the summer.

SSA 19 does not include the operational area of the Open Burn/Open Detonation (OB/OD) Range. The OB/OD Range is currently being addressed under CERCLA but has not been designated as a site.

Studies Completed to Date:

SSP Investigation The SSP investigation included the collection of surface soil, subsurface soil, groundwater, surface water, and sediment samples. As part of the SSP, human health and ecological risk screenings were conducted. ICR and HI values for unfiltered groundwater, subsurface soil, surface water, and sediment exceeded USEPA's target risk ranges due to the presence of naturally occurring inorganic constituents that were detected at SSA 19 within background ranges. As a result, no further RI/FS efforts or remedial actions are necessary at SSA 19. A No Further Action Decision Summary was signed in March 1996 (Baker, 1996c).

Status: No further action for soil. Groundwater to be investigated as part of GWOU X. The OB/OD Range will be addressed as a separate site.

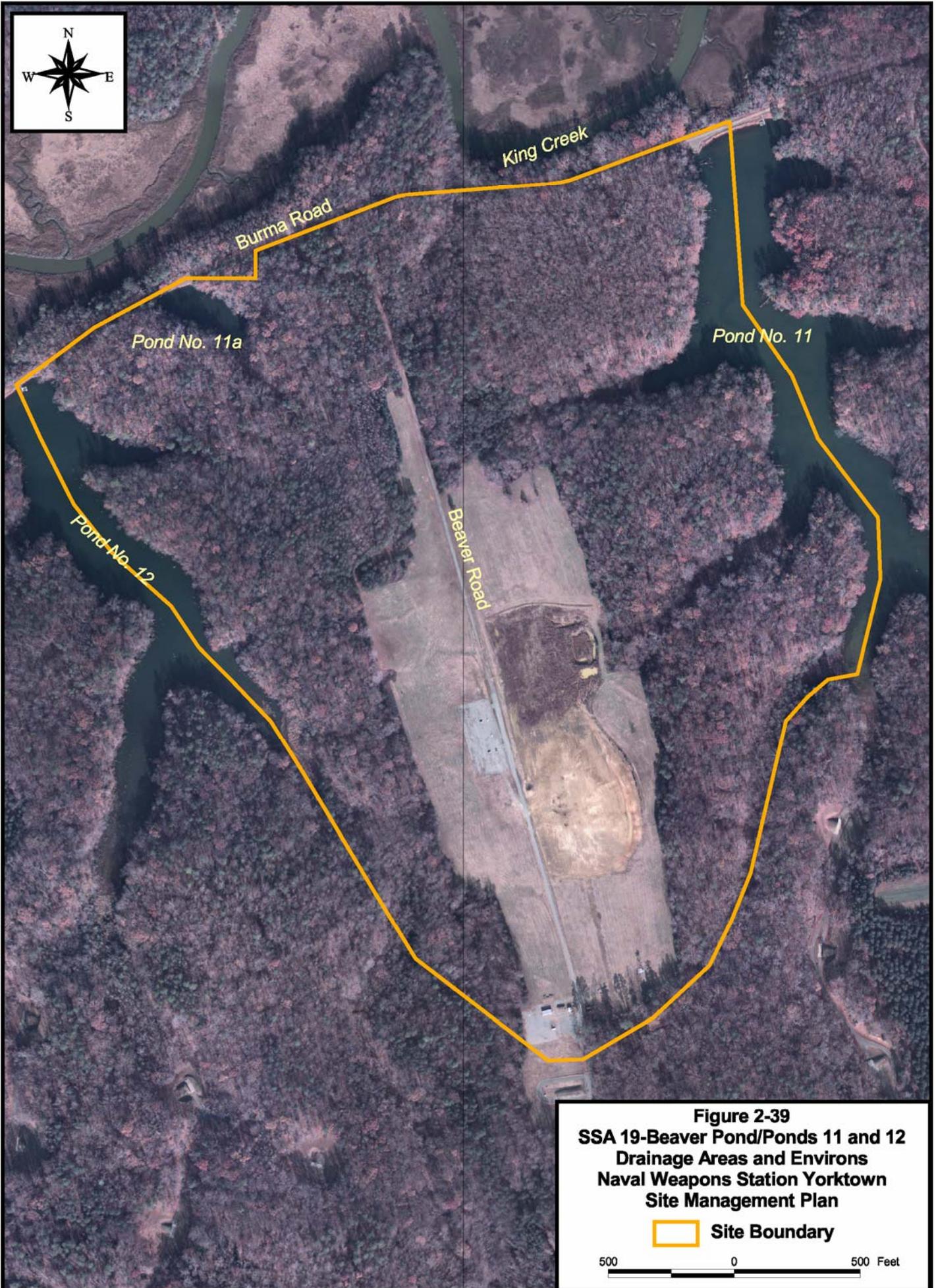


Figure 2-39
SSA 19-Beaver Pond/Ponds 11 and 12
Drainage Areas and Environs
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site Description:

Roosevelt Pond is an approximately 22.2 acre pond located in the eastern portion of WPNSTA Yorktown. The pond receives stormwater from the industrial area and sites therein, such as SSAs 4 and 5. Roosevelt Pond empties into the York River.

Studies Completed to Date:

Bioaccumulation Initiative Samples of fish, shellfish, surface water, and sediment were collected for the Bioaccumulation Initiative study and analyzed for TCL SVOCs, TCL pesticides and PCBs, and TAL inorganics. Low levels of SVOCs, pesticides, and PCBs were detected within the fish tissue and sediment. The concentrations did not produce an unacceptable risk, but it was recommended that additional studies be conducted to identify the PCB source, maximum potential tissue levels, and tissue contaminant levels to determine if the risk estimate was accurate.

Focused Biological Sampling and Preliminary Risk Evaluation Surface water, sediment, fish, and shellfish samples were collected and analyzed for TCL SVOCs, TCL pesticides and PCBs, TAL inorganics, and TOC. Results of the sampling indicated that low levels of SVOCs were detected in the sediment (PCBs were not detected). These concentrations did not produce a risk for the consumption of fish (Baker and Weston, 1993b).

SSP Investigation Surface and subsurface soil, surface water, and sediment samples were collected during the SSP. Results of the sampling conducted indicated the presence of elevated levels of inorganics in the surface and subsurface soil; however, the levels were generally within the range of station-wide background levels and therefore do not pose a risk to human health. VOCs, 3-nitrotoluene, pesticides, and inorganics were identified as ecological COPCs in a conservative risk evaluation. The potential for ecological risk was determined to be acceptable, however, and no further investigation is required. Groundwater will not be investigated as part of GWOU II since the human health and ecological risk screening did not indicate unacceptable risks from exposure to groundwater. A No Further Action Decision Summary was signed in May 2004 (Baker, 2004d).

Status: No further action.



Figure 2-40
SSA 21-Roosevelt Pond
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site Description:

SSA 22 (formerly AOC 4) consists of approximately 0.5 acres in the eastern portion of WPNSTA Yorktown adjacent to Building 530, which was operated from 1945 until the early to mid 1980s. Bomb fins and wings, inert bomb casings, and various other inert ordnance items were grit blasted inside Building 530 in a blasting booth and outside at the northern end of the building near a personnel door. Blasting material may have been composed of coal slag or steel grit. The blasting booth within the building utilized a dust collector; accumulated dust may have been deposited in the vicinity of the northern side of Building 530.

Studies Completed to Date:

AOC Investigation SSA 22 was investigated in 1995 as AOC 4. Three surface soil samples were collected and analyzed for TAL inorganics. Elevated concentrations (above USEPA residential soil screening criteria) of several inorganics were detected in the soil samples which warranted its retention for further investigation under the SSP.

1998 Removal Action In 1998, OHM Remediation Services (OHM) performed a removal action of the lead contaminated soil at SSA 22. The soil was excavated to depths of 6-inches to 2 feet below ground. Confirmation soil samples collected after the removal of contaminated soil indicated that soil levels were below the remedial action level of 200 mg/kg.

SSP Investigation Surface soil, subsurface soil, and groundwater samples were obtained during the SSP investigation at SSA 22. VOCs, SVOCs (PAHs), and inorganics were identified in the surface and subsurface soil. Concentrations of five VOCs were detected within the groundwater samples. These detections are located downgradient of a UST on the west side of Building 350 and may be associated with releases from the UST or the detections may be associated with the use of solvents as degreasers. The detected subsurface soil inorganic concentrations were within the range of Station-wide background levels. A human health risk assessment was performed as part of the SSP and unacceptable carcinogenic and noncarcinogenic risk existed due to the surface soil and groundwater. The 1998 removal action remediated human health risks from exposure to contaminated soil. Surface water and sediment were not collected from this SSA; therefore, an ecological risk screening was not conducted. Based on the removal action and confirmation samples, no further action for soil is required. A No Further Action Decision Summary was signed in May 2004 (Baker, 2004d).

Status: Groundwater at the site will be addressed under GWOU VII.



Figure 2-41
SSA 22-Sand Blasting Grit Pile
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

SSA 23 – Coal Storage Area

Site Description:

SSA 23, an area of approximately one acre adjacent to Building 708, was used to store coal from 1953 to the late 1970s. A nine-inch thick reinforced concrete wall surrounded the coal pile. The walled-in storage area is referred to as Building 1827. Every 20 feet, a 2- by 6-inch hole, which released water from the coal storage area, was located at the ground surface of Building 1827 on the north side of the walled area.

Studies Completed to Date:

AOC Investigation SSA 23 was investigated in 1995 as AOC 21. Elevated concentrations of inorganics, including arsenic and vanadium, were detected in surface soil samples. Some samples were collected near the drainage holes in the wall surrounding the coal pile. Additional investigation under the SSP was recommended to determine potential human health risks and ecological concerns associated with this SSA.

SSP Investigation Surface, subsurface and groundwater samples were collected as part of the SSP investigation. VOCs and SVOCs (PAHs) were identified in the surface soil samples, most likely associated with the coal pile. Unacceptable risk was calculated due to iron and arsenic in the surface and subsurface soil. Delineation and removal of the arsenic hot spot was recommended for SSA 23 (Baker, 2001b and 2004d).

Delineation of Arsenic Hot Spot In August 1998, Baker collected five surface soil samples outside the weep hole to delineate arsenic contamination in the wall of the coal storage area.

1998 Remedial Action In the autumn of 1998, the Navy excavated the arsenic contaminated soil adjacent to the north wall of the coal storage structure. The soil was excavated to a depth of one foot.

1999 Soil Excavation Additional soil excavation was performed in June of 1999 within two areas that had elevated levels of arsenic in the soil, as determined by the confirmation samples collected during the previous remedial action. Closure of the SSA was established with the proper disposal of all excavated soil.

Addendum to SSP Investigation Based on the removal of inorganic-contaminated soil, no further action is required for soil at SSA 23. A No Further Action Decision Summary was signed in May 2004 (Baker, 2004d).

Status: Groundwater at the site will be addressed under GWOU VIII.



SSA 25 – Wetlands Downgradient of Beaver Pond

Site Description:

SSA 25 is located in the extreme eastern portion of the facility property (Figure 2-1). The area is approximately 5.6 acres, and is located between two impounded portions of Ballard Creek: a natural beaver dam (Impoundment No. 1) which forms the eastern edge of Beaver Pond and a second impoundment approximately 750 feet down-gradient, whose history of construction is unclear. Ballard Creek is hydraulically connected for its entire length. Water flows from the erosive, up-gradient areas down to Beaver Pond, then over a low area along the northern edge of the beaver dam into the down-gradient wetlands, and then through a break in the southern edge of the second impoundment towards the York River. The second impoundment serves as a barrier to tidal influences from the York River. The centerline of Ballard Creek, which meanders throughout the area, marks the property boundary between WPNSTA Yorktown and the Colonial National Historic Park.

Studies Completed to Date:

Project Plans for Step 3b and 4 of the Baseline ERA Draft Project Plans for Step 3b and 4 of the Baseline ERA have been developed. The primary purpose of this investigation is to provide additional data with which to refine previous ecological risk estimates from potential exposures to mercury in wetland sediments of the study area, the area of Ballard Creek located between Impoundments No. 1 and No. 2. Data also will be collected to address potential exposures to mercury in wetland surface waters (Baker, 2005).

Status: The draft Project Plans are currently in review. Groundwater at the site may be addressed under GWOU III.



Barracks Circle

York River

Colonial Parkway

Ballard Creek



Figure 2-43
SSA 25-Wetlands Down-Gradient
of Beaver Pond
Naval Weapons Station Yorktown
Site Management Plan

 **Site Boundary**

500 0 500 Feet

3.0 CAX SITE AND AOC DESCRIPTIONS

This section provides summaries of the site histories and status for each of the 12 sites and 7 AOCs. A summary of the significant CERCLA documents completed for each site is presented chronologically. Figure 3-1 depicts the soil and groundwater status for each site and AOC while Figures 3-2 through 3-18 show site-specific layouts.

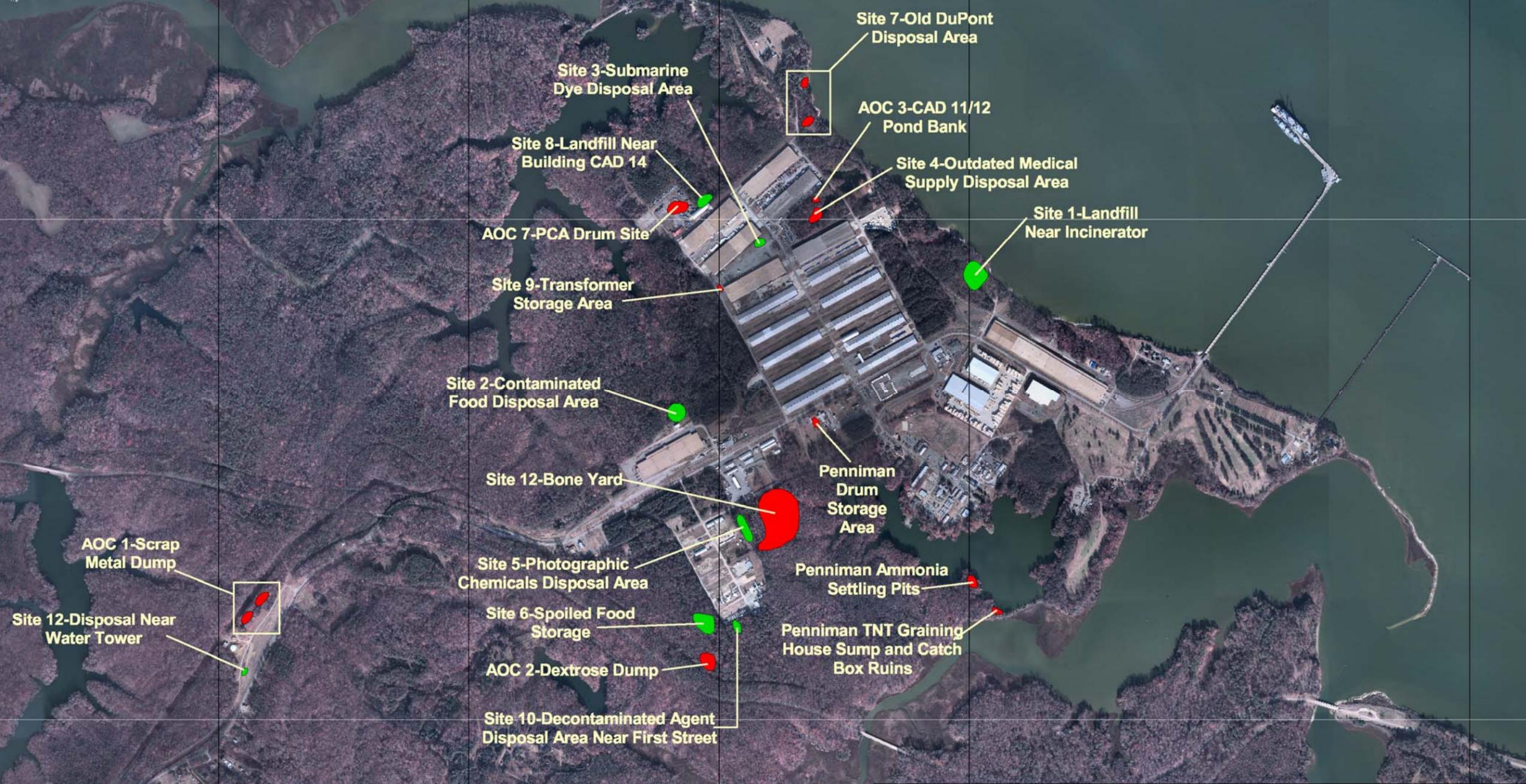


Figure 3-1
Cheatham Annex Site Management Plan
Soil and Groundwater Status

	Remedial Site Investigation/Removal Action (RSI/RA) in progress
	No Further Action with Land Use Control required (NFA LUC required)
	Remedial Site Investigation/Removal Action (RSI/RA) complete/No Further Action (NFA) Site

1400 0 1400 2800 Feet

Site 1 – Landfill Near Incinerator

Site Description:

Site 1, which covers approximately 1.3 acres, is located along the York River behind the old incinerator, which was dismantled between 1989 and 1992. From 1942 to 1951 the landfill was used as a disposal area for burn residues, and from 1951 to 1972, it was used as a general landfill. A variety of wastes, including empty paint cans and paint thinner cans, cartons of ether and other unspecified drugs, railroad ties, tar paper, sawdust, rags, concrete, and lumber, were burned and disposed in the landfill until 1981, after which date the landfill was no longer used. During its operation, an estimated 34,500 tons of solid waste were buried at the landfill. The landfill occupied an area of approximately one acre; an additional northern area of impacted soils (referred to as the debris pile) occupied approximately three tenths of an acre. The debris pile contained cables, metal storage containers, an empty storage tank, automobiles, airplane and boat parts, and other miscellaneous items. This area was previously designated as AOC 5 - Debris Area, but is currently managed as part of Site 1.

The edges of the landfill along both the wetland and the York River were historically steep (approximately 20 feet high, nearly vertical in areas) and unvegetated. Landfill contents (including metal scrap, wood, drums, containers, and other miscellaneous debris) were exposed along this perimeter. Continued erosion of the slopes may have caused exposure and migration of contaminated soil and debris to the adjacent wetland area over time. Baker conducted a limited shoreline erosion assessment of the river bank in the vicinity of Site 1. The assessment concluded that the erosion of the river bank was caused by high water levels and wave action. In addition, a small area along the northeastern perimeter was eroding. The area in which the landfill perimeter was eroding was difficult to access during high tide and was littered with fallen/washed up trees/wood.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices (NEESA, 1984). Because of the types of wastes disposed at the site (including paints, paint thinners, ether and unspecified drugs), the IAS recommended additional study to investigate the potential contamination of groundwater and the York River due to Site 1 contaminants.

Confirmation Study The Confirmation Study Step 1A (Verification), Round One (Dames and Moore, 1986) included installation of two new monitoring wells and collection of groundwater samples from the four existing wells and two newly installed wells. The Confirmation Study Step 1A (Verification), Round Two (Dames and Moore, 1988) included collection of an additional round of groundwater samples from the six monitoring wells in 1987.

Remedial Investigation Interim Report This report summarized the findings of the Confirmation Study. Potentially site-related contaminants detected in the Confirmation Study groundwater samples included oil and grease and total phenols. The report recommended the site for further investigation to better define the nature and extent of contamination at the site. Recommended efforts included aerial photographic analysis, collection of an additional round of groundwater samples, and performance of a risk assessment.

Site Investigation This study included installation of two new monitoring wells with collection of soil samples from both monitoring well borings. Groundwater samples were collected from each of the existing and newly installed monitoring wells. A total of six sediment samples were collected from three sampling stations. Samples of ash/soil exhibited elevated levels of metals, PCBs, and TPH, and

detectable levels of SVOCs. The VOCs, TPH, and metals were detected in groundwater, and the sediment samples contained low levels of TCE, SVOCs, TPH, and metals. The Site Investigation concluded that a major release of contaminants to groundwater has not occurred and that as most of the debris is adequately discovered, no immediate response or further investigation is required. The report did recommend re-sampling of monitoring wells for VOCs and dissolved metals and a file search of past records to verify closure status of the landfill (Weston, 1994).

SSP Investigation In August 1997, Baker collected groundwater samples from seven of the eight monitoring wells at Site 1. The samples were analyzed for TCL organics and TAL metals. No organic compounds were detected. The SSP also included human health and ecological risk screening to determine whether contaminants detected in environmental media pose unacceptable risks to human receptors and/or the environment. The risk screening process was completed in accordance with the SSP Guidelines (Baker, 1994d), and included previously collected soil and sediment samples. The SSP Report concluded that based on the available analytical data, no unacceptable human health or ecological risks are posed by the site. In addition, based on the available analytical data, no additional investigation or remedial action is warranted. Further, the soil cover of the landfill should be maintained.

Field Investigation The Field Investigation was conducted by Baker in 1998. This study included a geophysical survey to define the lateral extent of the landfill, and limited soil, sediment, and surface water sampling. Elevated levels of contaminants (primarily PAHs and heavy metals) were detected in soil and sediment. It was recommended that the surficial debris be removed from the flat, inter-tidal beach area in the vicinity of the eroding bank and interim measures be installed to mitigate erosion in the 60-foot stretch of shoreline where the landfill was being undermined (Baker, 1999d).

1999 Removal Action A TCRA was completed in August 1999 to remove the debris that had collected on the beach area and to stabilize the toe of the bank in the erosion area. Toe stabilization was accomplished by installation of three sand filled geosynthetic tubes. The Final Action Memorandum for the TCRA was prepared by Baker in August 1999 (Baker, 1999e).

Round One RI Results of the Round One RI indicated that the landfill contained a variety of wastes that were both non-hazardous and hazardous. The analytical data showed that samples of landfilled material exhibited the presence of PAHs, pesticides, PCBs, and inorganic compounds. The data showed evidence suggesting that the landfill has impacted the surrounding environment to a limited extent. The human health and ecological risk assessments conducted as part of the Round One RI determined that there were unacceptable risks to receptors from exposure to soil within the landfill. There were no unacceptable risks to receptors from groundwater. Therefore, no additional investigation or remedial action is required for groundwater at the site (Baker, 2004b).

Focused Feasibility Study In November 2000, the Focused Feasibility for Site 1 was submitted. The purpose of the Focused FS for Site 1 was to identify remedial action alternatives that are protective of human health and the environment. The area of concern at Site 1, from a human health risk perspective was the soil within the landfill. From this perspective, the following remediation alternatives were developed for Site 1: No action; Shoreline erosion control, surface debris removal, and soil cover; and surface debris removal and excavation with off-site disposal (Baker, 2000a).

2003 Removal Action Approximately 18,700 cubic yards of contaminated soil and landfill material were removed from the landfill in 2003. An additional 1,100 cubic yards of surface debris was also removed. A riverbank stabilization project was also included as part of the 2003 removal action (Baker, 2003d). Two breakwaters, constructed with Class 2 riprap, were installed in the York River parallel to Site 1.

The tidal surge and rainfall from Hurricane Isabel on September 18, 2003 uncovered a small portion of the landfill along the shore of the York River, which was outside the known landfill boundaries. Additional sampling and analysis was conducted to delineate the extent of this landfill lens. The exposed landfill material and associated contaminated soil were removed. Additional debris present along the treeline southwest of the former landfill was also removed at this time. The original scope of the removal action included the restoration of the wetland area impacted by the removal action as well as the creation of new wetland habitat in the subgrade elevation along the western boundary of the removal limits. Due to funding limitations, this task was not completed.

Wetland ERA In April 2005, a SERA +Step 3a refinement report was finalized for the wetland area adjacent to the former landfill. This report documented a re-evaluation of the wetland habitat based on samples collected following the 2003 NTCRA. Areas with contaminant concentrations which may pose unacceptable risk to ecological receptors were identified (Baker, 2005m).

Status: A pre-removal field investigation to characterize the extent of potential hotspots in the wetland adjacent to the former landfill is planned for the fall of 2005.



York River

D Street

E Street

Sanda Avenue

4th Street

Trailer Road

Figure 3-2
Site 1-Landfill Near Incinerator
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet



Site 2 – Contaminated Food Disposal Area

Site Description:

This site is located in a grassy area in the woods behind the cold storage warehouse. Ammonia-contaminated frozen food was buried in a disposal pit approximately 50 feet in diameter and 12 to 15 feet deep in 1970. The ammonia contamination resulted from a leak that developed in one of the cold storage rooms. The food was buried with cellophane wrappers and boxes intact.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. The site was overgrown at the time of the IAS. The IAS concluded that additional study was not warranted for the site because the wastes buried at the site would naturally decompose (NEESA, 1984).

NFRAP Decision Document The Yorktown Partnering Team agreed on June 18, 2003 to include Site 2 as part of a multi-site NFRAP. The NFRAP Decision Document presents the technical information to support the conclusion that soil and groundwater at Site 2 does not pose an unacceptable risk to human health or the environment. The NFRAP was signed in August 2003 (Baker, 2003c).

Status: No further action.



Figure 3-3
Site 2-Contaminated Food Disposal Area
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 3 – Submarine Dye Disposal Area

Site Description:

This site is located at the northeastern corner of Building CAD 15 and is presently used as a storage lot. Dye was stored in 55-gallon drums on two or three pallets located between the warehouses. The drums corroded and dye leaked onto the ground and into the storm sewer system. On rainy days, puddles containing a green fluorescent dye were observed. At times, the dye would leak into the storm sewer leading to the York River, turning the river green. The Coast Guard notified the Activity, and the drums were subsequently removed in the early 1970s.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. According to the IAS, since the drums were removed, the dye no longer poses an environmental hazard. Therefore, this site was not recommended for additional investigation (NEESA, 1984).

NFRAP Decision Document The Yorktown Partnering Team agreed on June 18, 2003 to include Site 3 as part of a multi-site NFRAP. The NFRAP Decision Document presents the technical information to support the conclusion that soil and groundwater at Site 3 does not pose an unacceptable risk to human health or the environment. The NFRAP was signed in August 2003 (Baker, 2003c).

Status: No further action.



Cheatham Pond

York River

Lynch Road

D Street

C Street

B Street

Figure 3-4
Site 3-Submarine Dye Disposal Area
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet



Site 4 – Outdated Medical Supply Disposal Area

Site Description:

Site 4 is located along an unnamed pond just upgradient of Youth Pond, between buildings CAD 11 and CAD 12. In 1968 or 1969, out-of-date medical supplies, possibly including syringes, empty IV bottles, and one-inch metal banding, were unloaded down a bank in this area and covered with soil. Much of that material was reportedly removed from the site because syringe needles were getting stuck in deer hooves. After heavy rains, what appeared to be syringes could sometimes be seen floating in the adjacent pond and in downgradient Youth Pond.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. The IAS concluded that additional study was not warranted for the site due to the inert nature of the materials disposed (NEESA, 1984).

1998 Surface Debris Removal During a May 4, 1998 site visit with VDEQ representatives, packages of what appeared to be unused needles wrapped in foil were noted within the drainage swale leading to the unnamed pond. Reactives Management, Inc. performed a surficial debris removal in May 1998. Approximately 200 pounds of debris and 13 pounds of sharps (metal and plastic) were recovered from the site and incinerated. Debris was removed from the surface, by hand or with hand tools, and no intrusive work (e.g., excavation) was conducted.

Site Inspection Report The Final Site Inspection Report recommended that a limited investigation to define the lateral extent of debris at the site be performed. In addition, an EE/CA was recommended to evaluate the most appropriate means of removing or covering the debris that is present at the site (Baker, 2001f).

Trenching Study In November 2001, Baker conducted some trenching at Site 4 to define the lateral extent of the debris.

SERA In June 2005, a SERA for Sites 4 and 9 was finalized. The primary objective of the SERA was to screen soil, surface water, and sediment from Sites 4 and 9 to determine if potential risk to ecological receptors warrant either (1) additional investigation beyond the conservative screening steps of the ERA process (unacceptable ecological risks possible), or (2) the removal of sites from further ecological consideration (no unacceptable risks). A second objective was to identify any data gaps or areas of unacceptable uncertainty that may require the collection of additional data to support ERA evaluations beyond the screening level. Based on the results of the SERA, it is recommended that Sites 4 and 9 continue to Step 3a of the Navy ERA process since multiple Chemicals of Potential Concern (COPCs) and complete exposure pathways were identified at each site. The SERA also concluded that insufficient data are available at Sites 4 and 9 to conduct Step 3a of the ERA process (Baker, 2005n).

Status: Further investigation may be required.



Cheatham Pond

York River

Lynch Road

B Street

C Street

D Street



Figure 3-5
Site 4-Outdated Medical Supply
Disposal Area
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet



Site 5 – Photographic Chemicals Disposal Area

Site Description:

In 1967 or 1968 outdated photographic chemicals were reportedly disposed in a pit of unknown dimensions. This site was originally a borrow pit located behind (southeast) the old DuPont munitions factory area, near Second Street.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. Based on the small quantity and the non-hazardous nature of the chemicals that were disposed, the IAS concluded that further study was not warranted (NEESA, 1984).

1998 Site Visit In June 1998, Baker and Navy representatives visited Site 5 and reconnoitered the area to locate the site. No signs of contamination, distressed areas, or evidence of the disposal pit could be identified. Based on the small quantity of the chemicals that were reportedly disposed and the lack of evidence of contamination, the site was not considered a significant source of contamination.

NFRAP Decision Document The Yorktown Partnering Team agreed on June 18, 2003 to include Site 5 as part of a multi-site NFRAP. The NFRAP Decision Document presents the technical information to support the conclusion that soil and groundwater at Site 5 does not pose an unacceptable risk to human health or the environment. The NFRAP was signed in August 2003 (Baker, 2003c).

Status: No further action.



Figure 3-6
Site 5-Photographic Chemicals
Disposal Area
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 6 – Spoiled Food Disposal Area

Site Description:

Site 6 is located to the west of the old DuPont ammunition factory. Reportedly, approximately 750 cubic yards of food spoiled in cold storage were buried in a 12 to 15 foot deep pit around 1970.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. The IAS concluded that additional study was not warranted for the site because the decomposed food was not hazardous (NEESA, 1984).

NFRAP Decision Document The Yorktown Partnering Team agreed on June 18, 2003 to include Site 6 as part of a multi-site NFRAP. The NFRAP Decision Document presents the technical information to support the conclusion that soil and groundwater at Site 6 does not pose an unacceptable risk to human health or the environment. The NFRAP was signed in August 2003 (Baker, 2003c).

Status: No further action.

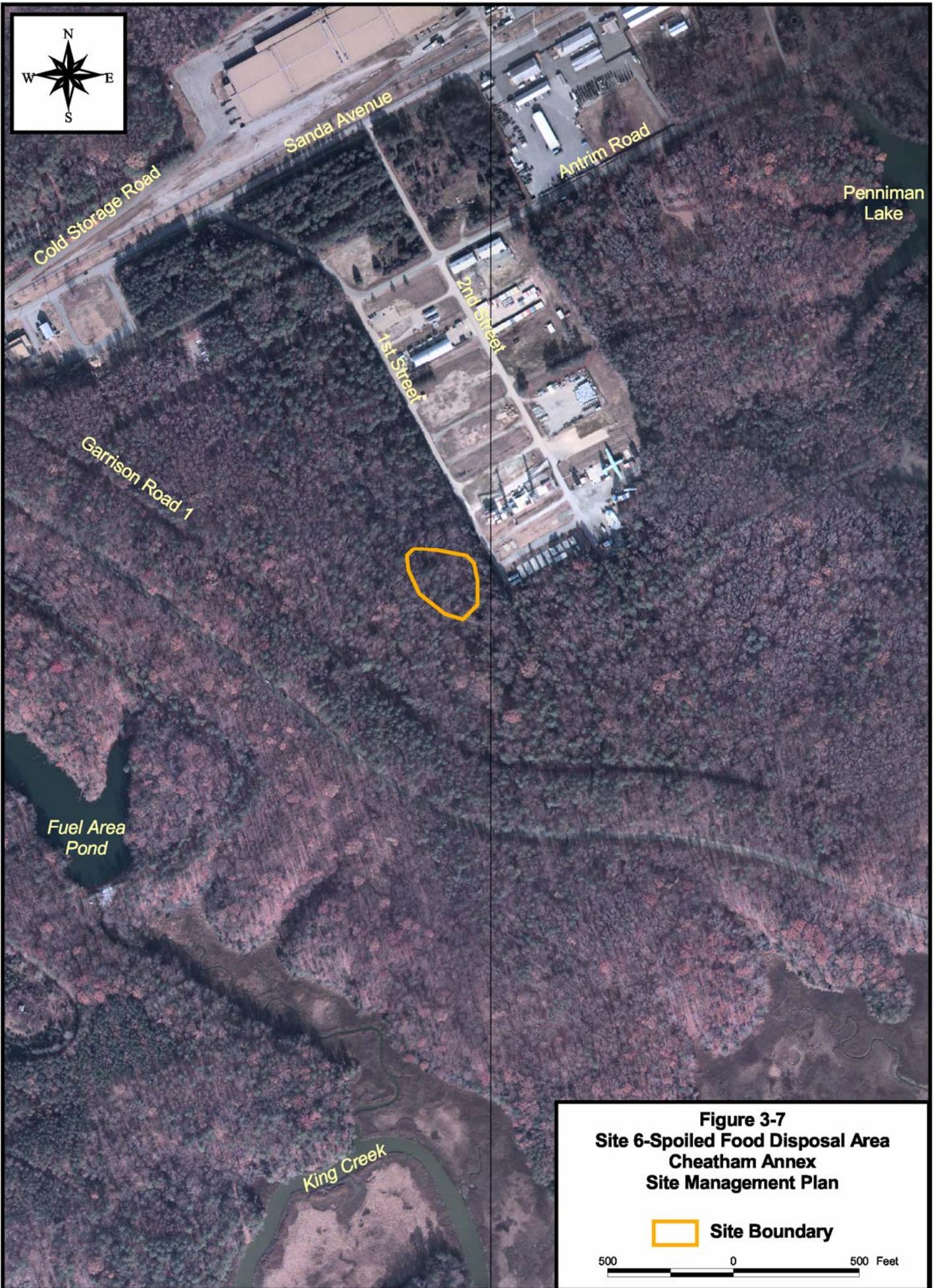


Figure 3-7
Site 6-Spoiled Food Disposal Area
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 7 – Old DuPont Disposal Area

Site Description:

Site 7 is located along the York River. The area is comprised of a flat, sparsely vegetated depression, with a berm along the northern perimeter. Gravel and ballast rock can be seen on the ground surface. To the east of the flat area, the land drops off slightly, and in a very small area along the perimeter, buried debris (pipe, metal, and wood) can be seen outcropping from the edge of the slope and along the beach. The nature of the debris indicates that the disposal occurred more recently than the World War I era. Surface debris on the beach has since been removed.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. According to the IAS, Site 7 received wastes from the City of Penniman and from the DuPont facility. Specific information documenting the types and quantities of wastes was not available. E.I. DuPont de Nemours and Company was contacted during the IAS, but specific information regarding disposal practices was not available. The surface of the site was described as level and supporting a variety of grasses. No evidence of stressed vegetation was noted during the IAS. The western, northern, and eastern boundaries of the site are clearly defined by steep banks rising an estimated 10 to 20 feet in elevation. The IAS also indicates that ammunition waste was disposed at the site, but it is not clear how this determination was made (NEESA, 1984).

1999 Field Investigation In November 1999, Baker performed a field investigation south of the recreational cabins that included test pits to define the lateral extent of buried debris at the site. The debris found within the test pits revealed it was much more recent than World War I era, suggesting that this dump area was not related to the Penniman facility which ceased operations shortly after World War I (Baker, 2001g).

2004 Trenching Study In February 2004, trenching with limited sampling of the site adjacent to Cabin 169 was conducted to delineate the extent of debris. Additional sampling was conducted in April 2004 to further delineate the extent of debris near Cabin 170. The trenching report identified potential soil contamination adjacent to and encompassing Cabins 169 and 170 (Baker, 2004g). In addition, a volume of ash and debris was identified in the southwestern portion of the site where erosion of the slope has occurred. This area is highly vulnerable to further erosion into the York River by surface water runoff and intense wave action. The trenching report recommended further investigation of the site.

2004 Action Memorandum As a result of Hurricane Isabel in 2003, debris from the disposal area was eroding onto the beach and into the York River. An Action Memorandum for a TCRA was signed July 1, 2004. The Action Memorandum only addressed shoreline stabilization along the York River (Baker, 2004h). During mobilization and preparation of the site, a three-inch motor round was discovered and properly disposed. The TCRA was put on hold while the Navy obtains an Explosives Safety Submission (ESS) Waiver.

Status: The TCRA for shoreline stabilization is on hold pending the ESS Waiver. The Navy intends to remove the area of debris and contaminated soil under a separate removal action or remedial action.



Cheatham Pond

Chase Road

York River

Lynch Road

B Street

C Street

Figure 3-8
Site 7-Old DuPont Disposal Area
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 8 – Landfill Near Building CAD 14

Site Description:

Site 8 is located approximately 300 feet north of Building CAD 14 and is estimated to be less than 0.25 acre. The disposal area reportedly consisted of a series of trenches 2,000 feet long and 10 feet deep. The site was used at various times since the early 1940s but was most active before the Site 1 (Landfill Near Incinerator) was opened. Waste was reportedly disposed at the site as recently as 1980.

Specific information documenting disposal practices is not available. Reportedly, only non-hazardous materials such as spoiled meat, spoiled candy, and clothing have been disposed at the site. The surface of the site is level and overgrown with tall grasses, and, at the time of the IAS, there was no surface evidence of waste and no stressed vegetation.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. The IAS concluded that additional study was not warranted for the site because wastes disposed at the site were not hazardous. Based on the inert nature of the materials that were reportedly buried at Site 8 and a site visit conducted in 2002, the site is not considered to be a significant source of contamination (NEESA, 1984).

NFRAP Decision Document The Yorktown Partnering Team agreed on June 18, 2003 to include Site 8 as part of a multi-site NFRAP. The NFRAP Decision Document presents the technical information to support the conclusion that soil and groundwater at Site 8 does not pose an unacceptable risk to human health or the environment. The NFRAP was signed in August 2003 (Baker, 2003c).

Status: No further action.



Figure 3-9
Site 8-Landfill Near Building CAD 14
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 9 – Transformer Storage Area

Site Description:

This site is approximately 7,000 square feet and is located adjacent to the northwest corner of Building CAD 16. Between 1973 and 1980, electrical transformers, some of which contained PCBs, were reportedly stored at the site for repair or disposal. Between 6 and 30 transformers were stored at the site at a time. The storage area was not paved; however it was enclosed by an earthen wall. Transformers were not stored at the site after 1980, and the area was graded and covered with gravel.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. The IAS recommended additional study due to the potential for PCB contamination (NEESA, 1984).

Confirmation Study The Confirmation Study Step 1A (Verification), Round One (Dames and Moore, 1986b) included collection of 13 soil samples from Site 9 for analysis of PCBs and 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD). Aroclor-1260 was the only PCB detected (8 of 13 samples). TCDD was not detected in any samples. Detected concentrations of Aroclor-1260 ranged from 21 micrograms per kilogram (mg/kg) to 321 mg/kg. No additional sampling was recommended because of the low levels of the detections.

NFRAP Decision Document A Draft Final NFRAP Decision Document was submitted for the site in December 1999. The document was reviewed by the VDEQ and USEPA, and based on this review, further investigation and an ecological risk assessment were recommended (Baker, 1999f).

SERA In June 2005, a SERA for Sites 4 and 9 was finalized. The primary objective of the SERA was to screen soil, surface water, and sediment from Sites 4 and 9 to determine if potential risk to ecological receptors warrant either (1) additional investigation beyond the conservative screening steps of the ERA process (unacceptable ecological risks possible), or (2) the removal of sites from further ecological consideration (no unacceptable risks). A second objective was to identify any data gaps or areas of unacceptable uncertainty that may require the collection of additional data to support ERA evaluations beyond the screening level. Based on the results of the SERA, it is recommended that Sites 4 and 9 continue to Step 3a of the Navy ERA process since multiple Chemicals of Potential Concern (COPCs) and complete exposure pathways were identified at each site. The SERA also concluded that insufficient data are available at Sites 4 and 9 to conduct Step 3a of the ERA process (Baker, 2005n).

Status: Further investigation may be required.



Cheatham Pond

York River

Lynch Road

B Street

C Street

Figure 3-10
Site 9-Transformer Storage Area
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site 10 – Decontamination Agent Disposal Area Near First Street

Site Description:

Site 10 is located south of First Street in the southernmost part of the old DuPont munitions plant. An estimated 75 to 100 gallons of decontamination agent (DS-2) were reportedly buried at the site before 1982. DS-2, which is toxic to humans and corrosive to metals, is used for decontaminating equipment contaminated with nerve or blister agents. It is not known if the DS-2 was neutralized prior to disposal.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. At the time of the IAS, the surface of the site was covered with a variety of grasses. No evidence of stressed vegetation was noted, and surrounding vegetation and animal life showed no visible adverse effects. The IAS recommended that a magnetometer survey be performed to locate metallic containers of DS-2 (NEESA, 1984).

Magnetometer Survey A Magnetometer survey was performed in December 1985 (Geosight, 1985). The results of the survey indicated that the mounds of soil present in the wooded area contained little iron. The magnetometer survey was summarized in the Final Remedial Investigation Interim Report (Dames and Moore, 1991). The report recommended that historical aerial photographs be reviewed to ascertain additional information about the disposal activities and that a risk assessment be performed.

Site Investigation The Site Investigation for Site 10 was performed in 1992. As part of the Site Investigation, three monitoring wells were installed within the shallow aquifer. One surface soil sample and three subsurface soil samples were collected from each monitoring well boring, and groundwater samples were collected from each well. The report concluded that low levels of contamination in soil and groundwater did not appear to be related to DS-2. However, resampling of the monitoring wells for VOCs and mercury was recommended to confirm the Site Investigation results (Weston, 1994).

SSP In 1997, as part of the SSP investigation, Baker resampled the three monitoring wells to confirm the Site Investigation results. No organic compounds were detected in groundwater. SI and SSP investigation sampling did not locate any significant sources of contamination at the site. The buried containers of DS-2 have not been located to date. Based on the results of these investigations and the relatively small volume of DS-2 that was reportedly buried, the site does not appear to pose a significant threat to human health or the environment (Baker, 1997d).

NFRAP Decision Document The Yorktown Partnering Team agreed on June 18, 2003 to include Site 10 as part of a multi-site NFRAP. The NFRAP Decision Document presents the technical information to support the conclusion that soil and groundwater at Site 10 does not pose an unacceptable risk to human health or the environment. The Final NFRAP was signed in August 2003 (Baker, 2003c).

Status: No further action.

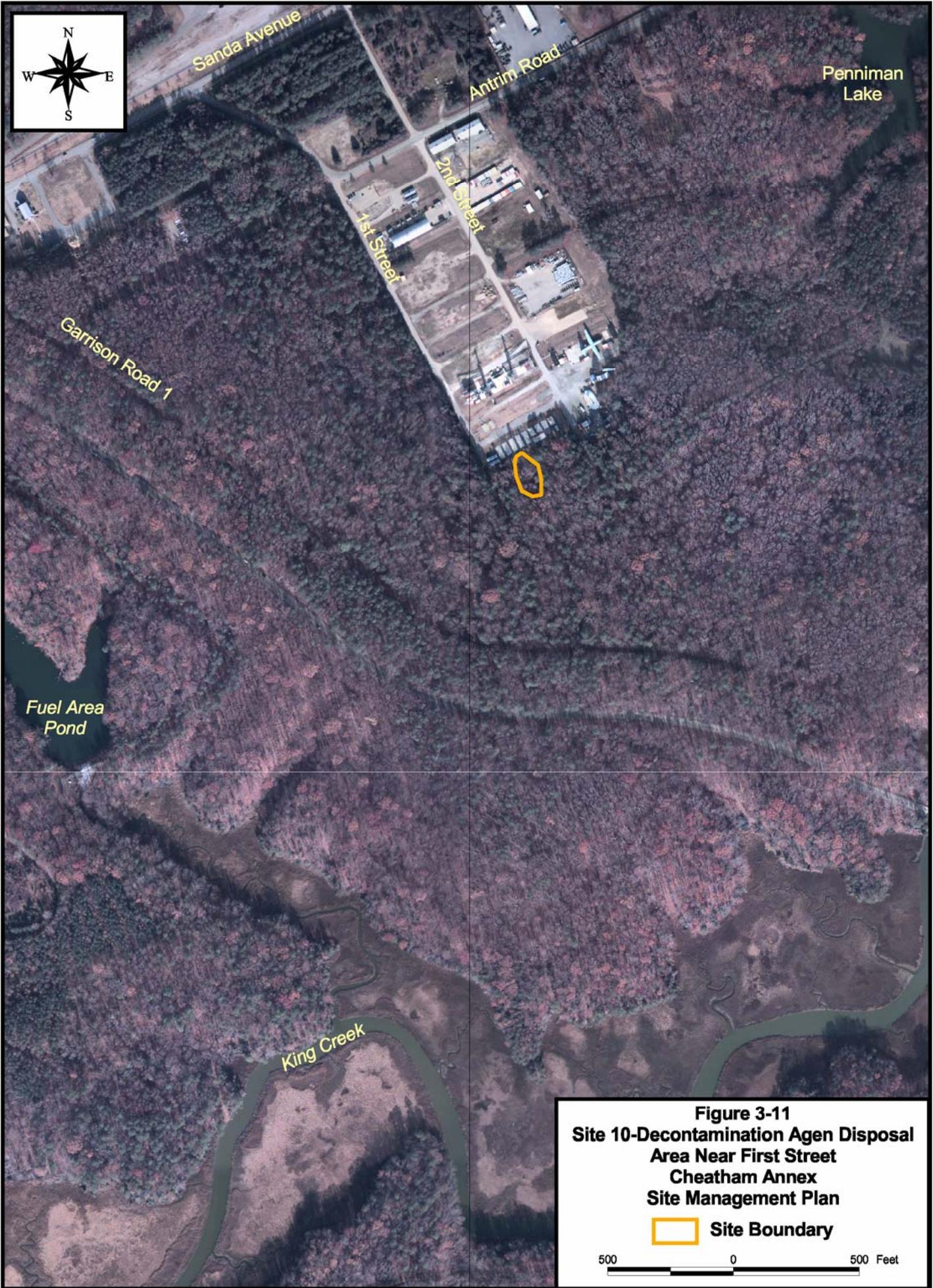


Figure 3-11
Site 10-Decontamination Agen Disposal
Area Near First Street
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site Description:

Site 11 encompasses an estimated 2.7-acre area located approximately 250 feet south of Antrim Road, behind the public works facility. The site was reportedly used between 1940 and 1978 to store containers of waste-oil and tar as well as asphalt and other scrap materials on the ground. Oil, asphalt, gasoline, and other unspecified materials have been identified in the disposal area.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. During the IAS, scrap metal, old containers (fuel oil, mixing tanks, etc), fence posts, and abandoned cars were found inside the fenced and gated enclosure within an estimated one-acre area. Various discarded clamshell buckets and other surplus metal objects used in heavy construction were also located throughout the area. Approximately ten five-gallon containers labeled “paraplastic” (concrete sealant) were also present. South of the entrance, numerous barrels containing petroleum products were discovered, as well as several 500-gallon square tanks containing asphalt or oil used in making asphalt. These tanks were reported to have leaked in the past.

Numerous tar cylinders were deposited at the end of the road leading into the site. The cylinders had apparently been there for quite a while, as their initial cardboard containers had decomposed and the tar had melted. Numerous pieces of scrap metal and surplus construction equipment were scattered along the path. Due to the oil and gasoline at the site, as well as reported spills and waste burial, the IAS recommended additional study for Site 11 (NEESA, 1984).

Confirmation Study The Confirmation Study Step 1A (Verification), Round One (Dames and Moore, 1986) included collection of three surface water and three sediment samples, and installation of three shallow monitoring wells. Groundwater samples were collected from each of the three monitoring wells. A total of nine soil samples were collected; one composite sample from each of the monitoring well borings and six discrete samples were collected from locations throughout the site. A total of 18 samples were collected from 15 drums (three of the drums contained a liquid phase which was sampled).

The Confirmation Study Step 1A (Verification), Round Two (Dames and Moore, 1988) included collection of three surface water and three sediment samples co-located with the Round One samples and collection of a second round of groundwater samples from each of the three monitoring wells which were installed during Round One.

Remedial Investigation Interim Report The Final Remedial Investigation Report (Dames and Moore, 1991) reported that most of the 55-gallon drums and scrap metal had been removed from the site since the IAS. This report, which characterizes the site as more of a scrap yard than a burial site, summarized the findings of the Confirmation Study. The report recommended further investigation to better define the nature and extent of contamination at the site.

Site Investigation The Site Investigation for Site 11 (Weston, 1994) included a soil-gas survey, collection of 14 surface soil samples, installation of 2 monitoring wells with soil samples collected from each boring, collection of groundwater samples from the newly installed and existing monitoring wells, collection of 16 sediment samples from 8 locations, and collection of 5 surface water samples. The Site Investigation concluded that previous activities at Site 11 have had some impact on shallow soils, marsh sediments, and lake sediments, but very little to no impact on groundwater and surface water. Potential for further degradation of the environment was minimal. The report recommended that the drums and

asphalt tank remaining on site be removed. Confirmation of TCE detections in surface soil, VOCs and dissolved metals in groundwater, and TCE at one surface water sample location was also recommended.

SSP During the SSP groundwater investigation in 1997, approximately 60 drums were noted in the woods along with three tanks that contained tar. Approximately one half of the drums were empty. The remaining drums contained one or a combination of the following: tar, leaves, soil, or sludge. The drums and tanks were removed from the site in early September 1997 by Industrial Marine Services, Inc. of Norfolk, Virginia. Approximately 60 tons of material, including drums, tanks, solidified tar, and miscellaneous scrap/materials were disposed as non-hazardous waste. The SSP investigation included collection of an additional round of groundwater samples from each of the monitoring wells. No organic compounds were detected. Concentrations of total metals were significantly lower in the 1997 samples than in previously collected samples due to the employment of low-flow sampling during the SSP investigation. Based on human health and ecological risk screening, the SSP report concluded that no additional investigations were necessary.

Field Investigation In November 1999, a Field Investigation was conducted at Site 11 to determine soil conditions within the area of the 1997 removal of tar drums/tanks. Six surface soil and six subsurface oil samples were collected. TCL organics, nitramines, TAL inorganics, and cyanide were identified in both the surface and subsurface soil.

Removal Closeout Report The Draft Removal Closeout Report (Baker, 2000c) summarizes removal activities that have occurred at Site 11. Previous investigations at Site 11 have not located any sources of significant contamination. Previous removals and housekeeping activities have eliminated sources of contamination from the site; however, a remedial investigation was conducted in 2002 to thoroughly evaluate the site.

RI Report The RI for Site 11 was completed in 2002. The purpose of the RI was to delineate the lateral and vertical extent of contamination, characterize contamination found at the site, as well as the surrounding and underlying native soil, sediment, surface water, and groundwater. The human health risk assessment determined that it is unlikely that adverse health effects would occur based on exposure to Site 11 media. The ecological risk assessment recommended further evaluation of the site to include Step 3a of the baseline ecological risk assessment (Baker, 2004c). The RI has not been finalized.

Status: The draft RI will be revised to include a Baseline Ecological Risk Assessment.



Site 12 – Disposal Site Near Water Tower

Site Description:

Site 12, located approximately 2,000 feet west of Jones Pond, was used for surface disposal of scrap metal, primarily old automobile parts and iron pipe. Based on visual inspection of the site, approximately 10 to 110 cubic feet of material was disposed.

Studies Completed to Date:

IAS An IAS was completed in 1984 to identify and assess the sites that may pose a potential threat to human health or to the environment due to contamination from past hazardous waste disposal practices. It appeared that only non-hazardous materials were disposed of at the site and no signs of stressed vegetation were noted at the time of the IAS. Because the materials were reportedly not hazardous, the IAS recommended no further study (NEESA, 1984).

EPIC Study The EPIC Study indicates that a small mound of dark-toned material was present at the site in 1955, but was not present in 1963. The debris is no longer present at the site.

Field Investigation A limited field investigation consisting of eight surface and eight subsurface soil samples was conducted at Site 12 in June 2002. Not long after these samples were collected, CAX public works employees ran a new water/utility line through Site 12 and toward the Jones Pond water plant west of Site 12. A Source Release Investigation was conducted in March 2004 (Baker, 2004e). Results of this investigation recommended no further action for Site 12.

NFRAP Decision Document The NFRAP Decision Document presents the technical information to support the conclusion that soil and groundwater at Site 12 does not pose an unacceptable risk to human health or the environment. The NFRAP Decision Document was signed in April 2004 (Baker, 2004e).

Status: No further action.



Colonial Parkway

Pennington Road (SR 641)

Patrol Road 5

Patrol Road 2

Figure 3-13
Site 12-Disposal Site Near Water Tower
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

AOC 1 – Scrap Metal Dump

Site Description:

AOC 1 is a debris disposal area located just west of Chapman Road in two ravines along unnamed tributaries to Jones Pond. Wood and metal debris outcrop from the banks of the ravines.

Studies Completed to Date:

Field Investigation In November 1999, a field investigation that included a geophysical survey and collection of soil, surface water, and sediment samples was performed. VOCs, SVOCs, pesticides, PCBs, inorganics, and cyanide were detected in the surface soil samples. SVOCs and inorganics were detected in the surface water at low levels. VOCs, SVOCs, PCBs, and inorganics were detected in the sediment samples. The extensive volume of debris at the AOC is a potential source of contamination.

Site Inspection Report The Final Site Inspection Report recommended that a limited investigation to evaluate disposal parameters be performed. In addition, an EE/CA was recommended to evaluate the most appropriate means of removing or covering the debris present at the site (Baker, 2001f).

Status: Additional investigations are planned.



Figure 3-14
AOC 1-Scrap Metal Dump
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

Site Description:

AOC 2 was discovered during site visits performed by the Navy, USEPA, VDEQ, and Baker in late 1997 and early 1998. The area is situated in woods, north of Garrison Road, along the southern perimeter of CAX and contains several rows of concrete foundation piers, which at one time supported a Shipping House at the former Penniman Shell Loading Plant. Most of the Penniman facility was demolished between 1918 and 1925. Grass-covered lanes, which lead to the area, are likely locations of former rail lines that have been removed. Several glass bottles, many of which are labeled dextrose, were present. In addition, several partially buried empty drums were also noted. Mounds of soil that are present may also indicate buried materials. Additional buried drums may be located in this area.

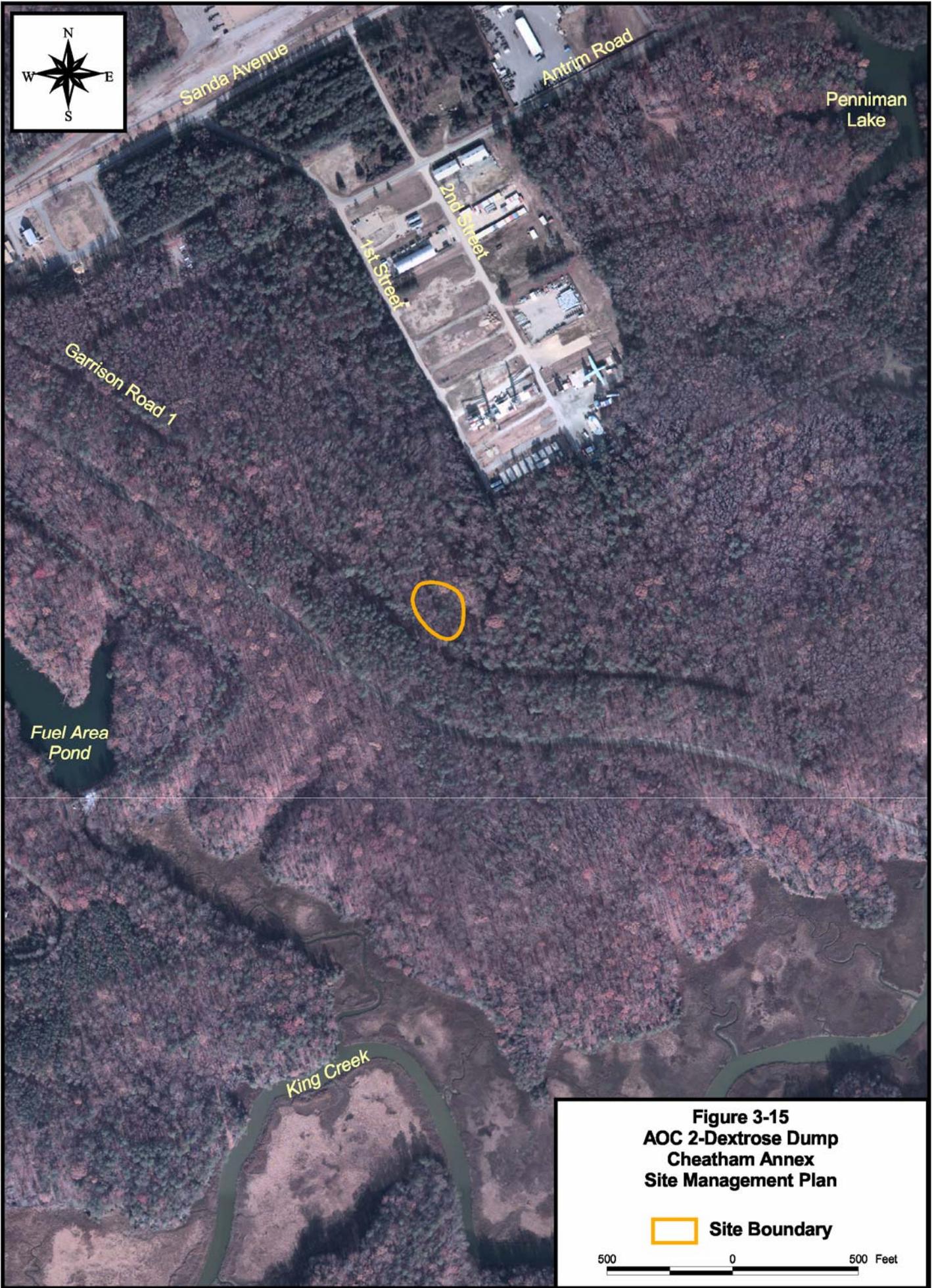
Studies Completed to Date:

Removal Action During May 1998, Reactives Management, Inc. removed 470 bottles from the site as part of a routine housekeeping operation and selected 24 bottles for random analysis. Each bottle contained greater than 2,000 ppm glucose indicating that the bottles did contain dextrose, as suspected.

1998 Field Investigation In 1998, Baker performed a Field Investigation for AOC 2 that consisted of a geophysical survey and soil and groundwater investigations. The Field Investigation Report recommended that the sources of the geophysical anomalies and potential sources of contamination be identified by excavating a total of six shallow test pits in the vicinity of the most significant anomalies detected (Baker, 1999d).

1999 Field Investigation In November 1999, Baker performed a field investigation that included test pits and exploratory hand auger borings to define the lateral extent of buried debris at the site. Samples of native soil and soil within the debris zones were collected. During the investigation, a large volume of buried drums and respirator filter canisters was encountered. A few of the drums contained a thin layer of tar coating or residue. The remaining drums were empty. In the Final Field Investigation Report, additional geophysical surveying with confirmatory test pitting was recommended to further delineate the extent of buried debris, with emphasis placed on locating areas of buried respirator cartridge canisters. Based on the findings of the investigation, it was recommended that an EE/CA be completed to determine the appropriate management strategy for the site (Baker, 2001g).

Status: Scheduled for EE/CA and removal action.



Sanda Avenue

Antrim Road

Penniman Lake

2nd Street

1st Street

Garrison Road 1

Fuel Area Pond

King Creek

Figure 3-15
AOC 2-Dextrose Dump
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

AOC 3 – CAD 11/12 Pond Bank

Site Description:

AOC 3 consists of an approximately 20 foot by 20 foot by 10 foot high pile of metal banding along the north bank of the unnamed pond, situated between Buildings 11 and 12, north of D Street. This area, which also contains a few empty drums, is adjacent to Site 4 - Medical Supplies Disposal Area. This location was designated as an AOC in 1998 following site visits by Navy, USEPA, and VDEQ representatives.

Studies Completed to Date:

Field Investigation During the 1999 field investigation, two soil samples and two sediment samples were collected next to the metal banding pile. Results for the samples were included in the Site Inspection Report (Baker, 2001f). The site is not currently considered to be a significant source of contamination.

The samples collected during the 1999 field investigation were intended to determine if future investigation is warranted and to confirm that there are no sources of contamination present within the pile so the pile can be removed as part of a housekeeping measure, rather than under a removal action.

Status: Further investigation may be required.



Cheatham Pond

York River

Lynch Road

D Street

C Street

B Street

B Street



Figure 3-16
AOC 3-CAD 11/12 Pond Bank
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

AOC 4 – Outdated Medical Supply Disposal Area

Site Description:

During 1998, AOC 4 was identified as a new AOC. However, based on review of site history and available information, it was determined that AOC 4 is actually the same area as Site 4. AOC 4 will no longer be addressed as a separate entity.

Status: No further action.

AOC 5 – Debris Area

Site Description:

AOC 5, the large pile of debris at the toe of the Site 1 landfill, was identified in 1998. AOC 5 contains cables, conex boxes, an empty storage tank, automobiles, airplane/boat parts, and other miscellaneous items. Based on the results of the 1998 field investigation (Baker, 1999d), which included a geophysical survey and soil and sediment sampling in the vicinity of the pile, the Navy, with VDEQ concurrence, decided that it was more appropriate to manage these two areas (Site 1 and AOC 5) as one unit. Consequently, AOC 5 will no longer be addressed as a separate unit and will be managed as part of Site 1.

Status: No further action.

Site Description:

The Penniman Shell Loading Plant was an explosives manufacturing facility operated by the DuPont de Nemours Company on what is now CAX and adjacent properties. This facility operated as a TNT manufacturing plant beginning in approximately 1916, and subsequently began loading artillery shells for the war effort in 1918. Between 1918 and 1925, following the end of World War I, this facility was demolished and reverted to farmland. The Navy established CAX on a portion of this property in 1942 (Weston, 1999).

Based on aerial photographic analysis, five sub-areas have been identified within this AOC:

- Ammonia Settling Pits - This area consists of earthen ammonia settling pits that were part of a former shell loading area located on Cheatham Annex. Wastewater from an ammonia finishing building was discharged through these settling pits.
- TNT Graining House Sump - This area consists of a concrete-lined, open top pit believed to be the sump pit for the TNT graining house in the former shell loading area.
- TNT Catch Box Ruins - This area consists of an earthen, brick-lined depression located immediately adjacent to the TNT graining house in the former shell loading area. This area was used to separate TNT particles from wastewater.
- Waste Slag Material - This area consists of waste metallic slag material that is located throughout the shell loading area predominantly along the railroad tracks.
- 1918 Drum Storage - This area was used for the storage of wooden kegs when the shell loading area was active.

Since CAX was added to the NPL in December 2000, the USEPA and the Navy have discussed various approaches for conducting a site investigation of these sub-areas. In August 2000, the USEPA and the Navy agreed that all five sub-areas would be investigated since the five sub-areas were included in the hazard scoring for the NPL. However, the 1918 Drum Storage area and the Waste Slag Material area were a lower priority than the other three sub-areas: Ammonia Settling Pits, TNT Graining House Sump, and TNT Catch Box Ruins.

Studies Completed to Date:

These sub-areas of the Penniman AOC have not yet been investigated. Detailed figures presenting the site plan have not been developed. The Yorktown Partnering Team is currently discussing future investigations at the Penniman AOC. Pending results of these discussions, a RI/FS may be recommended for the Penniman AOC.

Status: Scheduled for future investigation.

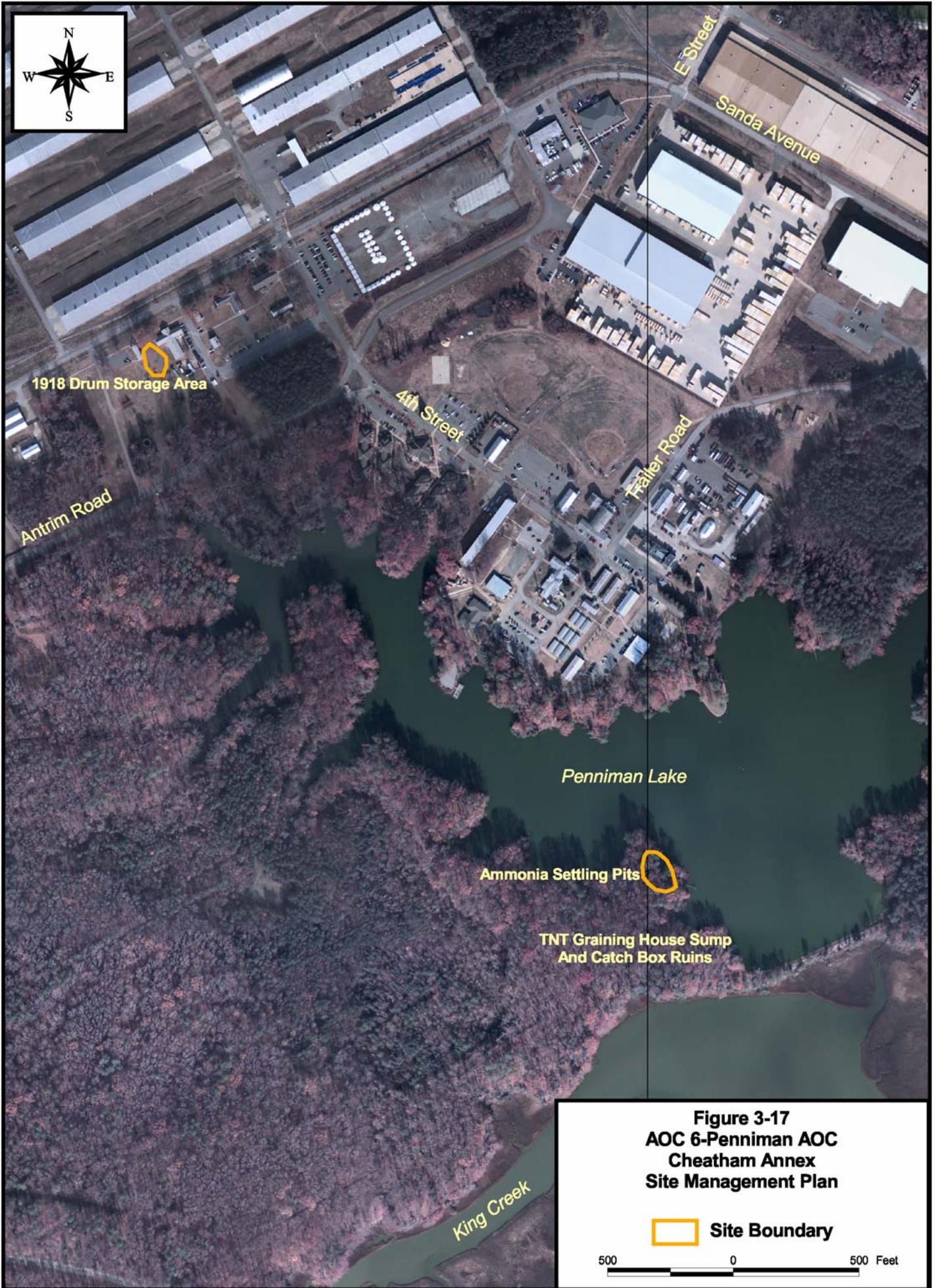


Figure 3-17
AOC 6-Penniman AOC
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

AOC 7 – Drum and Can Disposal Area

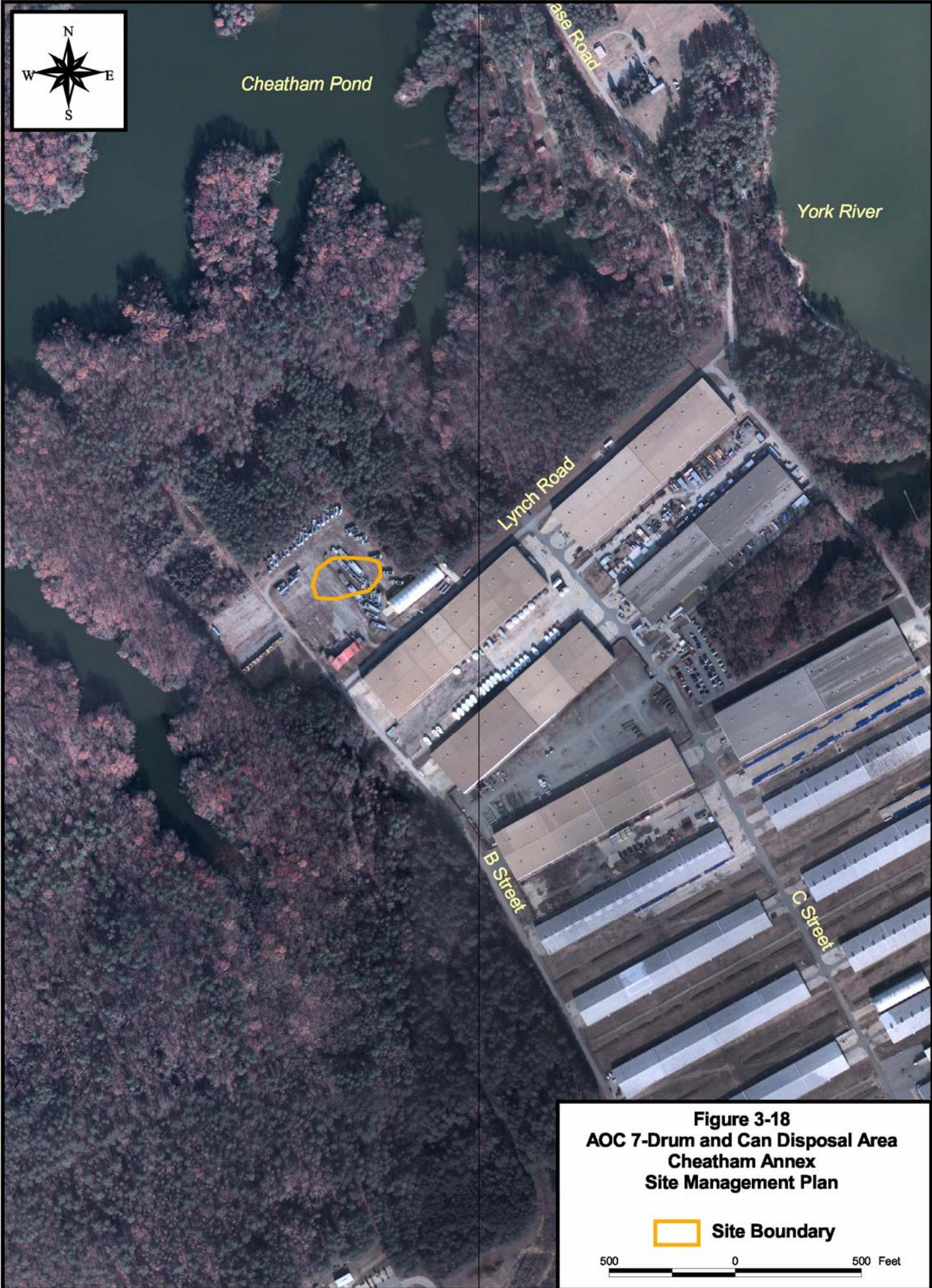
Site Description:

In April 2004, the Navy identified a potential area of concern near Site 8, north of Cheatham Annex Depot Building 14. The potential area of concern consists of several small surficial dump areas containing a 55-gallon drum and numerous cans. One of the areas of note is a pit approximately 30 feet by 20 feet and 8 feet deep that contains 40 to 50 10-gallon rusted cans with labeling containing the word “tetrachloroethane.”

Studies Completed to Date:

This AOC has not yet been investigated. A detailed figure presenting the site plan has not been developed.

Status: Scheduled for future investigation.



Cheatham Pond

York River

Lynch Road

B Street

C Street

Figure 3-18
AOC 7-Drum and Can Disposal Area
Cheatham Annex
Site Management Plan

 **Site Boundary**

500 0 500 Feet

4.0 SITE MANAGEMENT PLAN SCHEDULES

This section presents the project schedules for the sites, SSAs, and AOCs identified in Sections 2.0 and 3.0. Schedules depicting the major project activities for each site, SSA, and AOC are provided in Appendices A and B. These schedules are tentative based on funding allocation, completion of removal actions, and comments received on the documents. In addition, specific submittal deadlines planned for fiscal years 2006 and 2007 are being developed. Appendix A presents the schedules for actions (removal actions and finalized reports) which have been completed. Appendix B presents schedules for sites, SSAs, and AOCs that are currently active.

4.1 Yorktown-CAX Partnering Team

A formal Yorktown-CAX Partnering Team was established in July 1997 to manage the cleanup of IRP sites at WPNSTA Yorktown and CAX. The Partnering Team includes representatives from the Navy, USEPA, and VDEQ. The Team meets throughout the year to develop long-term goals, review on-going projects, and to discuss site-specific strategies to achieve site closure. Partnering Team decisions are documented through consensus statements, which usually address specific sites and agreements made by the Team. These consensus statements often affect schedules and overall activities at the sites. Table 4-1 provides a list of the consensus statements for WPNSTA Yorktown and CAX.

4.2 Scheduling Assumptions

Assumptions regarding document review periods and deviations from the FFA are discussed in the following sections.

4.2.1 Federal Facility Agreement Assumptions

RI/FS and Remedial Design (RD)/Remedial Action (RA) deliverables are classified as “primary” or “secondary” documents in the FFAs for WPNSTA Yorktown and CAX (USEPA, 1994 and 2005). A primary document is typically a major, discrete portion of an RI/FS or RD/RA activity, whereas a secondary document may be a discrete portion of a primary document or may serve as a feeder document to a primary document. The project schedules have been developed using the primary and secondary document review and comment process specified in the FFAs.

The time required for review will vary according to the length and complexity of the document. In an effort to expedite document finalization, the draft document review period may be decreased from the FFA 60-day duration to a 30-day period for the secondary documents listed below, as these secondary documents are expected to be short in length and relatively straightforward in nature compared with the other primary and secondary documents:

- Treatability Study Work Plan
- Treatability Study Report
- EE/CA Report
- Removal Action Memorandum

4.2.2 Document Preparation, Field Investigation, and Sample Analysis/Validation Assumptions

Durations for work plan preparation and field investigation activities have been based on the available information for the sites, while taking into account the overall complexity of each area (e.g., size, media types, potential receptors, proximity to other sites). The sampling efforts needed to support RI/FS activities (i.e., required to fill existing risk-, hydrogeologic-, and engineering-related data gaps) also were taken into account. These factors will be more thoroughly evaluated during Work Plan development.

TABLE 4-1

**WPNSTA YORKTOWN/CAX
PARTNERING TEAM
CONSENSUS STATEMENT SUMMARY**

NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT
	NA	10/23/2001	WPNSTA	18		Site 18	The Team agreed to separate the Mercury issue from the Site 18 ROD.
	NA	10/23/2001	WPNSTA			Dec. 2002 Partnering Meeting	The team agreed to start at 12:00 noon Monday, December 3, 01 (lunch on own prior to starting) and meet through Wednesday evening with site visits Thursday December 6, 2001.
	NA	10/24/2001	CAX	2		Site 2 – Contaminated Food Disposal Area	The team thinks NFA for site review site at end of site visit.
	NA	10/24/2001	CAX	3		Site 3 – Submarine Dye Disposal Area	The team decided to review the site at the end of the site visit.
	NA	10/24/2001	CAX	4		Site 4 – Outdated Medical Supply Disposal Area	The team wants to use the site visit to determine the extent of the debris. S. Milhalko stated that DEQ would require that site would either have to have removal with backfill or cover such that it would not be uncovered again.
	NA	10/24/2001	CAX	6		Site 6 – Spoiled Food Disposal Area	The team agreed to drive by site to determine location at end of site visit.
	NA	10/24/2001	CAX	12		Site 12 – Disposal Site Near Water Tower	The team proposed that approach be a SSA and during site visit evaluate need for this. For site visit, evaluate a proposed sampling plan to be evaluated during site visit, prepare site map for site visit.
	NA	10/24/2001	CAX		4	AOC 4 – IR Site 4 – Outdated Medical Supply Disposal Area	During the site visit, the approach will be evaluated and a decision is to be made.
	NA	10/24/2001	CAX		5	AOC 5 – Debris Area	Group decided to combine AOC 5 and Site 1, eliminate AOC 5.
	NA	10/24/2001	CAX			Site Update	Dave Martin, as topic leader, and other members wanted to focus on reviewing sites proposed for NFA, then review sites during site visit & what the team wants to do during the site visit (drive by versus walk the site).
	NA	10/24/2001	CAX			Site Update	For site visit, the team decided that a technical guide to the sites would be prepared that incorporates previous information on the site, the Partnering Team discussion, approach to the site, data gaps. This package is to include: site descriptions, maps, previous sampling locations, aerial photographs with site locations/approximate boundaries and for some sites a proposed sampling plan.
	NA	12/3/2001	WPNSTA	6, 7		LUCIP Review Sites 6 & 7	state the site size and then the size of the restricted area, annotate Global Position Coordinates (GPS) of restricted area on figures.
	NA	12/3/2001				Define Metrics in Partnering Deliverable	Keep as stated in deliverable.
	NA	12/4/2001	CAX	2		Site 2 – Contaminated Food Disposal Area	The team agreed that no further action is warranted at this site given that only spoiled food was disposed of at the site.
	NA	12/4/2001	CAX	4		Site 4 – Outdated Medical Supply Disposal Area	AOC-3 is part of AOC-4, AOC-4 is now Site 4- Outdated Medical Supply Disposal Area.
	NA	12/4/2001	CAX	5		Site 5 – Photographic Chemicals Disposal Area	Due to the small volume of photochemicals disposed in an area that can not be located using historical records and the disposal of these wastes in a "marl" pit consisting of clayey native soils that would prohibit transport of the photochemicals, no further action is warranted at this site.
	NA	12/4/2001	CAX	6		Site 6 – Spoiled Food Disposal Area	The team agreed that no further action is warranted at this site given that only spoiled food was disposed of at the site.
	NA	12/4/2001	CAX	8		Site 8 - Landfill Near Building CAD 14 Site Visit	On page 4-16 of handout, last paragraph, delete first sentence "The VDEQ....site."
	NA	12/4/2001	CAX	8		Site 8 - Landfill Near Building CAD 14 Site Visit	The team agreed that no further action is warranted at this site given that only non-hazardous materials such as spoiled meat, spoiled candy, and clothing were disposed at the site and all anecdotal records indicate that the clothing was not impregnated with any chemicals.
	NA	12/4/2001	CAX	11		Site 11 – Bone Yard	The team agreed to investigate Penniman Lake and Site 11 separately. Penniman Lake is already in the budget cycle as a separate site.
	NA	12/4/2001	CAX	12		Site 12 – Disposal Site Near Water Tower	The team agreed that further sampling is required at the site prior to making a NFA decision. The approach agreed to consist of a grid of five soil samples (1 center, 4 corner points). One sample will be analyzed for TAL/TCL and the remaining 4 will be analyzed for TAL metals only. An additional three soil samples will be collected between the railroad tracks adjacent to the site. These analytical results will be compared to the grid analytical results to determine whether or not the railroad maybe a source area.
	NA	12/4/2001	WPNSTA	6		Site 6 – Explosives-Contaminated Wastewater Impoundment	This site is former cache where TNT was placed in a hole and stored. The hole was later backfilled. Soil with concentrations of cadmium and zinc were left in the hole and then backfilled with 4 feet of soil. After discussing the conditions of the site, the team agreed to evaluate whether further action was required at this site.
	NA	2/5/2002	CAX	9		Site 9 - Transformer Storage Area	Based upon review of PCB confirmation data, proceed with NFA for Site 9.
	NA	2/5/2002	CAX	11		Site 11 – Bone Yard	The team agreed with the proposed sampling plan pending resolution of their comments.
		2/5/2002	CAX	12		Site 12 – Disposal Site Near Water Tower	The team agreed to analyze all soil samples for TCL organics in addition to the planned TAL Metals.
	NA	2/5/2002	CAX		1	AOC 1 - Scrap Metal Dump	AOC 1 will continue as an AOC, a Work Plan will be developed for the debris removal. If no significant contamination is found, based on confirmatory soil sampling, (i.e.: meet Eco/HH requirements), the AOC will be closed. The Work Plan will be flexible to allow for in-field adjustments.
	NA	2/5/2002	CAX			GIS Needs Assessment	The Draft Final CAX GIS Needs Assessment submitted in September 2001 will be considered final. Baker will proceed with the awarded CAX GIS Implementation.
	NA	2/5/2002	WPNSTA	18		Site 18	Because Site 18 is NFA, the team proposed to schedule preparation of documents for this site on the same schedule as Sites 23-26.

TABLE 4-1

**WPNSTA YORKTOWN/CAX
PARTNERING TEAM
CONSENSUS STATEMENT SUMMARY**

NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT
	NA	2/5/2002	WPNSTA	2, 8, 14		Sites 2, 8, and SSA 14	Sites 2, 8, and SSA 14 (2 will be a ROD, 8 & SSA 14 will be a ROD) will track on a later schedule than Sites 23-26.
	NA	2/5/2002	WPNSTA	8, 18, SSA 14		RI Sites 8, 18 & SSA 14	Baker will update the report and resubmit for review and comment.
		2/5/2002		12		5-Year Review	The team agreed to form a subgroup to research and report out at the March meeting on this issue. The subgroup consists of Bob Stroud and Jennifer Davis.
	NA	2/5/2002				2002 Goals Update	The team agreed to include the Goals as part of each meeting's minutes.
	NA	2/5/2002				Consensus Statement Documentation	The team agreed to document Consensus Statements by site as an addendum to the Site Management Plan. Mary is to evaluate possible methods (by site, chronologically, etc.) and report back to the team during the March Meeting.
	NA	2/5/2002				Draft FFA	Scott Park/Jennifer Davis to prepare Draft FFA Addendum for counsel review and submittal to EPA and DEQ.
1	3/13/2002-1	3/13/2002				Documentation of Consensus Statements	The team agreed to document Consensus Statements by site as an addendum to the Site Management Plan. A tracking number will be used to track the documents consisting of date and numerical sequence (i.e.: Month/Day/Year-Number – 3/13/02-1).
2	3/13/2002-2	3/13/2002	WPNSTA	4		Clean-up level	If Site 4 removal action cannot achieve residential levels then Sites 4 and 22 ROD will split into two separate RODS.
3	4/23/2002-3	4/23/2002				Identification of new sites	The Team agrees that the FFA (Sections 9.3a and 9.3b) gives the team the authority to add newly identified sites to the SMP.
4	4/24/2002-4	4/24/2002				Site Management Plan	The team agreed to go final with the FY 2002/2003 Draft SMP and revise text for the FY 2003/2004 submittal. Baker will provide Final covers for the FY 2002/2003 SMP.
5	4/24/2002-5	4/24/2002	CAX	11		Approval of Proposed Field Investigation Sampling Locations presented in the Project Plans for CTO 236	The team agreed with the sampling location revisions made during the site visit and agreed that the field investigation can be performed. The field activities will be scheduled for May 2002.
5	4/24/2002-6	4/24/2002	CAX		Penniman	Penniman AOC Sub-areas Investigation approach	The Team agrees to follow a general approach to the Penniman AOC sub-areas as follows: 1918 Drum Storage Area: Verify whether or not the kegs were used to store Ammonium Nitrate. Consider collecting surface soil samples between Buildings 225 and 113. Waste Slag Area: Based upon the understanding that the waste slag is most likely associated with maintenance activities along the rail line, a sampling approach will be developed.
7	4/24/2002-7	4/24/2002				Community Relations Plan	The Team agrees to go final with the Community Relations Plan. If appropriate, final covers and spines will be submitted.
8	6/03/2002-8	6/3/2002	WPNSTA	GWOU 1		Groundwater Operable Unit 1 – Work Plan	The Team agrees to investigate and install groundwater monitoring wells if a removal action(s) at site 24 within Groundwater Operable Unit I shows contamination or materials that pose a potential risk to receptors with the potential of exposure to groundwater (waste left in place or confirmatory samples detections exceed PRG).
9	8/6/2002-9	8/6/2002	CAX	2, 3, 5, 8, 9, 10, 12		NFRAP Decision Document Format	The Team agreed to use the Quantico format for the NFRAP document. The team will review the NFRAP documents before finalizing them.
10	8/6/2002-10	8/6/2002	WPNSTA			Five Year Review Report, WPNSTA Yorktown Sites 1, 6, 7, 12, 16, and 19	The team agrees with the 5-year review Report findings and agrees to go final with the document. Jeff Harlow to pursue signature of the document by Admiral.
11	8/6/2002-11 ON HOLD	8/6/2002	CAX	3		Fluorescein Dye	The Team agrees that since Fluorescence Dye is still in use, is very water soluble hence dilutes infinitely.
12	9/18/2002-12	9/18/2002				New technical team member	The Team agreed to add Marlene Ivester as a technical member to the team.
13	9/18/2002-13	9/18/2002				Facilitator	The team agreed a facilitator is needed for a few meetings.
14	10/22/2002-14	10/22/2002	WPNSTA			LUCIPs	The Team agreed to revise the LUCIP to incorporate two sections: Site Environmental History and References. Also, the LUCIP will include a brief executive summary of the ROD (about 1 paragraph, similar to the Camp Allen Landfill LUCIP). The numbers of signs for each site is as follows: - Site 12: At least four signs, placed at egress points to the site (of the ten proposed, four will be mandatory) - Site 19: At least three signs, placed at egress points to the site - Site 1: At least three signs, placed at egress points to the site - Sites 6 & 7: At least three signs for Site 6 at egress points and one sign at Site 7 egress point
15	10/23/2002-15	10/23/2002				N/A	The Team agreed to add a goal to the FY03 Team Goals to be self-facilitating by end of third Quarter 2003 (5 additional meetings).
16	10/23/2002-16	10/23/2002	WPNSTA			GWOU 1	The Team agreed that Baker can proceed with submitting the response to comments and with submitting a revised Draft Final Work Plan for GWOU I to the normal distribution list.

TABLE 4-1

**WPNSTA YORKTOWN/CAX
PARTNERING TEAM
CONSENSUS STATEMENT SUMMARY**

NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT
17	10/23/2002-17	12/4/2002 Revised				WPNSTA-SSAs 3-24; 23-26; 2, 8, 18 & SSA 14; GWOU I, 27-30 CAX-1, 4 & 9, 11, Background Study, NFRAP 2, 3, 5, 6, 9, 10 & 12	The WPNSTA Yorktown/CAX Partnering Team empowers the ecological technical support team to address and resolve ecological issues for various sites at WPNSTA Yorktown/CAX (see table below) to meet the dates and priority specified by the WPNSTA Yorktown/CAX Team, with Ed Cori to take the lead on meeting the schedule determined by the Team. WPNSTA: SSAs 3-24 SSP; 23-26 DF RI; 2, 8, 18 & SSA 14 DF RI; GWOU I Draft WP; 27-30 Draft RI CAX: 1 DF RI; 4 & 9 Draft RI (SERA); 11 Draft RI, Draft Background Study; 2, 3, 5, 6, 9, 10 & 12 Draft NFRAP
18	12/5/2002-18	12/5/2002		21, 22		WPNSTA Sites 21 & 22	Based upon EPA Region III comments, Sites 21 and 22 RODs will be rewritten as No Further Action (NFA) RODs with no institutional controls (ICs) because they were remediated to residential levels.
19	12/5/2002-19	12/5/2002				Site Action Status Report	The Team agrees to use the SASR as a tracking tool and add it to the standard meeting format.
20	12/5/2002-20	12/5/2002				Action Item List	The Team agreed that the Action Item List will be addressed during the Agenda Building Call with respect to whether or not the Action Item has been completed. If completed, a "C" will be put in the Outcome column of the Action Item list and the item will not be addressed during the subsequent Partnering Team Meeting.
21	1/29/2003-21	1/29/2003				CAX Site 1 Baseline Risk Assessment	The eco subgroup discussed the issues for the CAX Site 1 RI and determined that a baseline risk assessment was warranted for the wetland area based upon a conference call prior to the December Partnering Meeting. The Navy RPM determined that based upon the existing ROD schedule and funding execution for the site, it was determined that (revised per team concurrence by MM 3/4/2003) the ROD and funding schedule could not be met. Therefore, the Navy recommended that an EECA for soils/debris removal at CAX Site 1 would be the best approach. The Team agrees upon this approach.
22	3/13/2003-22	3/13/2003	WPNSTA	23		Confirmation sampling during removal action	At Yorktown Site 23, the Team agrees that the removal action should meet the following goals: Areas A and C are large areas and confirmation sampling will include multiple bottom samples as proposed in the confirmation sampling plan. All other sample locations that exceed cleanup goals at this time will be removed as hot spots.
23	3/13/2003-23	3/13/2003	CAX	1		Site clean-up goals	The Team agrees that the Draft Final EE/CA for CAX Site 1 can be distributed for public comment without specific site clean-up goals. Specific clean-up goals will be presented to the Team for review and approval, and final clean-up goals will be incorporated in the Final EE/CA.
24	3/13/2003-24	3/13/2003	WPNSTA	4		Site clean-up goals	The team agrees that the ROD for Site 4 should be drafted upon completion of the on-going non-time critical removal action (NTCRA) to ensure that the ROD will be most appropriate in light of final conditions following the NTCRA. The team understands that \$600,000 will be committed in March 2003 to fund the NTCRA and that the Navy RPM projects that the NTCRA may require additional funding at the start of FY04 to complete the clean up.
25	4/29/2003-25	4/29/2003	CAX	1		Clean-up goals at CAX Site 1	The Team agrees to the clean-up goals for the planned removal action under the EE/CA for CAX Site 1 established during a conference call on April 14, 2003 (see the attached table).
26	6/17/2003-26	6/17/2003	WPNSTA	24		Groundwater investigation at WPNSTA Site 24 – Aviation Field	Based upon past sample results and the reported solid waste disposed of at WPNSTA Site 24 – Aviation Field, the Partnering Team agrees that a groundwater investigation is not warranted at this time unless the planned removal action at WPNSTA Site 24 can not meet human health or ecological clean-up goals that have yet to be determined for sediment and soil.
27	6/11/2003-27	6/11/2003	CAX	1		Concurrence on CAX Site Removal	EPA Region III, Virginia Department of Environmental Quality and Atlantic Division, Naval Facilities Engineering Division agree to the proposed removal action at Cheatham Annex Site 1 – Landfill Near the Incinerator as documented in the Draft Final April 2003 EE/CA and the Action Memorandum.
28	6/17/2003-28	6/17/2003	CAX	1		CAX Site 1 RI Schedule	For CAX Site 1, the Team agrees: 1. Issue RI as a Final Round I RI with replacement pages and cover letter explaining the decision rationale. 2. Defer the PRAP & ROD for the site until after completion of wetlands BERA and Round II RI for sediments. 3. Issue a letter to file that the FS will be deferred until completion of the Round II RI.
29	6/17/2003-29	6/17/2003	CAX	2, 3, 5, 6, 8, 10		CAX Sites 2, 3, 5, 6, 8 & 10, No further action decision	The Team agrees with the NFA remedy for CAX Sites 2, 3, 5, 6, 8 and 10 based upon the information presented for the Draft NFRAP Decision Document.
30	6/19/2003-30	6/18/2003	WPNSTA	12		Long term monitoring program at WPNSTA Site 12	Based upon the information presented on June 19, 2003 at the Partnering Meeting on the long term monitoring program at WPNSTA Site 12 (years one through five), the Partnering Team agreed to the following: 1. Eliminate LTM monitoring at wells 12GW13 and 12GW4 (located upgradient of site) and collect one round of samples during the next 5 year LTM period at wells 12GW8, 12GW19, 12GW18 and 12GW 18A and analyze for 8 RCRA metals (total metals only). 2. The team agreed to install a new monitoring well, 12GW20, down gradient of well 12GW07 at the site to identify the migration pathway for VOCs. 3. Eliminate sampling at wells 12GW01A, 12GW06 for VOCs because: a. 12GW01A is screened in the deeper aquifer and has no history of detections; b. 12GW06 – concentrations have decreased over time and it is recommended that monitoring at 12GW01 will adequately monitor groundwater pathway. 4. Collect samples from at 10 wells (12GW01, 12GW05, 12GW07, 12GW09, 12GW13, 12GW14, 12GW17, 12GW15, 12GW16, and 12GW20 (new well) every two years and analyze for all VOCs. 5. The team agreed to collect 4 or 5 sediment samples at locations 12SDCWL, 12SD32, 12SD34, 12SD37, and RI sa

TABLE 4-1

**WPNSTA YORKTOWN/CAX
PARTNERING TEAM
CONSENSUS STATEMENT SUMMARY**

NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT
31	10-30-03-31	10/30/2003	CAX	7		CAX Site 7 TCRA	Based upon the landfill's proximity to the York River and the erosional damage associated with Hurricane Isabel, the team agrees that additional funding is necessary for a TCRA at CAX Site 7 in order to stabilize the shoreline. If additional FY 2004 funds can be obtained, the team agrees to delineate and characterize the landfill and determine the feasibility of landfill removal in the near term.
32	12-2-03-32	Dec. 2, 2003	WPNSTA	WPNSTA OB/OD Range		OB/OD Groundwater Monitoring Program	The Partnering Team agrees that the RCRA groundwater monitoring program conducted at the OB/OD Range Site should be discontinued as the CERCLA program will be conducting a media-wide investigation of the site.
33	1-07-04-33	1/7/2004	WPNSTA	23		Site 23 TCRA	With respect to zinc-contaminated soil at Site 23, the Team agrees to stop excavating at Grids 1 through 6, and to place a minimum of 2 feet of clean backfill. We agree that with a minimum of 2 foot of clean fill, there are no current unacceptable ecological risks presented by the soils. With respect to grids 4, 5, and 6, confirmation sampling indicates that zinc concentrations at the bottom of the excavated grids exceed the cleanup goal of 200 mg/kg. The Team agrees that based on the current mission of the WPNSTA, and the location of Site 23 within the blast arc of the pier, it is unlikely that the site would be redeveloped. However, should the soil at grids 4, 5, and 6 be excavated in the future, there is a chance of future ecological risks from zinc in the soil, should this soil be brought back to the surface. However, this potential risk ecological risk is small, given that the overall size of grids 4, 5, and 6 is relatively small, and given that if excavation occurred, soil would be mixed with clean fill, and this mixing with the clean fill would lower the overall zinc concentrations. Therefore, the actual chance of potential future ecological risks is minima
34	3-9-04-34	3/9/2004	WPNSTA	4		Site 4 Draft ROD	The team will move forward with the preparation of the Draft ROD for WPNSTA Site 4 as cited in the FY 2004 team goals. The document will be for internal team review only pending completion of removal activities at WPNSTA Site 4.
35	3-9-04-35	3/11/2004	CAX	12		Site 12 NFRAP	The team agrees with the NFA remedy for CAX Site 12 – Disposal Site Water Tower based upon the no further action remedy recommended in the Technical Memorandum submitted for review on January 12, 2004. A No Further Response Action Planned (NFRAP) Decision Document with a Final Technical Memorandum as an appendix will be prepared for submittal by March 31, 2004 in accordance with the annual team 2004 goals.
36	3-22-04-36	3/22/2004	CAX	7		CAX Site 7	Based upon the field investigation conducted at CAX Site 7N, as summarized in the Draft Trenching Letter Report dated 19 March 2004, the team has agreed to move forward with a TCRA Action Memorandum as an interim action that will recommend appropriate erosion control and shoreline stabilization for the site. The team also agrees that removal of the CAX Site 7N landfill will be accomplished under an Engineering Evaluation/Cost Analysis (EE/CA) when funding is available. While the team agreed that an esthetic clean up of the beach in the vicinity of the landfill does little to mitigate risk, the team agreed to move forward with a beach cleanup at the request of the Navy.
37	5-18-04-37	5/18/2004	WPNSTA	SSA 15 Beaver Pond		Planned action for SSA 15 Beaver Pond	The team agrees, based upon the 2003 limited field investigation, to develop a work plan for the continued investigation of mercury associated with the former STP 2 area, when funding becomes available. The team agrees that the proposed continued investigation is a high priority. The work plan will include a sampling program of sediment and tissue samples of small fish and amphibians or frogs to further assess nature and extent (vertical and lateral) of mercury in Ballard Creek from the Beaver Dam to the next downstream impoundment structure.
38	5-19-04-38	5/19/2004				BTAG	The Yorktown/CAX Partnering Team agrees that the role of USEPA BTAG members will be changed from Adjunct Member to Technical Member.
39	6-24-04-39	6/24/2004	WPNSTA	18		Site 18 NFA	Team agrees with No Further Action for WPNSTA Yorktown Site 18.
40	6-24-04-40	6/24/2004	WPNSTA	2, 8, SSA 14		Planned action for Sites 2, 8, SSA 14	Team agrees to perform pre-characterization sampling for WPNSTA Yorktown Sites 2 and 8 and SSA 14. If the sampling shows that the extent of contamination at the sites can be well defined, then the Navy will complete an EE/CA with a removal action and go for a NFA ROD. However, if the sampling indicates that extent of contamination at the sites cannot be well defined, then the Team agrees to go forward with a BERA and follow on FS/PRAP with a ROD with remedy.

The work plan durations represent the estimated time required to generate the first draft document. The field investigation durations include the time required for subcontractor procurement and mobilization of equipment and personnel.

With respect to sample analysis, a 28-day duration is the contractual turnaround time for Naval Facilities Engineering Services Command (NFESC) approved laboratories. However, 30 days is a more realistic estimate for receipt of analytical data and is therefore used as the standard turnaround time for receipt of all laboratory analyses. For data validation, a 14-day duration was assumed for all analytical data, which is also the standard turnaround time for the data validation firms currently under contract.

For preparation of other RI/FS and RD/RA documents, typical or average durations were assumed based on prior experience in preparing these reports. More accurate estimates of document preparation times can be made in subsequent SMPs as more data become available; estimates will be updated in each site-specific work plan.

4.3 Site-Specific Schedules

This section presents the proposed activities and schedules for the sites, SSAs, and AOCs identified in Sections 2.0 and 3.0. Appendix A presents the schedules for completed actions. Appendix B presents detailed schedules for activities that are currently underway.

The basic strategy employed during development of the SMP schedules was to overlap the RI/FS and RD/RA activities to the maximum extent practicable in order to compress the entire project schedule. The amount of overlap was based on the degree of dependency between the various tasks and documents and requested review times of government agencies. Key dependencies and related assumptions are outlined below:

- **Remedial Investigation:** Preparation of the Draft RI was assumed to start once all the analytical data are received prior to completion of data validation. Certain RI tasks can begin before the data are validated; to prevent duplication of effort, this overlap was assumed to be two weeks.
- **Feasibility Study:** Many FS tasks are dependent on the nature and extent of contamination, which is determined in the RI document. Preparation of the Draft FS was assumed to start upon submission of the Draft Final RI for those sites which require a future FS.
- **Proposed Plan:** Preparation of the Draft Proposed Plan was assumed to start upon submission of the Draft Final FS. As comments are received from USEPA and the Commonwealth of Virginia on the FS, modifications to the Proposed Plan will be made concurrently.
- **Public Comment Period:** The 30-day public comment period on the Proposed Plan will begin when the final Proposed Plan is submitted. Public comments on the Proposed Plan can then be considered and addressed in the Responsiveness Summary section of the ROD.
- **Record of Decision:** Preparation of the ROD will begin upon submission of the Draft Final Proposed Plan. The final ROD will incorporate all public comments received during the Public Comment Period.
- **Remedial Design:** The RD was assumed to start when the Draft Final ROD is submitted. Full scale preparation of the RD will, however, not begin until concurrence with the selected alternative(s) is obtained.

4.3.1 Proposed RI/FS Activities

RI's are planned for WPNSTA Yorktown Sites 23-26, GWOU III, and GWOU IV in FY 2006 and FY 2007.

4.3.2 Proposed Removal Actions

Removal actions are planned for WPNSTA Yorktown Sites 2 and 8 and SSA 14 and CAX Site 7 in FY 2006 and FY 2007.

4.3.3 Treatability Study Schedules

All treatability studies scheduled for WPNSTA Yorktown have been completed. There have been no treatability studies completed at CAX. No new treatability studies are planned for WPNSTA or CAX in FY 2006 or FY 2007.

4.3.4 Presumptive Remedies

Presumptive remedies are preferred technologies for common categories of sites based on historical patterns of remedy selection and USEPA's scientific and engineering evaluation of performance data on technology implementation. The objective of presumptive remedies is to use past agency experience to streamline site investigation and expedite selection of cleanup actions by eliminating the need for the initial identification and screening of alternatives during the FS.

Presumptive remedies evolve from the expectation that containment will be the likely focus at sites having wastes that pose relatively low, long-term threats or where treatment is impracticable. Presumptive remedies, typically applicable to municipal and CERCLA landfills, are types of sites where treatment of the waste may be impractical because of their size and the heterogeneity of their contents.

Sites at WPNSTA that could potentially be candidate sites for presumptive remedies include Site 2, Site 8, and SSA 14.

The potential use of a presumptive remedy at WPNSTA will be evaluated in FY 2006 and FY 2007 as RI/FS efforts are completed and receive agency approval.

5.0 REFERENCES

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- Baker. 2005b. Proposed Plan for Site 18, Naval Weapons Station Yorktown, Yorktown, Virginia. February 2005.
- Baker. 2005c. Final Record of Decision for Site 4, Naval Weapons Station Yorktown, Yorktown, Virginia. August 2005.
- Baker. 2005d. Final Record of Decision for Site 18, Naval Weapons Station Yorktown, Yorktown, Virginia. August 2005.
- Baker. 2005e. Draft Remedial Design for Land Use Controls for Site 1, Naval Weapons Station Yorktown, Yorktown, Virginia. March 2005.
- Baker. 2005f. Final Work Plan for the Pre-Removal Characterization of Soil, Site 2, Site 8, and SSA 14, Naval Weapons Station Yorktown, Yorktown, Virginia. June 2005.
- Baker. 2005g. Draft Remedial Design for Land Use Controls for Site 6, Naval Weapons Station Yorktown, Yorktown, Virginia. March 2005.
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- Baker. 2005i. Draft Remedial Design for Land Use Controls for Site 12, Naval Weapons Station Yorktown, Yorktown, Virginia. March 2005.
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- Baker. 2005k. Final Work Plan for the Recharacterization of Soil and Sediment at Site 23, Naval Weapons Station Yorktown, Yorktown, Virginia. May 2005.
- Baker. 2005l. Draft Project Plans for Step 3b and 4 of the Baseline Ecological Risk Assessment for SSA 25, Naval Weapons Station Yorktown, Yorktown, Virginia. May 2005.
- Baker. 2005m. Final Screening Level Ecological Risk Assessment and Step 3a Refinement Report. Site 1 – Landfill Near Incinerator. Naval Weapons Station Yorktown, Cheatham Annex. April 2005.
- Baker. 2005n. Final Screening Level Ecological Risk Assessment for Sites 4 and 9, Naval Weapons Station Yorktown, Cheatham Annex. June 2005.
- Baker. 2004a. Final Round Two Remedial Investigation Report for Sites 2, 8, 18, and Site Screening Area 14, Naval Weapons Station Yorktown, Yorktown, Virginia. June 2004.
- Baker. 2004b. Final Remedial Investigation Report for Site 1 – Landfill Near Incinerator, Naval Weapons Station Yorktown, Yorktown, Virginia, Cheatham Annex Site. February 2004.

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Baker. 2004d. Final Additional Evaluation of Site Screening Areas 3, 4, 5, and 21, Naval Weapons Station Yorktown, Yorktown, Virginia. March 2004.

Baker. 2004e. Final No Further Response Action Planned Decision Document for Site 12. Naval Weapons Station Yorktown, Cheatham Annex Site. March 2004.

Baker. 2004f. Draft Site 12 Long-Term Monitoring Report – Years 1 to 5, Naval Weapons Station Yorktown, Yorktown, Virginia. March 2004.

Baker. 2004g. Final Trenching and Limited Field Investigation Report for Site 7N, Naval Weapons Station Yorktown, Cheatham Annex Site. June 2004.

Baker. 2004h. Final Action Memorandum for Time-Critical Removal Action at Site 7N, Naval Weapons Station Yorktown, Cheatham Annex Site. July 2004.

Baker. 2003a. Final Record of Decision for Site 21, Naval Weapons Station Yorktown, Yorktown, Virginia. September 2003.

Baker. 2003b. Final Record of Decision for Site 22, Naval Weapons Station Yorktown, Yorktown, Virginia. September 2003.

Baker. 2003c. Final No Further Response Action Planned Decision Document for Sites 2, 3, 5, 6, 8, and 10, Naval Weapons Station Yorktown Cheatham Annex Site. September 2003.

Baker. 2003d. Action Memorandum for Contaminated Soil, Site 1 – Landfill Near Incinerator, Naval Weapons Station Yorktown, Yorktown, Virginia, Cheatham Annex Site. June 2003.

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Baker. 2002b. Final Five-Year Review Report for Sites 1, 6, 7, 12, 16, and 19, Naval Weapons Station Yorktown, Yorktown, Virginia. September 2002.

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Baker. 2001e. Proposed Remedial Action Plan for Site 21, Naval Weapons Station Yorktown, Yorktown, Virginia. August 2001.

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APPENDIX A
DETAILED SCHEDULES FOR COMPLETED ACTIONS

FY 1994: Site 5 Risk Assessment, Proposed Plan, and Record of Decision
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Days	Start	Finish	1994												1995					
				Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
SITE 5	393ed	9/1/93	9/29/94	[Solid black bar from Sep 1993 to Sep 1994]																	
RISK ASSESSMENT	275ed	9/1/93	6/3/94	[Solid black bar from Sep 1993 to Jun 1994]																	
Preliminary Draft	61ed	9/1/93	11/1/93	[Hatched bar from Sep 1993 to Oct 1993]																	
Review (Navy)	29ed	11/1/93	11/30/93	[Hatched bar from Nov 1993 to Dec 1993]																	
Draft	30ed	11/30/93	12/30/93	[Hatched bar from Dec 1993 to Jan 1994]																	
Review (EPA/State)	60ed	12/30/93	2/28/94	[Hatched bar from Jan 1994 to Feb 1994]																	
Draft Final	60ed	2/28/94	4/29/94	[Hatched bar from Mar 1994 to Apr 1994]																	
Final	35ed	4/29/94	6/3/94	[Hatched bar from May 1994 to Jun 1994]																	
PROPOSED PLAN	212ed	11/1/93	6/1/94	[Solid black bar from Nov 1993 to Jun 1994]																	
Preliminary Draft	30ed	11/1/93	12/1/93	[Hatched bar from Nov 1993 to Dec 1993]																	
Review (Navy)	33ed	12/1/93	1/3/94	[Hatched bar from Dec 1993 to Jan 1994]																	
Draft	28ed	1/3/94	1/31/94	[Hatched bar from Jan 1994 to Feb 1994]																	
Review (EPA/State)	60ed	1/31/94	4/1/94	[Hatched bar from Feb 1994 to Mar 1994]																	
Draft Final	31ed	4/1/94	5/2/94	[Hatched bar from Apr 1994 to May 1994]																	
Final	30ed	5/2/94	6/1/94	[Hatched bar from May 1994 to Jun 1994]																	
PUBLIC COMMENT PERIOD	45ed	6/5/94	7/20/94	[Solid black bar from Jun 1994 to Jul 1994]																	

FY 1994: Sites 6, 7, 12, 16, SSA 16 and Background Work Plan / Field Investigation
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Days	Start	Finish	1994																
				Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
SITES 6, 7, 12, 16, SSA 16 AND BACKGROUND RI WORK PLAN	474ed	9/1/93	12/19/94	[Solid black bar spanning from Sep 1993 to Dec 1994]																
Preliminary Draft	61ed	9/1/93	11/1/93	[Solid black bar from Sep 1993 to Nov 1993]																
Review (Navy)	30ed	11/1/93	12/1/93	[Hatched bar from Sep 1993 to Oct 1993]																
Draft	34ed	12/1/93	1/4/94	[Hatched bar from Nov 1993 to Dec 1993]																
Review (EPA/State)	60ed	1/4/94	3/5/94	[Hatched bar from Dec 1993 to Jan 1994]																
Draft Final	60ed	3/5/94	5/4/94	[Hatched bar from Jan 1994 to Feb 1994]																
Final	31ed	5/4/94	6/4/94	[Hatched bar from Feb 1994 to Mar 1994]																
RI FIELD INVESTIGATION	135ed	6/20/94	11/2/94	[Solid black bar from Jun 1994 to Oct 1994]																
Mobilization	15ed	6/20/94	7/5/94	[Hatched bar from Jun 1994 to Jul 1994]																
Field Investigation	120ed	7/5/94	11/2/94	[Hatched bar from Jul 1994 to Oct 1994]																
SAMPLE ANALYSIS/VALIDATION	160ed	7/7/94	12/14/94	[Solid black bar from Jul 1994 to Nov 1994]																
Sample Analysis	146ed	7/7/94	11/30/94	[Hatched bar from Jul 1994 to Oct 1994]																
Data Validation	132ed	8/4/94	12/14/94	[Hatched bar from Aug 1994 to Dec 1994]																

FY 1994: York River Basin Background Report
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Days	Start	Finish	1995												
				Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
YORK RIVER BASIN BACKGROUND REPORT	288ed	12/1/94	9/15/95													
Preliminary Draft	90ed	12/1/94	3/1/95													
Review (Navy)	30ed	3/1/95	3/31/95													
Draft	17ed	3/31/95	4/17/95													
Review (EPA/State)	60ed	4/17/95	6/16/95													
Final	35ed	6/16/95	7/21/95													

NOTE: The Draft Final Deliverable was not submitted due to limited Government comments.

FY 1995: Sites 4 and 21 Post-Removal Confirmation Sampling Report and Baseline Risk Assessment, Proposed Plan, and Record of Decision
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Days	Start	Finish	1995												1996					
				J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
SITES 4 and 21	298ed	1/23/95	11/17/95	[Solid black bar from Jan to Nov 1995]																	
POST-REMOVAL CONFIRMATION SAMPLING REPORT AND BASELINE RISK ASSESSMENT	298ed	1/23/95	11/17/95	[Solid black bar from Jan to Nov 1995]																	
Draft	42ed	3/23/95	5/4/95	[Dotted bar from Mar 23 to May 4 1995]																	
Review (EPA/State)	92ed	5/4/95	8/4/95	[Dotted bar from May 4 to Aug 4 1995]																	
Draft Final	47ed	8/4/95	9/20/95	[Hatched bar from Aug 4 to Sep 20 1995]																	
Review (EPA/State)	29ed	9/20/95	10/19/95	[Dotted bar from Sep 20 to Oct 19 1995]																	
Final	29ed	10/19/95	11/17/95	[Dotted bar from Oct 19 to Nov 17 1995]																	
PROPOSED PLAN	92ed	4/25/95	7/26/95	[Solid black bar from Apr 25 to Jul 26 1995]																	
Draft	31ed	4/25/95	5/26/95	[Dotted bar from Apr 25 to May 26 1995]																	
Review (EPA/State)	61ed	5/26/95	7/26/95	[Hatched bar from May 26 to Jul 26 1995]																	
RECORD OF DECISION	91ed	6/22/95	9/21/95	[Solid black bar from Jun 22 to Sep 21 1995]																	
Draft	32ed	6/22/95	7/24/95	[Dotted bar from Jun 22 to Jul 24 1995]																	
Review (EPA/State)	59ed	7/24/95	9/21/95	[Hatched bar from Jul 24 to Sep 21 1995]																	

Note: The remaining deliverables for the Proposed Plan and Record of Decision were eliminated from the scope of work.

FY 1995: Site 16 and SSA 16 Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision
 Naval Weapons Station Yorktown, Yorktown, Virginia

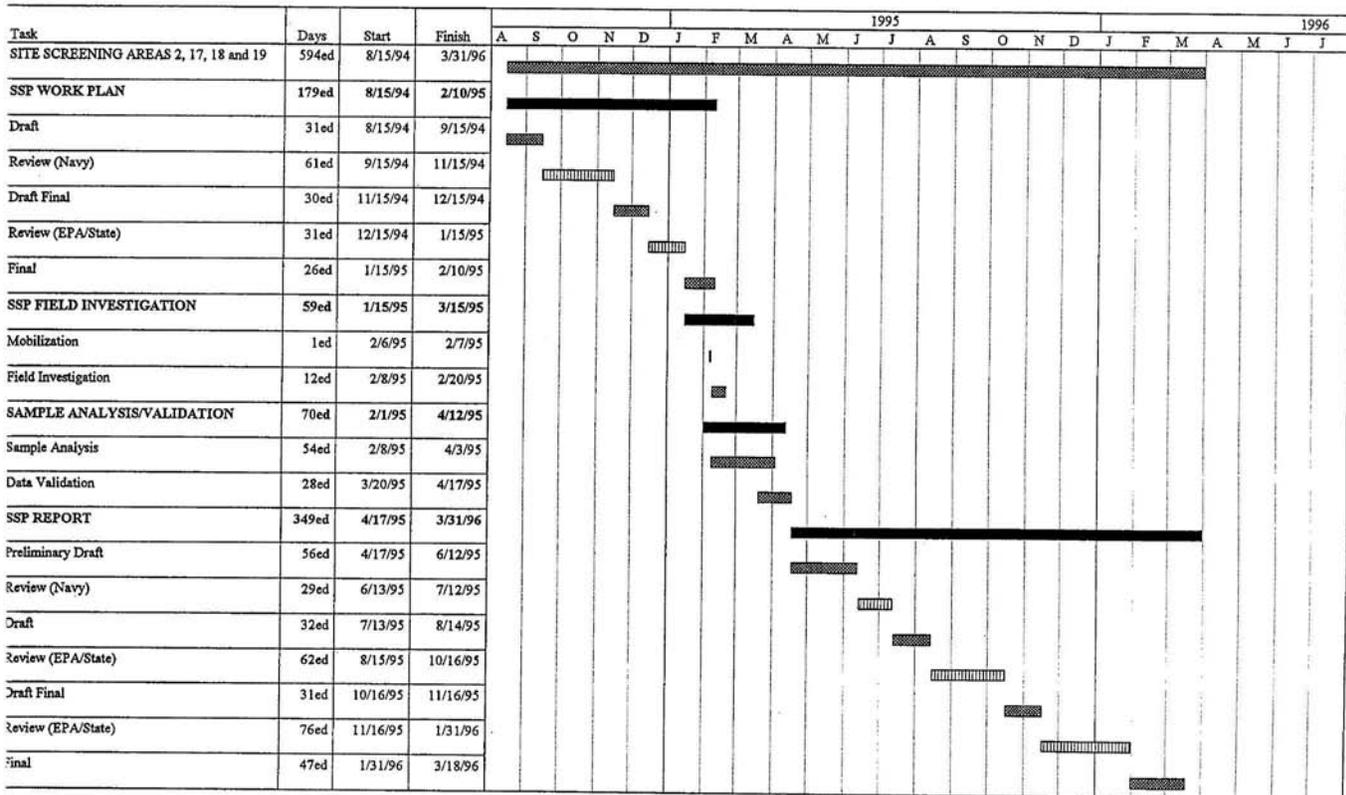
Task	Days	Start	Finish	1995												1996											
				D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
SITES 16 and SSA 16	294ed	12/23/94	10/13/95	[Gantt bar from Dec 23, 1994 to Oct 13, 1995]																							
REMEDIAL INVESTIGATION REPORT	210ed	12/23/94	7/21/95	[Gantt bar from Dec 23, 1994 to Jul 21, 1995]																							
Preliminary Draft	62ed	12/23/94	2/23/95	[Gantt bar from Dec 23, 1994 to Feb 23, 1995]																							
Review (Navy)	25ed	2/24/95	3/21/95	[Gantt bar from Feb 24, 1995 to Mar 21, 1995]																							
Draft	30ed	3/21/95	4/20/95	[Gantt bar from Mar 21, 1995 to Apr 20, 1995]																							
Review (EPA/State)	69ed	4/20/95	6/28/95	[Gantt bar from Apr 20, 1995 to Jun 28, 1995]																							
Final	23ed	6/28/95	7/21/95	[Gantt bar from Jun 28, 1995 to Jul 21, 1995]																							
PROPOSED PLAN	179ed	1/23/95	7/21/95	[Gantt bar from Jan 23, 1995 to Jul 21, 1995]																							
Preliminary Draft	58ed	1/23/95	3/22/95	[Gantt bar from Jan 23, 1995 to Mar 22, 1995]																							
Review (Navy)	48ed	3/23/95	5/10/95	[Gantt bar from Mar 23, 1995 to May 10, 1995]																							
Draft	9ed	5/10/95	5/19/95	[Gantt bar from May 10, 1995 to May 19, 1995]																							
Review (EPA/State)	33ed	5/19/95	6/21/95	[Gantt bar from May 19, 1995 to Jun 21, 1995]																							
Final	30ed	6/21/95	7/21/95	[Gantt bar from Jun 21, 1995 to Jul 21, 1995]																							
PUBLIC COMMENT PERIOD	45ed	7/25/95	9/8/95	[Gantt bar from Jul 25, 1995 to Sep 8, 1995]																							
RECORD OF DECISION	204ed	3/23/95	10/13/95	[Gantt bar from Mar 23, 1995 to Oct 13, 1995]																							
Preliminary Draft	29ed	3/23/95	4/21/95	[Gantt bar from Mar 23, 1995 to Apr 21, 1995]																							
Review (Navy)	42ed	4/21/95	6/2/95	[Gantt bar from Apr 21, 1995 to Jun 2, 1995]																							
Draft	17ed	6/2/95	6/19/95	[Gantt bar from Jun 2, 1995 to Jun 19, 1995]																							
Review (EPA/State)	30ed	6/19/95	7/19/95	[Gantt bar from Jun 19, 1995 to Jul 19, 1995]																							
Draft Final	19ed	7/19/95	8/7/95	[Gantt bar from Jul 19, 1995 to Aug 7, 1995]																							
Review (EPA/State)	60ed	8/7/95	10/6/95	[Gantt bar from Aug 7, 1995 to Oct 6, 1995]																							
Final	7ed	10/6/95	10/13/95	[Gantt bar from Oct 6, 1995 to Oct 13, 1995]																							

NOTE: The Draft Final Deliverable was not submitted due to limited Government comments.

FY 1995: Sites 9 and 19 Work Plan/Field Investigation
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Days	Start	Finish	1995											
				D	J	F	M	A	M	J	J	A	S	O	N
SITES 9 and 19	369ed	12/1/94	12/5/95	[Solid black bar]											
RI WORK PLAN	267ed	12/1/94	8/25/95	[Solid black bar]											
Preliminary Draft	74ed	12/1/94	2/13/95	[Dotted bar]											
Review (Navy)	16ed	2/13/95	3/1/95	[Dotted bar]											
Draft	30ed	3/1/95	3/31/95	[Dotted bar]											
Review (EPA/State)	59ed	3/31/95	5/29/95	[Dotted bar]											
Draft Final	30ed	5/29/95	6/28/95	[Dotted bar]											
Review (EPA/State)	30ed	6/28/95	7/28/95	[Dotted bar]											
Final	28ed	7/28/95	8/25/95	[Dotted bar]											
RI FIELD INVESTIGATION	60ed	8/21/95	10/20/95	[Solid black bar]											
Mobilization	4ed	8/21/95	8/25/95	[Solid black bar]											
Field Investigation	56ed	8/25/95	10/20/95	[Dotted bar]											
SAMPLE ANALYSIS/VALIDATION	89ed	9/7/95	12/5/95	[Solid black bar]											
Sample Analysis	74ed	9/7/95	11/20/95	[Solid black bar]											
Data Validation	60ed	10/6/95	12/5/95	[Dotted bar]											

FY 1995: Site Screening Areas 2, 17, 18 and 19 Work Plan/Field Investigation/SSP Report
 Naval Weapons Station Yorktown, Yorktown, Virginia



Note: Work Plan Production was funded in FY 1994.

FY 1995: Site 12 Remedial Investigation/Feasibility Study/Proposed Plan/Record of Decision
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Days	Start	Finish	1995												1996												1											
				Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		Mar	Apr	May	Jun							
Site 12	650ed	3/31/95	1/9/97	[Solid black bar]																																			
REMEDIAL INVESTIGATION REPORT	454ed	3/31/95	6/27/96	[Solid black bar]																																			
Preliminary Draft	61ed	3/31/95	5/31/95	[Dotted bar]																																			
Review (Navy)	30ed	5/31/95	6/30/95	[Dotted bar]																																			
Draft	70ed	6/30/95	9/8/95	[Dotted bar]																																			
Review (EPA/State)	60ed	9/8/95	11/7/95	[Dotted bar]																																			
Draft Final	156ed	11/7/95	4/11/96	[Dotted bar]																																			
Review (EPA/State)	62ed	4/11/96	6/12/96	[Dotted bar]																																			
Final	15ed	6/12/96	6/27/96	[Dotted bar]																																			
FEASIBILITY STUDY	426ed	4/28/95	6/27/96	[Solid black bar]																																			
Preliminary Draft	77ed	4/28/95	7/14/95	[Dotted bar]																																			
Review (Navy)	31ed	7/14/95	8/14/95	[Dotted bar]																																			
Draft	38ed	8/14/95	9/21/95	[Dotted bar]																																			
Review (EPA/State)	60ed	9/21/95	11/20/95	[Dotted bar]																																			
Draft Final	151ed	11/20/95	4/19/96	[Dotted bar]																																			
Review (EPA/State)	54ed	4/19/96	6/12/96	[Dotted bar]																																			
Final	15ed	6/12/96	6/27/96	[Dotted bar]																																			
PROPOSED PLAN	427ed	4/28/95	6/28/96	[Solid black bar]																																			
Preliminary Draft	84ed	4/28/95	7/21/95	[Dotted bar]																																			
Review (Navy)	62ed	7/21/95	9/21/95	[Dotted bar]																																			
Draft	29ed	9/21/95	10/20/95	[Dotted bar]																																			
Review (EPA/State)	61ed	10/20/95	12/20/95	[Dotted bar]																																			

FY 1996: Site Screening Areas 8, 11, 12, and 13, Work Plan/SSP Report
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Days	Start	Finish	1996												1997															
				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	Oct		
SITE SCREENING AREAS 8, 11, 12, and 13	624ed	11/13/95	7/29/97	[Solid black bar from Nov 1995 to Jul 1997]																											
Site Visit	2ed	11/13/95	11/15/95	[Vertical line at Nov 1995]																											
SSA WORK PLAN	163ed	11/15/95	4/26/96	[Solid black bar from Nov 1995 to Apr 1996]																											
Draft	30ed	11/15/95	12/15/95	[Hatched bar from Nov 1995 to Dec 1995]																											
Review (EPA/State)	70ed	12/15/95	2/23/96	[Hatched bar from Dec 1995 to Feb 1996]																											
Draft Final	32ed	2/23/96	3/26/96	[Hatched bar from Feb 1996 to Mar 1996]																											
Review (EPA/State)	30ed	3/26/96	4/25/96	[Hatched bar from Mar 1996 to Apr 1996]																											
Final	1ed	4/25/96	4/26/96	[Vertical line at Apr 1996]																											
SSP FIELD INVESTIGATION	4ed	5/6/96	5/10/96	[Vertical line at May 1996]																											
Mobilization	2ed	5/6/96	5/8/96	[Vertical line at May 1996]																											
Field Investigation	2ed	5/8/96	5/10/96	[Vertical line at May 1996]																											
SAMPLE ANALYSIS/VALIDATION	54ed	5/8/96	7/1/96	[Solid black bar from May 1996 to Jul 1996]																											
Sample Analysis	34ed	5/8/96	6/11/96	[Hatched bar from May 1996 to Jun 1996]																											
Data Validation	20ed	6/11/96	7/1/96	[Hatched bar from Jun 1996 to Jul 1996]																											
SITE SCREENING PROCESS REPORT	407ed	6/17/96	7/29/97	[Solid black bar from Jun 1996 to Jul 1997]																											
Draft	44ed	6/17/96	7/31/96	[Hatched bar from Jun 1996 to Jul 1996]																											
Review (EPA/State)	106ed	7/31/96	11/14/96	[Hatched bar from Jul 1996 to Nov 1996]																											
Final **	47ed	6/12/97	7/29/97	[Hatched bar from Jun 1997 to Jul 1997]																											

** Review and Comments of documents covered under Partnering

FY 1995: Sites 6 and 7 Remedial Investigation/Feasibility Study/Proposed Plan/Record of Decision
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task Name	Days	Start	Finish	1995												1996												1997												1998											
				J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F			
Sites 6 and 7	1218 edays	6/5/95	10/5/98	[Solid black bar]																																															
REMEDIAL INVESTIGATION REPORT	1082 edays	6/5/95	5/22/98	[Solid black bar]																																															
Preliminary Draft	116 edays	6/5/95	9/29/95	[Dotted bar]																																															
Review (Navy)	31 edays	9/29/95	10/30/95	[Dotted bar]																																															
Draft Work Plan Letter Addendum	7 edays	1/23/96	1/30/96	[Dotted bar]																																															
Review	7 edays	1/30/96	2/6/96	[Dotted bar]																																															
Final Work Plan Letter Addendum	6 edays	2/6/96	2/12/96	[Dotted bar]																																															
Additional Field Investigation	12 edays	2/12/96	2/24/96	[Dotted bar]																																															
Data Analysis and Validation	30 edays	2/24/96	3/25/96	[Dotted bar]																																															
Draft	67 edays	3/25/96	5/31/96	[Dotted bar]																																															
Review (EPA/State)	74 edays	5/31/96	8/13/96	[Dotted bar]																																															
Interim Final	218 edays	7/1/97	2/4/98	[Dotted bar]																																															
Review (EPA/State)	30 edays	2/4/98	3/6/98	[Dotted bar]																																															
Final	77 edays	3/6/98	5/22/98	[Dotted bar]																																															
FEASIBILITY STUDY	748 edays	5/10/96	5/28/98	[Solid black bar]																																															
Preliminary Draft	105 edays	5/10/96	8/23/96	[Dotted bar]																																															
Review (Navy)	31 edays	8/23/96	9/23/96	[Dotted bar]																																															
Interim Final	41 edays	2/13/98	3/26/98	[Dotted bar]																																															
Review (EPA/State)	19 edays	3/26/98	4/14/98	[Dotted bar]																																															
Final **	44 edays	4/14/98	5/28/98	[Dotted bar]																																															
PROPOSED PLAN	706 edays	6/21/96	5/28/98	[Solid black bar]																																															
Preliminary Draft	70 edays	6/21/96	8/30/96	[Dotted bar]																																															

NOTE: Public Comment Period will close prior to finalization of the Record of Decision. ** Review and Comments on documents covered under Partnering.

FY 1995: Sites 1 and 3 Remedial Investigation/Feasibility Study/Proposed Plan/Record of Decision
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task Name	Duration	Start	Finish	1995												1996												1997												1998												1
				J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	
SITES 1 and 3	1446 edays	7/3/95	6/18/99	[Gantt bar]																																																
RI WORK PLAN	243 edays	7/1/95	2/29/96	[Gantt bar]																																																
Preliminary Draft Meeting	31 edays	7/1/95	8/1/95	[Gantt bar]																																																
Draft	31 edays	8/1/95	9/1/95	[Gantt bar]																																																
Review (EPA/State)	61 edays	7/3/95	9/2/95	[Gantt bar]																																																
Draft Final	42 edays	11/1/95	12/13/95	[Gantt bar]																																																
Review (EPA/State)	50 edays	7/3/95	8/22/95	[Gantt bar]																																																
Final	28 edays	2/1/96	2/29/96	[Gantt bar]																																																
RI FIELD INVESTIGATION	72 edays	12/4/95	2/14/96	[Gantt bar]																																																
Mobilization	3 edays	12/4/95	12/7/95	[Gantt bar]																																																
Field Investigation	23 edays	1/22/96	2/14/96	[Gantt bar]																																																
SAMPLE ANALYSIS/VALIDATION	68 edays	1/22/96	3/30/96	[Gantt bar]																																																
Sample Analysis	53 edays	1/22/96	3/15/96	[Gantt bar]																																																
Data Validation	37 edays	2/22/96	3/30/96	[Gantt bar]																																																
REMEDIAL INVESTIGATION REPORT	478 edays	3/28/96	7/19/97	[Gantt bar]																																																
Preliminary Draft Meeting	62 edays	3/28/96	5/29/96	[Gantt bar]																																																
Draft	31 edays	5/29/96	6/29/96	[Gantt bar]																																																
Review (EPA/State)	172 edays	6/29/96	12/18/96	[Gantt bar]																																																
Draft Final	51 edays	12/18/96	2/7/97	[Gantt bar]																																																
Review (EPA/State)	139 edays	2/7/97	6/26/97	[Gantt bar]																																																
Final **	330 edays	6/26/97	5/22/98	[Gantt bar]																																																
FOCUSED FEASIBILITY STUDY	94 edays	7/18/97	10/20/97	[Gantt bar]																																																
Draft	59 edays	7/18/97	9/15/97	[Gantt bar]																																																

FY 1995: CTO-209 Bench-Scale Treatability Study
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Description	Days	Start	Finish	Start1	1995												1996												1997											
						O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
PHASE I	SOIL CHARACTERIZATION/COLLECTION	125ed	10/1/94	2/3/95	NA	[Gantt chart bars for Phase I tasks]																																			
Task 1	Soil Characterization	93ed	10/1/94	1/2/95	NA	[Gantt chart bars for Task 1]																																			
	Project Scope Development	61ed	10/1/94	12/1/94	NA	[Gantt chart bars for Project Scope Development]																																			
	Soil Characterization Work Plan	61ed	10/1/94	12/1/94	NA	[Gantt chart bars for Soil Characterization Work Plan]																																			
	Navy Review	7ed	12/1/94	12/8/94	NA	[Gantt chart bars for Navy Review]																																			
	Field Preparation/Mobilization	5ed	12/5/94	12/10/94	NA	[Gantt chart bars for Field Preparation/Mobilization]																																			
	Field Investigation	5ed	12/12/94	12/17/94	NA	[Gantt chart bars for Field Investigation]																																			
	Laboratory Analysis	20ed	12/13/94	1/2/95	NA	[Gantt chart bars for Laboratory Analysis]																																			
Task 2	Soil Characterization Evaluation	7ed	1/5/95	1/12/95	NA	[Gantt chart bars for Task 2]																																			
	Meeting @LANTDIV	0ed	1/5/95	1/5/95	1/5/95	[Gantt chart bars for Meeting @LANTDIV]																																			
	Meeting Summary	6ed	1/6/95	1/12/95	NA	[Gantt chart bars for Meeting Summary]																																			
Task 3	Soil Sample Collection	21ed	1/13/95	2/3/95	NA	[Gantt chart bars for Task 3]																																			
	Field Preparation	2ed	1/13/95	1/15/95	NA	[Gantt chart bars for Field Preparation]																																			
	Soil Collection	3ed	1/16/95	1/19/95	NA	[Gantt chart bars for Soil Collection]																																			
	Laboratory Analysis	7ed	1/19/95	1/26/95	NA	[Gantt chart bars for Laboratory Analysis]																																			
	W.E.S Collection	0.67d	1/30/95	1/30/95	1/30/95	[Gantt chart bars for W.E.S Collection]																																			
	Documentation/Reporting	18ed	1/16/95	2/3/95	NA	[Gantt chart bars for Documentation/Reporting]																																			

* Deliverable due date will be modified pending peer review of the Army Corps of Engineers Report on the Treatability Study.

FY 1995: CTO-209 Bench-Scale Treatability Study
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Description	Days	Start	Finish	Start1	1995												1996												1997											
						O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
PHASE II	BENCH-SCALE TREATABILITY STUDIES	985ed	10/1/94	6/12/97	NA	[Solid black bar from start of 1995 to end of 1996]																																			
Task 4	Treatability Study Work Plan	213ed	10/1/94	5/2/95	NA	[Solid black bar from start of 1995 to end of 1995]																																			
	Preliminary Draft Work Plan (WES)	31ed	10/1/94	11/1/94	NA	[Hatched bar from start of 1995 to end of 1995]																																			
	Navy/Baker Review	22ed	11/1/94	11/23/94	NA	[Hatched bar from start of 1995 to end of 1995]																																			
	Draft Work Plan (WES)	51ed	11/23/94	1/13/95	NA	[Hatched bar from start of 1995 to end of 1995]																																			
	EPA/State Review	61ed	1/13/95	3/15/95	NA	[Hatched bar from start of 1995 to end of 1995]																																			
	Final Work Plan (WES/Baker)	48ed	3/15/95	5/2/95	NA	[Hatched bar from start of 1995 to end of 1995]																																			
Task 5	Bench-Scale Treatability Study	613ed	1/30/95	10/4/96	NA	[Solid black bar from start of 1995 to end of 1996]																																			
	Phase I to III	151ed	1/30/95	6/30/95	NA	[Hatched bar from start of 1995 to end of 1995]																																			
	Meeting @ WES	0ed	7/7/95	7/7/95	7/7/95	[Diamond marker at start of 1995]																																			
	Phase IV (Bioslurry)	191ed	7/10/95	1/17/96	NA	[Hatched bar from start of 1995 to end of 1995]																																			
	Phase V (Biocell)	163ed	7/10/95	12/20/95	NA	[Hatched bar from start of 1995 to end of 1995]																																			
	Phase VI (Shurox)	220ed	7/10/95	2/15/96	NA	[Hatched bar from start of 1995 to end of 1995]																																			
	Phase VII (Reporting)	232ed	2/15/96	10/4/96	NA	[Hatched bar from start of 1995 to end of 1995]																																			
Task 6	Treatability Study Report (T.S.)	251ed	10/4/96	6/12/97	NA	[Solid black bar from start of 1996 to end of 1996]																																			
	Review WES TS	7ed	10/4/96	10/11/96	NA	[Hatched bar from start of 1996 to end of 1996]																																			
	Preliminary Draft T.S. (Baker)	29ed	1/2/97	1/31/97	NA	[Hatched bar from start of 1996 to end of 1996]																																			
	LANTDIV Review	31ed	1/31/97	3/3/97	4/15/96	[Hatched bar from start of 1996 to end of 1996]																																			
	Draft T.S. (WES/Baker)	2ed	3/3/97	3/5/97	NA	[Hatched bar from start of 1996 to end of 1996]																																			
	EPA/State Review	51ed	3/5/97	4/25/97	NA	[Hatched bar from start of 1996 to end of 1996]																																			
	Final T.S. Report (Baker)	128ed	4/25/97	8/31/97	NA	[Hatched bar from start of 1996 to end of 1996]																																			

* Deliverable due date will be modified pending peer review of the Army Corps of Engineers Report on the Treatability Study.

FY 1996: CTO-354, Sites 11 and 17, Work Plan/Field Investigation/RI Report/FS Report/PRAP/ROD
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task Name	Days	Start	Finish	1996												1997												1998												1999												200																																																																																																																																																																																																																																																		
				F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J																																																																																																																																																																																																																																													
SITES 11 and 17	1315 edays	2/23/96	9/30/99	[Solid black bar]																																																																																																																																																																																																																																																																																																		
WORK PLAN	273 edays	2/23/96	11/22/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Preliminary Draft	60 edays	2/23/96	4/23/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Review (Navy)	30 edays	4/23/96	5/23/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Draft	29 edays	5/23/96	6/21/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Review (EPA/State)	80 edays	6/21/96	9/9/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Draft Final	11 edays	9/9/96	9/20/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Review (EPA/State)	29 edays	9/20/96	10/19/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Final	34 edays	10/19/96	11/22/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
RI FIELD INVESTIGATION	44 edays	10/7/96	11/20/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Mobilization	4 edays	10/7/96	10/11/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Field Investigation	23 edays	10/28/96	11/20/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
SAMPLE ANALYSIS/VALIDATION	72 edays	10/29/96	1/9/97	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Sample Analysis	57 edays	10/29/96	12/25/96	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Data Validation	40 edays	11/30/96	1/9/97	[Solid black bar]																																																																																																																																																																																																																																																																																																		
REMEDIAL INVESTIGATION REPORT	470 edays	5/7/97	8/20/98	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Draft	124 edays	5/7/97	9/8/97	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Review (EPA/State)	38 edays	9/8/97	10/16/97	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Draft Final	291 edays	10/16/97	8/3/98	[Solid black bar]																																																																																																																																																																																																																																																																																																		
Final	17 edays	8/3/98	8/20/98	[Solid black bar]																																																																																																																																																																																																																																																																																																		

FY 1998 & 1999: CTO-0388 Field Investigation Report - Site 1 and AOC 2
Naval Weapons Station Yorktown, Yorktown Virginia
Cheatham Annex Site

Task Name	Start	Finish	1998										1999							
			May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
PROJECT PLANS	NA	NA																		
Draft	6/15/98	7/10/98		█																
Review (Navy)	7/11/98	7/31/98			█															
Draft Final	7/20/98	8/12/98			█	█														
Review (EPA/State)	8/12/98	9/25/98				█	█	█												
Final	9/23/98	10/16/98						█	█											
FIELD INVESTIGATION	NA	NA																		
Mobilization	10/12/98	10/19/98							█											
Field Investigation	10/19/98	10/24/98							█											
SAMPLE ANALYSIS/VALIDATION	NA	NA																		
Sample Analysis	10/22/98	12/15/98								█	█									
Data Validation	12/1/98	1/22/99									█	█								
REPORT	NA	NA																		
Draft	11/1/98	3/26/99									█	█	█	█						
Review (Navy)	3/25/99	5/4/99												█	█					
Draft Final	5/4/99	5/14/99													█					
Review (EPA/State)	5/14/99	8/13/99														█	█	█		
Final	8/1/99	9/7/99															█	█	█	
Shoreline Erosion Evaluation	7/7/98	8/9/98		█															█	█
	NA	NA																		

CAX Sites 4, 9, 11 Ecological Risk Assessment, Steps 1 and 2
 Cheatham Annex Site
 Naval Weapons Station, Yorktown, Virginia

Task Name	Duration	Start	Finish	2001												2002			
				M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	
Site Management Plan	251 days	Tue 5/15/01	Tue 4/30/02	[Gantt bar spanning from May 2001 to April 2002]															
Draft	24 days	Tue 5/15/01	Fri 6/15/01	[Gantt bar from May 15, 2001 to June 15, 2001]															
Navy and Agency Review	43 days	Mon 6/18/01	Wed 8/15/01	[Gantt bar from June 18, 2001 to August 15, 2001]															
Final	184 days	Thu 8/16/01	Tue 4/30/02	[Gantt bar from August 16, 2001 to April 30, 2002]															
Ecological Risk Assessments	108 days	Mon 6/4/01	Wed 10/31/01	[Gantt bar spanning from June 2001 to October 2001]															
Draft	21 days	Mon 6/4/01	Mon 7/2/01	[Gantt bar from June 4, 2001 to July 2, 2001]															
Navy and Agency Review	43 days	Tue 7/3/01	Thu 8/30/01	[Gantt bar from July 3, 2001 to August 30, 2001]															
Final	44 days	Fri 8/31/01	Wed 10/31/01	[Gantt bar from August 31, 2001 to October 31, 2001]															
Community Relations Plan	271 days	Wed 5/2/01	Wed 5/15/02	[Gantt bar spanning from May 2001 to May 2002]															
Draft	23 days	Wed 5/2/01	Fri 6/1/01	[Gantt bar from May 2, 2001 to June 1, 2001]															
Navy and Agency Review	31 days	Mon 6/4/01	Mon 7/16/01	[Gantt bar from June 4, 2001 to July 16, 2001]															
Final	217 days	Tue 7/17/01	Wed 5/15/02	[Gantt bar from July 17, 2001 to May 15, 2002]															
Public Comment Period	31 days	Mon 6/3/02	Mon 7/15/02	[Gantt bar from June 3, 2002 to July 15, 2002]															

Project: CTO-0195
 Date: Wed 2/4/04
 Page: 1

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

SSAs 3, 4, 5, 9, 10, 20, 21, 23, 24
Naval Weapons Station Yorktown

Task Name	Duration	Start	Finish	2001												2002												2003												2											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J														
Site Screening Areas 3, 4, 5, 9, 10, 20, 21, 2	1913 days	Mon 12/2/96	Wed 3/31/04	[Solid black bar]																																															
Work Plan	162 days	Mon 12/2/96	Tue 7/15/97	[Solid black bar]																																															
Preliminary Draft	56 days	Mon 12/2/96	Mon 2/17/97	[Solid black bar]																																															
Review (Navy)	15 days	Tue 2/18/97	Mon 3/10/97	[Solid black bar]																																															
Draft	17 days	Tue 3/11/97	Wed 4/2/97	[Solid black bar]																																															
Review (EPA/State)	43 days	Thu 4/3/97	Mon 6/2/97	[Solid black bar]																																															
Final	31 days	Tue 6/3/97	Tue 7/15/97	[Solid black bar]																																															
Remedial Field Investigation	50 days	Tue 9/2/97	Mon 11/10/97	[Solid black bar]																																															
Mobilization	5 days	Tue 9/2/97	Mon 9/8/97	[Solid black bar]																																															
Field Investigation	45 days	Tue 9/9/97	Mon 11/10/97	[Solid black bar]																																															
Sample Analysis/Validation	77 days	Tue 9/9/97	Wed 12/24/97	[Solid black bar]																																															
Sample Analysis	67 days	Tue 9/9/97	Wed 12/10/97	[Solid black bar]																																															
Data Validation	56 days	Wed 10/6/97	Wed 12/24/97	[Solid black bar]																																															
Site Screening Progress Report	1601 days	Wed 3/25/98	Wed 5/12/04	[Solid black bar]																																															
Draft	47 days	Wed 3/25/98	Thu 5/28/98	[Solid black bar]																																															
Review (EPA/State)	42 days	Fri 5/29/98	Mon 7/27/98	[Solid black bar]																																															
Draft Final	23 days	Tue 9/18/01	Thu 10/18/01	[Solid black bar]																																															
Review	75 days	Fri 10/19/01	Thu 1/31/02	[Solid black bar]																																															
Resolution of Ecological Approach for SSAs	195 days	Tue 9/3/02	Mon 6/2/03	[Solid black bar]																																															
Draft SERA Addendum - SSAs 3, 4, 5, 21	38 days	Tue 9/2/03	Thu 10/23/03	[Solid black bar]																																															
Review	25 days	Thu 2/19/04	Wed 3/24/04	[Solid black bar]																																															
Revised Final with SERA Addendum	5 days	Thu 3/25/04	Wed 3/31/04	[Solid black bar]																																															
Final SSP Report w/ SERA Addendum	30 days	Thu 4/1/04	Wed 5/12/04	[Solid black bar]																																															

Date: Fri 6/18/04
Page: 1

Task	[Solid black bar]	Milestone	◆	External Tasks	[Hatched bar]
Split	Summary	▬	External Milestone	◆
Progress	[Solid black bar]	Project Summary	▬	Deadline	⏏

**CAX Background Investigation and Report
Naval Weapons Station Yorktown
Cheatham Annex Site**

Task Name	Duration	Start	Finish	2001												2002												2003																							
				F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O															
CAX Background Investigation	665 days	Wed 3/14/01	Tue 9/30/03	[Redacted Gantt Bar]																																															
Work Plan	71 days	Wed 3/14/01	Wed 6/20/01	[Redacted Gantt Bar]																																															
Draft (Actual)	23 days	Wed 3/14/01	Fri 4/13/01	[Redacted Gantt Bar]																																															
Navy and Agency Review	46 days	Fri 4/13/01	Fri 6/15/01	[Redacted Gantt Bar]																																															
Final	4 days	Fri 6/15/01	Wed 6/20/01	[Redacted Gantt Bar]																																															
Field Investigation	23 days	Mon 6/18/01	Wed 7/18/01	[Redacted Gantt Bar]																																															
Background Report	545 days	Wed 8/29/01	Tue 9/30/03	[Redacted Gantt Bar]																																															
Draft	219 days	Wed 8/29/01	Mon 7/1/02	[Redacted Gantt Bar]																																															
Navy and Agency Review	46 days	Mon 7/1/02	Mon 9/2/02	[Redacted Gantt Bar]																																															
Final	282 days	Mon 9/2/02	Tue 9/30/03	[Redacted Gantt Bar]																																															

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

**No Further Response Action Planned (NFRAP) Decision Document for Sites 2, 3, 5, 6, 8, 10, and 12
Naval Weapons Station Yorktown
Cheatam Annex Site**

Task Name	Duration	Start	Finish	2002												2003																							
				N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A						
NFRAP for Various Sites	606 days	Wed 12/5/01	Wed 3/31/04	[Gantt bar from Dec 5, 2001 to Mar 31, 2004]																																			
Project Plans - Site 12	366 days	Wed 12/5/01	Wed 4/30/03	[Gantt bar from Dec 5, 2001 to Apr 30, 2003]																																			
Draft Project Plans - Site 12	18 days	Wed 5/1/02	Fri 5/24/02	[Gantt bar from May 1, 2002 to May 24, 2002]																																			
Agency Review	50 days	Fri 5/24/02	Thu 8/1/02	[Gantt bar from May 24, 2002 to Aug 1, 2002]																																			
Site Visit - Sites 2, 3, 5, 7, 8, 9, and 10	1 day	Wed 12/5/01	Wed 12/5/01	[Milestone diamond at Dec 5, 2001]																																			
Site Visit - Site 12	1 day	Thu 3/28/02	Thu 3/28/02	[Milestone diamond at Mar 28, 2002]																																			
Final Project Plans - Site 12	194 days	Fri 8/2/02	Wed 4/30/03	[Gantt bar from Aug 2, 2002 to Apr 30, 2003]																																			
Field Investigation - Site 12	1 day	Fri 6/28/02	Fri 6/28/02	[Milestone diamond at Jun 28, 2002]																																			
Lab Analysis & Validation	34 days	Mon 7/1/02	Thu 8/15/02	[Gantt bar from Jul 1, 2002 to Aug 15, 2002]																																			
GIS - Site 12	246 days	Fri 9/20/02	Fri 8/29/03	[Gantt bar from Sep 20, 2002 to Aug 29, 2003]																																			
Assess Risk (Sites 2, 3, 5, 6, 8, and 10)	10 days	Mon 8/18/03	Fri 8/29/03	[Gantt bar from Aug 18, 2003 to Aug 29, 2003]																																			
Assess Risk (Site 12)	10 days	Fri 12/5/03	Thu 12/18/03	[Gantt bar from Dec 5, 2003 to Dec 18, 2003]																																			
NFRAP Decision Document	166 days	Mon 1/13/03	Mon 9/1/03	[Gantt bar from Jan 13, 2003 to Sep 1, 2003]																																			
Draft NFRAP Decision Document (Sites 2, 3, 5, 6, 8, and 10)	100 days	Mon 1/13/03	Fri 5/30/03	[Gantt bar from Jan 13, 2003 to May 30, 2003]																																			
Review	30 days	Mon 6/2/03	Fri 7/11/03	[Gantt bar from Jun 2, 2003 to Jul 11, 2003]																																			
Final NFRAP Decision Document (Sites 2, 3, 5, 6, 8, and 10)	36 days	Mon 7/14/03	Mon 9/1/03	[Gantt bar from Jul 14, 2003 to Sep 1, 2003]																																			
Site 12 Limited Field Investigation Report	74 days	Fri 12/19/03	Wed 3/31/04	[Gantt bar from Dec 19, 2003 to Mar 31, 2004]																																			
Site 12 Technical Memo	17 days	Fri 12/19/03	Mon 1/12/04	[Gantt bar from Dec 19, 2003 to Jan 12, 2004]																																			
Review	30 days	Tue 1/13/04	Mon 2/23/04	[Gantt bar from Jan 13, 2004 to Feb 23, 2004]																																			
Site 12 Decision Document	27 days	Tue 2/24/04	Wed 3/31/04	[Gantt bar from Feb 24, 2004 to Mar 31, 2004]																																			

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Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

Site 21
Naval Weapons Station Yorktown

Task Name	Duration	Start	Finish	2002												2003															
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O		
Site 21	1989 days	Fri 2/23/96	Fri 10/3/03	[Gantt bar from 2/23/96 to 10/3/03]																											
Work Plan	197 days	Fri 2/23/96	Fri 11/22/96	[Gantt bar from 2/23/96 to 11/22/96]																											
Preliminary Draft	44 days	Fri 2/23/96	Wed 4/24/96	[Gantt bar from 2/23/96 to 4/24/96]																											
Review (Navy)	22 days	Thu 4/25/96	Fri 5/24/96	[Gantt bar from 4/25/96 to 5/24/96]																											
Draft	19 days	Mon 5/27/96	Thu 6/20/96	[Gantt bar from 5/27/96 to 6/20/96]																											
Review (EPA/State)	57 days	Fri 6/21/96	Mon 9/9/96	[Gantt bar from 6/21/96 to 9/9/96]																											
Draft Final	10 days	Tue 9/10/96	Mon 9/23/96	[Gantt bar from 9/10/96 to 9/23/96]																											
Review (EPA/State)	22 days	Tue 9/24/96	Wed 10/23/96	[Gantt bar from 9/24/96 to 10/23/96]																											
Final	23 days	Thu 10/24/96	Fri 11/22/96	[Gantt bar from 10/24/96 to 11/22/96]																											
RI Field Investigation	34 days	Mon 10/7/96	Wed 11/20/96	[Gantt bar from 10/7/96 to 11/20/96]																											
Mobilization	5 days	Mon 10/7/96	Fri 10/11/96	[Gantt bar from 10/7/96 to 10/11/96]																											
Field Investigation	19 days	Mon 10/28/96	Wed 11/20/96	[Gantt bar from 10/28/96 to 11/20/96]																											
Sample Analysis/ Validation	55 days	Tue 10/29/96	Thu 1/9/97	[Gantt bar from 10/29/96 to 1/9/97]																											
Sample Analysis	44 days	Tue 10/29/96	Wed 12/25/96	[Gantt bar from 10/29/96 to 12/25/96]																											
Validation	30 days	Sat 11/30/96	Thu 1/9/97	[Gantt bar from 11/30/96 to 1/9/97]																											
Remedial Investigation Report	595 days	Mon 6/30/97	Fri 10/8/99	[Gantt bar from 6/30/97 to 10/8/99]																											
Draft	106 days	Mon 6/30/97	Mon 11/24/97	[Gantt bar from 6/30/97 to 11/24/97]																											
Review (EPA/State)	41 days	Tue 11/25/97	Tue 1/20/98	[Gantt bar from 11/25/97 to 1/20/98]																											
Final	448 days	Wed 1/21/98	Fri 10/8/99	[Gantt bar from 1/21/98 to 10/8/99]																											
Feasibility Study	111 days	Fri 10/8/99	Fri 3/10/00	[Gantt bar from 10/8/99 to 3/10/00]																											
Draft	21 days	Fri 10/8/99	Fri 11/5/99	[Gantt bar from 10/8/99 to 11/5/99]																											
Review (EPA/ State)	43 days	Mon 11/8/99	Wed 1/5/00	[Gantt bar from 11/8/99 to 1/5/00]																											
Final	47 days	Thu 1/6/00	Fri 3/10/00	[Gantt bar from 1/6/00 to 3/10/00]																											
Proposed Plan	276 days	Mon 6/12/00	Fri 6/29/01	[Gantt bar from 6/12/00 to 6/29/01]																											
Draft	6 days	Mon 6/12/00	Mon 6/19/00	[Gantt bar from 6/12/00 to 6/19/00]																											
Review (EPA/State)	23 days	Tue 6/20/00	Thu 7/20/00	[Gantt bar from 6/20/00 to 7/20/00]																											
Final	247 days	Fri 7/21/00	Fri 6/29/01	[Gantt bar from 7/21/00 to 6/29/01]																											
Public Comment Period	33 days	Sun 1/21/01	Tue 3/6/01	[Gantt bar from 1/21/01 to 3/6/01]																											
NTC Removal Action	474 days	Tue 12/11/01	Fri 10/3/03	[Gantt bar from 12/11/01 to 10/3/03]																											
Site 21	474 days	Tue 12/11/01	Fri 10/3/03	[Gantt bar from 12/11/01 to 10/3/03]																											
Record of Decision	87 days	Mon 6/2/03	Tue 9/30/03	[Gantt bar from 6/2/03 to 9/30/03]																											
Site 21 NFA ROD	87 days	Mon 6/2/03	Tue 9/30/03	[Gantt bar from 6/2/03 to 9/30/03]																											

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Task		Summary		Roll Up Progress		Project Summary	
Progress		Roll Up Task		Split		Group By Summary	
Milestone		Roll Up Milestone		External Tasks			

Site 22
Naval Weapons Station Yorktown

Task Name	Duration	Start	Finish	2002												2003															
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O		
Site 22	1986 days	Fri 2/23/96	Tue 9/30/03	[Gantt bar from 2/23/96 to 9/30/03]																											
Work Plan	197 days	Fri 2/23/96	Fri 11/22/96	[Gantt bar from 2/23/96 to 11/22/96]																											
Preliminary Draft	44 days	Fri 2/23/96	Wed 4/24/96	[Gantt bar from 2/23/96 to 4/24/96]																											
Review (Navy)	22 days	Thu 4/25/96	Fri 5/24/96	[Gantt bar from 4/25/96 to 5/24/96]																											
Draft	19 days	Mon 5/27/96	Thu 6/20/96	[Gantt bar from 5/27/96 to 6/20/96]																											
Review (EPA/State)	57 days	Fri 6/21/96	Mon 9/9/96	[Gantt bar from 6/21/96 to 9/9/96]																											
Draft Final	10 days	Tue 9/10/96	Mon 9/23/96	[Gantt bar from 9/10/96 to 9/23/96]																											
Review (EPA/State)	22 days	Tue 9/24/96	Wed 10/23/96	[Gantt bar from 9/24/96 to 10/23/96]																											
Final	23 days	Thu 10/24/96	Fri 11/22/96	[Gantt bar from 10/24/96 to 11/22/96]																											
RI Field Investigation	34 days	Mon 10/7/96	Wed 11/20/96	[Gantt bar from 10/7/96 to 11/20/96]																											
Mobilization	5 days	Mon 10/7/96	Fri 10/11/96	[Gantt bar from 10/7/96 to 10/11/96]																											
Field Investigation	19 days	Mon 10/28/96	Wed 11/20/96	[Gantt bar from 10/28/96 to 11/20/96]																											
Sample Analysis/ Validation	55 days	Tue 10/29/96	Thu 1/9/97	[Gantt bar from 10/29/96 to 1/9/97]																											
Sample Analysis	44 days	Tue 10/29/96	Wed 12/25/96	[Gantt bar from 10/29/96 to 12/25/96]																											
Validation	30 days	Sat 11/30/96	Thu 1/9/97	[Gantt bar from 11/30/96 to 1/9/97]																											
Remedial Investigation Report	595 days	Mon 6/30/97	Fri 10/8/99	[Gantt bar from 6/30/97 to 10/8/99]																											
Draft	106 days	Mon 6/30/97	Mon 11/24/97	[Gantt bar from 6/30/97 to 11/24/97]																											
Review (EPA/State)	41 days	Tue 11/25/97	Tue 1/20/98	[Gantt bar from 11/25/97 to 1/20/98]																											
Final	448 days	Wed 1/21/98	Fri 10/8/99	[Gantt bar from 1/21/98 to 10/8/99]																											
Feasibility Study	111 days	Fri 10/8/99	Fri 3/10/00	[Gantt bar from 10/8/99 to 3/10/00]																											
Draft	21 days	Fri 10/8/99	Fri 11/5/99	[Gantt bar from 10/8/99 to 11/5/99]																											
Review (EPA/ State)	43 days	Mon 11/8/99	Wed 1/5/00	[Gantt bar from 11/8/99 to 1/5/00]																											
Final	47 days	Thu 1/6/00	Fri 3/10/00	[Gantt bar from 1/6/00 to 3/10/00]																											
Proposed Plan	276 days	Mon 6/12/00	Fri 6/29/01	[Gantt bar from 6/12/00 to 6/29/01]																											
Draft	6 days	Mon 6/12/00	Mon 6/19/00	[Gantt bar from 6/12/00 to 6/19/00]																											
Review (EPA/State)	23 days	Tue 6/20/00	Thu 7/20/00	[Gantt bar from 6/20/00 to 7/20/00]																											
Final	247 days	Fri 7/21/00	Fri 6/29/01	[Gantt bar from 7/21/00 to 6/29/01]																											
Public Comment Period	33 days	Sun 1/21/01	Tue 3/6/01	[Gantt bar from 1/21/01 to 3/6/01]																											
NTC Removal Action	270 days	Mon 9/24/01	Fri 10/4/02	[Gantt bar from 9/24/01 to 10/4/02]																											
Site 22	270 days	Mon 9/24/01	Fri 10/4/02	[Gantt bar from 9/24/01 to 10/4/02]																											
Record of Decision	87 days	Mon 6/2/03	Tue 9/30/03	[Gantt bar from 6/2/03 to 9/30/03]																											
Site 22 NFA ROD	87 days	Mon 6/2/03	Tue 9/30/03	[Gantt bar from 6/2/03 to 9/30/03]																											

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Task		Summary		Roll Up Progress		Project Summary	
Progress		Roll Up Task		Split		Group By Summary	
Milestone		Roll Up Milestone		External Tasks			

**Site 4
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005											
				S	O	N	D	J	F	M	A	M	J	J	A
Site 4	2487 days	Fri 2/23/96	Wed 8/31/05												
RI Work Plan	197 days	Fri 2/23/96	Fri 11/22/96												
RI Field Investigation	34 days	Mon 10/7/96	Wed 11/20/96												
Mobilization	5 days	Mon 10/7/96	Fri 10/11/96												
Field Investigation	19 days	Mon 10/28/96	Wed 11/20/96												
Sample Analysis/Validation	55 days	Tue 10/29/96	Thu 1/9/97												
Sample Analysis	44 days	Tue 10/29/96	Wed 12/25/96												
Validation	30 days	Sat 11/30/96	Thu 1/9/97												
Remedial Investigation Report	595 days	Mon 6/30/97	Fri 10/8/99												
Draft	106 days	Mon 6/30/97	Mon 11/24/97												
Review (EPA/State)	41 days	Tue 11/25/97	Tue 1/20/98												
Final	448 days	Wed 1/21/98	Fri 10/8/99												
Feasibility Study	111 days	Fri 10/8/99	Fri 3/10/00												
Draft	21 days	Fri 10/8/99	Fri 11/5/99												
Review (EPA/ State)	43 days	Mon 11/8/99	Wed 1/5/00												
Final	47 days	Thu 1/6/00	Fri 3/10/00												
Proposed Plan	276 days	Mon 6/12/00	Fri 6/29/01												
Draft	6 days	Mon 6/12/00	Mon 6/19/00												
Review (EPA/State)	23 days	Tue 6/20/00	Thu 7/20/00												
Final	247 days	Fri 7/21/00	Fri 6/29/01												
Public Comment Period	33 days	Sun 1/21/01	Tue 3/6/01												
NTC Removal Action	798 days	Thu 2/7/02	Mon 2/28/05												
Site 4	798 days	Thu 2/7/02	Mon 2/28/05												
Record of Decision	407 days	Tue 2/10/04	Wed 8/31/05												
Draft NFA ROD	316 days	Tue 2/10/04	Tue 4/26/05												
Review	66 days	Wed 4/27/05	Wed 7/27/05												
Draft Final NFA ROD	4 days	Thu 7/28/05	Tue 8/2/05												
Review	15 days	Wed 8/3/05	Tue 8/23/05												
Final NFA ROD	6 days	Wed 8/24/05	Wed 8/31/05												

Date: Mon 9/12/05
Page: 1

Task		Summary		Rolled Up Progress		Project Summary	
Progress		Rolled Up Task		Split		Group By Summary	
Milestone		Rolled Up Milestone		External Tasks			

**Site 18
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005											
				S	O	N	D	J	F	M	A	M	J	J	A
Site 18	2436 days	Wed 5/1/96	Wed 8/31/05												
RI Work Plan	179 days	Wed 5/1/96	Mon 1/6/97												
RI Field Investigation	40 days	Mon 1/6/97	Fri 2/28/97												
Sample Analysis/Validation	67 days	Tue 1/14/97	Wed 4/16/97												
Remedial Investigation Report	1687 days	Fri 2/20/98	Mon 8/9/04												
Draft Report	98 days	Fri 2/20/98	Tue 7/7/98												
Review (EPA/State)	83 days	Wed 7/8/98	Fri 10/30/98												
Draft Final Report	31 days	Fri 3/1/02	Fri 4/12/02												
Review	45 days	Mon 4/15/02	Fri 6/14/02												
Draft SERA	30 days	Fri 8/15/03	Thu 9/25/03												
Review	176 days	Fri 9/26/03	Fri 5/28/04												
Draft Final SERA	23 days	Mon 5/31/04	Wed 6/30/04												
Review	15 days	Thu 7/1/04	Wed 7/21/04												
Final RI with SERA	13 days	Thu 7/22/04	Mon 8/9/04												
Proposed Plan	30 days	Mon 1/3/05	Fri 2/11/05												
Public Comment Period	21 days	Mon 2/14/05	Mon 3/14/05												
Record of Decision	143 days	Mon 2/14/05	Wed 8/31/05												
Draft ROD	28 days	Mon 2/14/05	Wed 3/23/05												
Review (EPA/State)	32 days	Thu 3/24/05	Fri 5/6/05												
Draft Final ROD	47 days	Mon 5/9/05	Tue 7/12/05												
Review	16 days	Wed 7/13/05	Wed 8/3/05												
Final ROD	20 days	Thu 8/4/05	Wed 8/31/05												

Date: Fri 9/9/05 Page:1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

APPENDIX B

DETAILED SCHEDULES FOR PROJECTS CURRENTLY UNDERWAY

**Site 1
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2004												2005											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Sites 1 Long-Term Monitoring	1701 days	Mon 8/2/99	Mon 2/6/06																								
Project Plans - Baseline	228 days	Mon 8/2/99	Wed 6/14/00																								
Draft Project Plans	52 days	Mon 8/2/99	Tue 10/12/99																								
Review	33 days	Mon 1/3/00	Wed 2/16/00																								
Final Project Plans	21 days	Thu 2/17/00	Thu 3/16/00																								
Field Sampling	28 days	Mon 5/8/00	Wed 6/14/00																								
Sample Analysis/Validation	34 days	Thu 6/15/00	Tue 8/1/00																								
Sample Analysis	21 days	Thu 6/15/00	Thu 7/13/00																								
Sample Validation	10 days	Fri 7/14/00	Thu 7/27/00																								
Data Management	3 days	Fri 7/28/00	Tue 8/1/00																								
Project Plans - Event 2	345 days	Tue 3/11/03	Mon 7/5/04																								
Draft Work Plans	34 days	Tue 3/11/03	Fri 4/25/03																								
Review	305 days	Mon 4/28/03	Fri 6/25/04																								
Final Work Plans	6 days	Mon 6/28/04	Mon 7/5/04																								
LTM - Event 2 (Four Quarters)	223 days	Wed 9/22/04	Fri 7/29/05																								
Field Sampling - Round 2	12 days	Wed 9/22/04	Thu 10/7/04																								
Field Sampling - Round 3	4 days	Tue 2/8/05	Fri 2/11/05																								
Field Sampling - Round 4	4 days	Tue 5/3/05	Fri 5/6/05																								
Field Sampling - Round 5	4 days	Tue 7/26/05	Fri 7/29/05																								
Draft LTM Report	20 days	Mon 9/19/05	Fri 10/14/05																								
Draft Review	60 days	Mon 10/17/05	Fri 1/6/06																								
Final LTM Report	21 days	Mon 1/9/06	Mon 2/6/06																								

Date: Mon 5/2/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

Site 2
Naval Weapons Station Yorktown

Task Name	Duration	Start	Finish	2005												2006											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Site 2	2943 days	Wed 5/1/96	Fri 8/10/07																								
RI Work Plan	179 days	Wed 5/1/96	Mon 1/6/97																								
RI Field Investigation	40 days	Mon 1/6/97	Fri 2/28/97																								
Sample Analysis/Validation	67 days	Tue 1/14/97	Wed 4/16/97																								
Remedial Investigation Report	1687 days	Fri 2/20/98	Mon 8/9/04																								
Draft Report	98 days	Fri 2/20/98	Tue 7/7/98																								
Review (EPA/State)	83 days	Wed 7/8/98	Fri 10/30/98																								
Draft Final Report	31 days	Fri 3/1/02	Fri 4/12/02																								
Review	45 days	Mon 4/15/02	Fri 6/14/02																								
Draft SERA	30 days	Fri 8/15/03	Thu 9/25/03																								
Review	176 days	Fri 9/26/03	Fri 5/28/04																								
Draft Final SERA	23 days	Mon 5/31/04	Wed 6/30/04																								
Review	15 days	Thu 7/1/04	Wed 7/21/04																								
Final RI with SERA	13 days	Thu 7/22/04	Mon 8/9/04																								
Pre-Removal Characterization WP	66 days	Tue 3/1/05	Tue 5/31/05																								
Draft	15 days	Tue 3/1/05	Mon 3/21/05																								
Review	28 days	Wed 3/23/05	Fri 4/29/05																								
Final	22 days	Mon 5/2/05	Tue 5/31/05																								
Field Investigation	3 days	Mon 6/20/05	Wed 6/22/05																								
EE/CA	120 days	Tue 11/1/05	Mon 4/17/06																								
Draft	30 days	Tue 11/1/05	Mon 12/12/05																								
Review (EPA/State)	60 days	Tue 12/13/05	Mon 3/6/06																								
Final	30 days	Tue 3/7/06	Mon 4/17/06																								
Removal Action	88 days	Tue 4/18/06	Thu 8/17/06																								
Proposed Plan	87 days	Fri 8/18/06	Mon 12/18/06																								
Draft	44 days	Fri 8/18/06	Wed 10/18/06																								
Review (EPA/State)	30 days	Thu 10/19/06	Wed 11/29/06																								
Final	13 days	Thu 11/30/06	Mon 12/18/06																								
Public Comment Period	30 days	Tue 12/19/06	Mon 1/29/07																								
Record of Decision	139 days	Tue 1/30/07	Fri 8/10/07																								
Draft ROD	24 days	Tue 1/30/07	Fri 3/2/07																								
Review	45 days	Mon 3/5/07	Fri 5/4/07																								
Draft Final ROD	30 days	Mon 5/7/07	Fri 6/15/07																								
Review	30 days	Mon 6/18/07	Fri 7/27/07																								
Final ROD	10 days	Mon 7/30/07	Fri 8/10/07																								

Date: Mon 9/12/05
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Task		Progress		Summary		External Tasks		Deadline	
Split		Milestone		Project Summary		External Milestone			

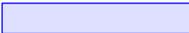
**Site 3
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2004												2005													
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	
Site 3 Long-Term Monitoring	1701 days	Mon 8/2/99	Mon 2/6/06																										
Project Plans - Baseline	228 days	Mon 8/2/99	Wed 6/14/00																										
Draft Project Plans	52 days	Mon 8/2/99	Tue 10/12/99																										
Review	33 days	Mon 1/3/00	Wed 2/16/00																										
Final Project Plans	21 days	Thu 2/17/00	Thu 3/16/00																										
Field Sampling	28 days	Mon 5/8/00	Wed 6/14/00																										
Sample Analysis/Validation	34 days	Thu 6/15/00	Tue 8/1/00																										
Sample Analysis	21 days	Thu 6/15/00	Thu 7/13/00																										
Sample Validation	10 days	Fri 7/14/00	Thu 7/27/00																										
Data Management	3 days	Fri 7/28/00	Tue 8/1/00																										
Project Plans - Event 2	345 days	Tue 3/11/03	Mon 7/5/04																										
Draft Work Plans	34 days	Tue 3/11/03	Fri 4/25/03																										
Review	305 days	Mon 4/28/03	Fri 6/25/04																										
Final Work Plans	6 days	Mon 6/28/04	Mon 7/5/04																										
LTM - Event 2 (Four Quarters)	223 days	Wed 9/22/04	Fri 7/29/05																										
Field Sampling - Round 2	12 days	Wed 9/22/04	Thu 10/7/04																										
Field Sampling - Round 3	4 days	Tue 2/8/05	Fri 2/11/05																										
Field Sampling - Round 4	4 days	Tue 5/3/05	Fri 5/6/05																										
Field Sampling - Round 5	4 days	Tue 7/26/05	Fri 7/29/05																										
Draft LTM Report	20 days	Mon 9/19/05	Fri 10/14/05																										
Draft Review	60 days	Mon 10/17/05	Fri 1/6/06																										
Final LTM Report	21 days	Mon 1/9/06	Mon 2/6/06																										

Date: Mon 5/2/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Site 6
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Site 6 Long-Term Monitoring	1826 days	Fri 1/1/99	Fri 12/30/05																								
Project Plans - Baseline	228 days	Mon 8/2/99	Wed 6/14/00																								
Draft Project Plans	52 days	Mon 8/2/99	Tue 10/12/99																								
Review	33 days	Mon 1/3/00	Wed 2/16/00																								
Final Project Plans	21 days	Thu 2/17/00	Thu 3/16/00																								
Field Sampling	28 days	Mon 5/8/00	Wed 6/14/00																								
Sample Analysis/Validation	34 days	Thu 6/15/00	Tue 8/1/00																								
Sample Analysis	21 days	Thu 6/15/00	Thu 7/13/00																								
Sample Validation	10 days	Fri 7/14/00	Thu 7/27/00																								
Data Management	3 days	Fri 7/28/00	Tue 8/1/00																								
Remedial Action	1826 days	Fri 1/1/99	Fri 12/30/05																								

Date: Mon 9/12/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Site 7
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2004												2005											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Site 7 Long-Term Monitoring	1701 days	Mon 8/2/99	Mon 2/6/06																								
Project Plans - Baseline	228 days	Mon 8/2/99	Wed 6/14/00																								
Draft Project Plans	52 days	Mon 8/2/99	Tue 10/12/99																								
Review	33 days	Mon 1/3/00	Wed 2/16/00																								
Final Project Plans	21 days	Thu 2/17/00	Thu 3/16/00																								
Field Sampling	28 days	Mon 5/8/00	Wed 6/14/00																								
Sample Analysis/Validation	34 days	Thu 6/15/00	Tue 8/1/00																								
Sample Analysis	21 days	Thu 6/15/00	Thu 7/13/00																								
Sample Validation	10 days	Fri 7/14/00	Thu 7/27/00																								
Data Management	3 days	Fri 7/28/00	Tue 8/1/00																								
Project Plans - Event 2	345 days	Tue 3/11/03	Mon 7/5/04																								
Draft Work Plans	34 days	Tue 3/11/03	Fri 4/25/03																								
Review	305 days	Mon 4/28/03	Fri 6/25/04																								
Final Work Plans	6 days	Mon 6/28/04	Mon 7/5/04																								
LTM - Event 2 (Four Quarters)	223 days	Wed 9/22/04	Fri 7/29/05																								
Field Sampling - Round 2	12 days	Wed 9/22/04	Thu 10/7/04																								
Field Sampling - Round 3	4 days	Tue 2/8/05	Fri 2/11/05																								
Field Sampling - Round 4	4 days	Tue 5/3/05	Fri 5/6/05																								
Field Sampling - Round 5	4 days	Tue 7/26/05	Fri 7/29/05																								
Draft LTM Report	20 days	Mon 9/19/05	Fri 10/14/05																								
Draft Review	60 days	Mon 10/17/05	Fri 1/6/06																								
Final LTM Report	21 days	Mon 1/9/06	Mon 2/6/06																								

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Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

Site 8
Naval Weapons Station Yorktown

Task Name	Duration	Start	Finish	2005												2006											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Site 8	2840 days	Wed 5/1/96	Tue 3/20/07																								
RI Work Plan	179 days	Wed 5/1/96	Mon 1/6/97																								
RI Field Investigation	40 days	Mon 1/6/97	Fri 2/28/97																								
Sample Analysis/Validation	67 days	Tue 1/14/97	Wed 4/16/97																								
Remedial Investigation Report	1687 days	Fri 2/20/98	Mon 8/9/04																								
Draft Report	98 days	Fri 2/20/98	Tue 7/7/98																								
Review (EPA/State)	83 days	Wed 7/8/98	Fri 10/30/98																								
Draft Final Report	31 days	Fri 3/1/02	Fri 4/12/02																								
Review	45 days	Mon 4/15/02	Fri 6/14/02																								
Draft SERA	30 days	Fri 8/15/03	Thu 9/25/03																								
Review	176 days	Fri 9/26/03	Fri 5/28/04																								
Draft Final SERA	23 days	Mon 5/31/04	Wed 6/30/04																								
Review	15 days	Thu 7/1/04	Wed 7/21/04																								
Final RI with SERA	13 days	Thu 7/22/04	Mon 8/9/04																								
Pre-Removal Characterization Work Plan	66 days	Tue 3/1/05	Tue 5/31/05																								
Draft	15 days	Tue 3/1/05	Mon 3/21/05																								
Review	28 days	Wed 3/23/05	Fri 4/29/05																								
Final	22 days	Mon 5/2/05	Tue 5/31/05																								
Field Investigation	3 days	Mon 6/20/05	Wed 6/22/05																								
EE/CA	83 days	Mon 8/1/05	Wed 11/23/05																								
Draft	23 days	Mon 8/1/05	Wed 8/31/05																								
Review (EPA/State)	30 days	Thu 9/1/05	Wed 10/12/05																								
Final	30 days	Thu 10/13/05	Wed 11/23/05																								
Removal Action	88 days	Thu 11/24/05	Mon 3/27/06																								
Proposed Plan	87 days	Tue 3/28/06	Wed 7/26/06																								
Draft Report	44 days	Tue 3/28/06	Fri 5/26/06																								
Review	30 days	Mon 5/29/06	Fri 7/7/06																								
Final Report	13 days	Mon 7/10/06	Wed 7/26/06																								
Public Comment Period	30 days	Thu 7/27/06	Wed 9/6/06																								
Record of Decision	139 days	Thu 9/7/06	Tue 3/20/07																								
Draft ROD	24 days	Thu 9/7/06	Tue 10/10/06																								
Review	45 days	Wed 10/11/06	Tue 12/12/06																								
Draft Final ROD	30 days	Wed 12/13/06	Tue 1/23/07																								
Review	30 days	Wed 1/24/07	Tue 3/6/07																								
Final ROD	10 days	Wed 3/7/07	Tue 3/20/07																								

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Task		Progress		Summary		External Tasks		Deadline	
Split		Milestone		Project Summary		External Milestone			

**Site 12
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Site 12 - Long Term Monitoring	1882 days	Thu 8/20/98	Thu 11/3/05																								
Year 1 Fieldwork - Baseline	2 days	Thu 8/20/98	Fri 8/21/98																								
Annual Event - Baseline	2 days	Thu 8/20/98	Fri 8/21/98																								
Final LTM Report for Year 1	1 day	Fri 3/3/00	Fri 3/3/00																								
Year 2 Field Work	208 days	Sat 5/13/00	Tue 2/27/01																								
Annual Event and Area A Cover-Round 1	7 days	Sat 5/13/00	Mon 5/22/00																								
Area A Cover-Round 2	2 days	Tue 8/15/00	Wed 8/16/00																								
Area A Cover-Round 3	2 days	Wed 12/13/00	Thu 12/14/00																								
Area A Cover-Round 4	2 days	Mon 2/26/01	Tue 2/27/01																								
LTM Letter Report - Rounds 1 and 2	1 day	Mon 2/12/01	Mon 2/12/01																								
Year 3 Field Work	118 days	Wed 6/27/01	Fri 12/7/01																								
Annual Event and Area A Cover-Round 5	3 days	Wed 6/27/01	Fri 6/29/01																								
Area A Cover-Round 6	3 days	Wed 12/5/01	Fri 12/7/01																								
Year 4 Field Work	103 days	Tue 7/30/02	Thu 12/19/02																								
Annual Event and Area A Cover-Round 7	9 days	Tue 7/30/02	Fri 8/9/02																								
Area A Cover-Round 8	3 days	Tue 12/17/02	Thu 12/19/02																								
Year 5 Field Work	4 days	Mon 4/28/03	Thu 5/1/03																								
Annual Event and Area A Cover-Round 9	4 days	Mon 4/28/03	Thu 5/1/03																								
Draft LTM Report - Years 1 to 5	86 days	Mon 12/8/03	Mon 4/5/04																								
Review	259 days	Tue 4/6/04	Fri 4/1/05																								
Draft Final LTM Report - Years 1 to 5	64 days	Mon 4/4/05	Thu 6/30/05																								
Review	60 days	Fri 7/1/05	Thu 9/22/05																								
Final LTM Report - Years 1 to 5	30 days	Fri 9/23/05	Thu 11/3/05																								
Year 6 Field Work	5 days	Mon 6/13/05	Fri 6/17/05																								

Date: Mon 5/2/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Site 23
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Site 23	1161 days	Sun 12/1/96	Fri 5/11/01																								
RI Work Plan	163 days	Sun 12/1/96	Tue 7/15/97																								
RI Field Investigation	29 days	Sun 12/1/96	Wed 1/8/97																								
Sample Analysis/Validation	56 days	Sun 12/1/96	Fri 2/14/97																								
Remedial Investigation Report	2049 days	Tue 11/25/97	Fri 9/30/05																								
Draft	309 days	Tue 11/25/97	Fri 1/29/99																								
Review (EPA/State)	42 days	Mon 2/1/99	Tue 3/30/99																								
Draft Final	24 days	Tue 1/22/02	Fri 2/22/02																								
Review	25 days	Mon 2/25/02	Sun 3/31/02																								
Final	523 days	Wed 10/1/03	Fri 9/30/05																								
Removal Action for Site 23 Soils	219 days	Tue 4/1/03	Fri 1/30/04																								
Technical Memorandum	88 days	Tue 6/1/04	Thu 9/30/04																								
Recharacterization Work Plan	107 days	Mon 1/3/05	Tue 5/31/05																								
Draft	63 days	Mon 1/3/05	Wed 3/30/05																								
Review	22 days	Thu 3/31/05	Fri 4/29/05																								
Final	22 days	Mon 5/2/05	Tue 5/31/05																								
Recharacterization Field Investigation	21 days	Mon 10/3/05	Mon 10/31/05																								
Sample Analysis/Validation	22 days	Tue 11/1/05	Wed 11/30/05																								
EE/CA for Soil	87 days	Thu 12/1/05	Fri 3/31/06																								
Draft	33 days	Thu 12/1/05	Mon 1/16/06																								
Review	31 days	Tue 1/17/06	Tue 2/28/06																								
Final	23 days	Wed 3/1/06	Fri 3/31/06																								
Public Comment Period	30 days	Mon 4/3/06	Fri 5/12/06																								
Removal Action for Soil	100 days	Mon 5/15/06	Fri 9/29/06																								
Proposed Plan	96 days	Mon 10/2/06	Mon 2/12/07																								
Draft	10 days	Mon 10/2/06	Fri 10/13/06																								
Review (EPA/State)	22 days	Mon 10/16/06	Tue 11/14/06																								
Final	31 days	Wed 11/15/06	Wed 12/27/06																								
Public Comment Period	33 days	Thu 12/28/06	Mon 2/12/07																								
Record of Decision	102 days	Tue 2/13/07	Wed 7/4/07																								
Draft	19 days	Tue 2/13/07	Fri 3/9/07																								
Review (EPA/State)	60 days	Mon 3/12/07	Fri 6/1/07																								
Final	23 days	Mon 6/4/07	Wed 7/4/07																								

Date: Mon 5/2/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Site 24
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Site 24	1161 days	Sun 12/1/96	Fri 5/11/01																								
Work Plan	163 days	Sun 12/1/96	Tue 7/15/97																								
Preliminary Draft	57 days	Sun 12/1/96	Mon 2/17/97																								
Review (Navy)	15 days	Tue 2/18/97	Mon 3/10/97																								
Draft	17 days	Tue 3/11/97	Wed 4/2/97																								
Review (EPA/State)	43 days	Thu 4/3/97	Mon 6/2/97																								
Final	16 days	Tue 6/24/97	Tue 7/15/97																								
RI Field Investigation	29 days	Sun 12/1/96	Wed 1/8/97																								
Sample Analysis/Validation	56 days	Sun 12/1/96	Fri 2/14/97																								
Remedial Investigation Report	2049 days	Tue 11/25/97	Fri 9/30/05																								
Draft	309 days	Tue 11/25/97	Fri 1/29/99																								
Review (EPA/State)	42 days	Mon 2/1/99	Tue 3/30/99																								
Draft Final	24 days	Tue 1/22/02	Fri 2/22/02																								
Review	25 days	Mon 2/25/02	Sun 3/31/02																								
Final	523 days	Wed 10/1/03	Fri 9/30/05																								
Feasibility Study Site 24	77 days	Mon 10/3/05	Tue 1/17/06																								
Draft	25 days	Mon 10/3/05	Fri 11/4/05																								
Review (EPA/State)	40 days	Mon 11/7/05	Fri 12/30/05																								
Final	12 days	Mon 1/2/06	Tue 1/17/06																								
Proposed Plan	63 days	Wed 1/18/06	Fri 4/14/06																								
Draft	10 days	Wed 1/18/06	Tue 1/31/06																								
Review (EPA/State)	22 days	Wed 2/1/06	Thu 3/2/06																								
Final	31 days	Fri 3/3/06	Fri 4/14/06																								
Public Comment Period	33 days	Mon 4/17/06	Wed 5/31/06																								
Record of Decision	107 days	Thu 6/1/06	Fri 10/27/06																								
Draft	19 days	Thu 6/1/06	Tue 6/27/06																								
Review (EPA/State)	65 days	Wed 6/28/06	Tue 9/26/06																								
Final	23 days	Wed 9/27/06	Fri 10/27/06																								
Removal Action for Site 24	100 days	Mon 10/30/06	Fri 3/16/07																								

Date: Mon 5/2/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Site 27
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Site 27	1822 days	Tue 6/1/99	Wed 5/24/06																								
Work Plan	225 days	Tue 6/1/99	Mon 4/10/00																								
Draft	30 days	Tue 6/1/99	Mon 7/12/99																								
Review (EPA/State)	23 days	Wed 1/12/00	Sat 2/12/00																								
Final	27 days	Fri 3/3/00	Mon 4/10/00																								
RI Field Investigation	20 days	Mon 5/1/00	Fri 5/26/00																								
Mobilization	3 days	Mon 5/1/00	Wed 5/3/00																								
Field Investigation	17 days	Thu 5/4/00	Fri 5/26/00																								
Sample Analysis/Validation	32 days	Fri 5/26/00	Mon 7/10/00																								
Sample Analysis	22 days	Fri 5/26/00	Mon 6/26/00																								
Validation	10 days	Tue 6/27/00	Mon 7/10/00																								
Remedial Investigation Report	1320 days	Mon 7/10/00	Fri 7/29/05																								
Draft RI	1038 days	Mon 7/10/00	Wed 6/30/04																								
Review (EPA/State)	179 days	Thu 7/1/04	Tue 3/8/05																								
Draft Final RI	69 days	Wed 3/9/05	Mon 6/13/05																								
Review (EPA/State)	27 days	Tue 6/14/05	Wed 7/20/05																								
Final RI	7 days	Thu 7/21/05	Fri 7/29/05																								
Proposed Plan	104 days	Wed 7/27/05	Mon 12/19/05																								
Draft	48 days	Wed 7/27/05	Fri 9/30/05																								
Review (EPA/State)	21 days	Mon 10/3/05	Mon 10/31/05																								
Final	35 days	Tue 11/1/05	Mon 12/19/05																								
Public Comment Period	32 days	Tue 12/20/05	Wed 2/1/06																								
Record of Decision	80 days	Thu 2/2/06	Wed 5/24/06																								
Draft	23 days	Thu 2/2/06	Mon 3/6/06																								
Review (EPA/State)	42 days	Tue 3/7/06	Wed 5/3/06																								
Final	15 days	Thu 5/4/06	Wed 5/24/06																								

Date: Fri 9/9/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

Site 28
Naval Weapons Station Yorktown

Task Name	Duration	Start	Finish	2005												2006												2007																							
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D								
Site 28	2143 days	Tue 6/1/99	Thu 8/16/07	[Gantt bar spanning from start to finish]																																															
Work Plan	225 days	Tue 6/1/99	Mon 4/10/00	[Gantt bar]																																															
RI Field Investigation	20 days	Mon 5/1/00	Fri 5/26/00	[Gantt bar]																																															
Sample Analysis/Validation	32 days	Fri 5/26/00	Mon 7/10/00	[Gantt bar]																																															
Remedial Investigation Report	1320 days	Mon 7/10/00	Fri 7/29/05	[Gantt bar]																																															
Draft RI	1038 days	Mon 7/10/00	Wed 6/30/04	[Gantt bar]																																															
Review (EPA/State)	179 days	Thu 7/1/04	Tue 3/8/05	[Gantt bar]																																															
Draft Final RI	69 days	Wed 3/9/05	Mon 6/13/05	[Gantt bar]																																															
Review (EPA/State)	27 days	Tue 6/14/05	Wed 7/20/05	[Gantt bar]																																															
Final RI	7 days	Thu 7/21/05	Fri 7/29/05	[Gantt bar]																																															
BERA Project Plans	70 days	Tue 11/1/05	Mon 2/6/06	[Gantt bar]																																															
Draft	20 days	Tue 11/1/05	Mon 11/28/05	[Gantt bar]																																															
Review	30 days	Tue 11/29/05	Mon 1/9/06	[Gantt bar]																																															
Final	20 days	Tue 1/10/06	Mon 2/6/06	[Gantt bar]																																															
BERA	154 days	Tue 2/7/06	Fri 9/8/06	[Gantt bar]																																															
Draft	66 days	Tue 2/7/06	Tue 5/9/06	[Gantt bar]																																															
Review	30 days	Wed 5/10/06	Tue 6/20/06	[Gantt bar]																																															
Draft Final	36 days	Wed 6/21/06	Wed 8/9/06	[Gantt bar]																																															
Review	10 days	Thu 8/10/06	Wed 8/23/06	[Gantt bar]																																															
Final	12 days	Thu 8/24/06	Fri 9/8/06	[Gantt bar]																																															
Feasibility Study	65 days	Mon 9/11/06	Fri 12/8/06	[Gantt bar]																																															
Draft	11 days	Mon 9/11/06	Mon 9/25/06	[Gantt bar]																																															
Review (EPA/ State)	44 days	Tue 9/26/06	Fri 11/24/06	[Gantt bar]																																															
Final	10 days	Mon 11/27/06	Fri 12/8/06	[Gantt bar]																																															
Proposed Plan	67 days	Mon 12/11/06	Tue 3/13/07	[Gantt bar]																																															
Draft	11 days	Mon 12/11/06	Mon 12/25/06	[Gantt bar]																																															
Review (EPA/State)	21 days	Tue 12/26/06	Tue 1/23/07	[Gantt bar]																																															
Final	35 days	Wed 1/24/07	Tue 3/13/07	[Gantt bar]																																															
Public Comment Period	32 days	Wed 3/14/07	Thu 4/26/07	[Gantt bar]																																															
Record of Decision	80 days	Fri 4/27/07	Thu 8/16/07	[Gantt bar]																																															
Draft	23 days	Fri 4/27/07	Tue 5/29/07	[Gantt bar]																																															
Review (EPA/State)	42 days	Wed 5/30/07	Thu 7/26/07	[Gantt bar]																																															
Final	15 days	Fri 7/27/07	Thu 8/16/07	[Gantt bar]																																															

Date: Mon 9/12/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Site 29
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006												2007											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	
Site 29	2143 days	Tue 6/1/99	Thu 8/16/07																																				
Work Plan	225 days	Tue 6/1/99	Mon 4/10/00																																				
RI Field Investigation	20 days	Mon 5/1/00	Fri 5/26/00																																				
Sample Analysis/Validation	32 days	Fri 5/26/00	Mon 7/10/00																																				
Remedial Investigation Report	1320 days	Mon 7/10/00	Fri 7/29/05																																				
Draft RI	1038 days	Mon 7/10/00	Wed 6/30/04																																				
Review (EPA/State)	179 days	Thu 7/1/04	Tue 3/8/05																																				
Draft Final RI	69 days	Wed 3/9/05	Mon 6/13/05																																				
Review (EPA/State)	24 days	Fri 6/17/05	Wed 7/20/05																																				
Final RI	7 days	Thu 7/21/05	Fri 7/29/05																																				
BERA Project Plans	70 days	Tue 11/1/05	Mon 2/6/06																																				
Draft	20 days	Tue 11/1/05	Mon 11/28/05																																				
Review	30 days	Tue 11/29/05	Mon 1/9/06																																				
Final	20 days	Tue 1/10/06	Mon 2/6/06																																				
BERA	154 days	Tue 2/7/06	Fri 9/8/06																																				
Draft	66 days	Tue 2/7/06	Tue 5/9/06																																				
Review	30 days	Wed 5/10/06	Tue 6/20/06																																				
Draft Final	36 days	Wed 6/21/06	Wed 8/9/06																																				
Review	10 days	Thu 8/10/06	Wed 8/23/06																																				
Final	12 days	Thu 8/24/06	Fri 9/8/06																																				
Feasibility Study	65 days	Mon 9/11/06	Fri 12/8/06																																				
Draft	11 days	Mon 9/11/06	Mon 9/25/06																																				
Review (EPA/ State)	44 days	Tue 9/26/06	Fri 11/24/06																																				
Final	10 days	Mon 11/27/06	Fri 12/8/06																																				
Proposed Plan	67 days	Mon 12/11/06	Tue 3/13/07																																				
Draft	11 days	Mon 12/11/06	Mon 12/25/06																																				
Review (EPA/State)	21 days	Tue 12/26/06	Tue 1/23/07																																				
Final	35 days	Wed 1/24/07	Tue 3/13/07																																				
Public Comment Period	32 days	Wed 3/14/07	Thu 4/26/07																																				
Draft	23 days	Fri 4/27/07	Tue 5/29/07																																				
Review (EPA/State)	42 days	Wed 5/30/07	Thu 7/26/07																																				
Final	15 days	Fri 7/27/07	Thu 8/16/07																																				
Record of Decision	80 days	Fri 4/27/07	Thu 8/16/07																																				
Draft	23 days	Fri 4/27/07	Tue 5/29/07																																				
Review (EPA/State)	42 days	Wed 5/30/07	Thu 7/26/07																																				
Final	15 days	Fri 7/27/07	Thu 8/16/07																																				

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Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

**Site 30
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Site 30	2036 days	Tue 6/1/99	Tue 3/20/07																								
Work Plan	225 days	Tue 6/1/99	Mon 4/10/00																								
RI Field Investigation	20 days	Mon 5/1/00	Fri 5/26/00																								
Sample Analysis/Validation	32 days	Fri 5/26/00	Mon 7/10/00																								
Remedial Investigation Report	1320 days	Mon 7/10/00	Fri 7/29/05																								
Draft RI	1038 days	Mon 7/10/00	Wed 6/30/04																								
Review (EPA/State)	179 days	Thu 7/1/04	Tue 3/8/05																								
Draft Final RI	69 days	Wed 3/9/05	Mon 6/13/05																								
Review (EPA/State)	27 days	Tue 6/14/05	Wed 7/20/05																								
Final RI	7 days	Thu 7/21/05	Fri 7/29/05																								
EE/CA	92 days	Tue 11/1/05	Wed 3/8/06																								
Draft	28 days	Tue 11/1/05	Thu 12/8/05																								
Review (EPA/ State)	44 days	Fri 12/9/05	Wed 2/8/06																								
Final	20 days	Thu 2/9/06	Wed 3/8/06																								
Removal Action	90 days	Thu 3/9/06	Wed 7/12/06																								
Proposed Plan	67 days	Thu 7/13/06	Fri 10/13/06																								
Draft	11 days	Thu 7/13/06	Thu 7/27/06																								
Review (EPA/State)	21 days	Fri 7/28/06	Fri 8/25/06																								
Final	35 days	Mon 8/28/06	Fri 10/13/06																								
Public Comment Period	32 days	Mon 10/16/06	Tue 11/28/06																								
Record of Decision	80 days	Wed 11/29/06	Tue 3/20/07																								
Draft	23 days	Wed 11/29/06	Fri 12/29/06																								
Review (EPA/State)	42 days	Mon 1/1/07	Tue 2/27/07																								
Final	15 days	Wed 2/28/07	Tue 3/20/07																								

Date: Fri 9/9/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

SSA 14
Naval Weapons Station Yorktown

Task Name	Duration	Start	Finish	2005												2006											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
SSA 14	2840 days	Wed 5/1/96	Tue 3/20/07																								
RI Work Plan	179 days	Wed 5/1/96	Mon 1/6/97																								
RI Field Investigation	40 days	Mon 1/6/97	Fri 2/28/97																								
Sample Analysis/Validation	67 days	Tue 1/14/97	Wed 4/16/97																								
Remedial Investigation Report	1687 days	Fri 2/20/98	Mon 8/9/04																								
Draft Report	98 days	Fri 2/20/98	Tue 7/7/98																								
Review (EPA/State)	83 days	Wed 7/8/98	Fri 10/30/98																								
Draft Final Report	31 days	Fri 3/1/02	Fri 4/12/02																								
Review	45 days	Mon 4/15/02	Fri 6/14/02																								
Draft SERA	30 days	Fri 8/15/03	Thu 9/25/03																								
Review	176 days	Fri 9/26/03	Fri 5/28/04																								
Draft Final SERA	23 days	Mon 5/31/04	Wed 6/30/04																								
Review	15 days	Thu 7/1/04	Wed 7/21/04																								
Final RI with SERA	13 days	Thu 7/22/04	Mon 8/9/04																								
Pre-Removal Characterization WP	66 days	Tue 3/1/05	Tue 5/31/05																								
Draft	15 days	Tue 3/1/05	Mon 3/21/05																								
Review	28 days	Wed 3/23/05	Fri 4/29/05																								
Final	22 days	Mon 5/2/05	Tue 5/31/05																								
Field Investigation	3 days	Mon 6/20/05	Wed 6/22/05																								
EE/CA	83 days	Mon 8/1/05	Wed 11/23/05																								
Draft	23 days	Mon 8/1/05	Wed 8/31/05																								
Review (EPA/State)	30 days	Thu 9/1/05	Wed 10/12/05																								
Final	30 days	Thu 10/13/05	Wed 11/23/05																								
Removal Action	88 days	Thu 11/24/05	Mon 3/27/06																								
Proposed Plan	117 days	Tue 3/28/06	Wed 9/6/06																								
Draft	44 days	Tue 3/28/06	Fri 5/26/06																								
Review (EPA/State)	30 days	Mon 5/29/06	Fri 7/7/06																								
Final	13 days	Mon 7/10/06	Wed 7/26/06																								
Public Comment Period	30 days	Thu 7/27/06	Wed 9/6/06																								
Record of Decision	139 days	Thu 9/7/06	Tue 3/20/07																								
Draft ROD	24 days	Thu 9/7/06	Tue 10/10/06																								
Review	45 days	Wed 10/11/06	Tue 12/12/06																								
Draft Final ROD	30 days	Wed 12/13/06	Tue 1/23/07																								
Review	30 days	Wed 1/24/07	Tue 3/6/07																								
Final ROD	10 days	Wed 3/7/07	Tue 3/20/07																								

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Task		Progress		Summary		External Tasks		Deadline	
Split		Milestone		Project Summary		External Milestone			

**OB/OD Range
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006												2											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A		S	O	N	D	J	F	M	A	M	J	
OB/OD Range	373 days	Mon 8/2/04	Wed 1/4/06	[Gantt bar from 8/2/04 to 1/4/06]																																			
RI Project Plans	132 days	Mon 8/2/04	Tue 2/1/05	[Gantt bar from 8/2/04 to 2/1/05]																																			
Draft	34 days	Mon 8/2/04	Thu 9/16/04	[Light blue bar from 8/2/04 to 9/16/04]																																			
Review	45 days	Fri 9/17/04	Thu 11/18/04	[Light blue bar from 9/17/04 to 11/18/04]																																			
Final	53 days	Fri 11/19/04	Tue 2/1/05	[Light blue bar from 11/19/04 to 2/1/05]																																			
RI Field Investigation	24 days	Wed 2/2/05	Mon 3/7/05	[Gantt bar from 2/2/05 to 3/7/05]																																			
Mobilization	5 days	Wed 2/2/05	Tue 2/8/05	[Light blue bar from 2/2/05 to 2/8/05]																																			
Field Investigation	19 days	Wed 2/9/05	Mon 3/7/05	[Light blue bar from 2/9/05 to 3/7/05]																																			
Remedial Investigation Report	217 days	Tue 3/8/05	Wed 1/4/06	[Gantt bar from 3/8/05 to 1/4/06]																																			
Draft	106 days	Tue 3/8/05	Tue 8/2/05	[Light blue bar from 3/8/05 to 8/2/05]																																			
Review	41 days	Wed 8/3/05	Wed 9/28/05	[Light blue bar from 8/3/05 to 9/28/05]																																			
Draft Final	48 days	Thu 9/29/05	Mon 12/5/05	[Light blue bar from 9/29/05 to 12/5/05]																																			
Review	10 days	Tue 12/6/05	Mon 12/19/05	[Light blue bar from 12/6/05 to 12/19/05]																																			
Final	12 days	Tue 12/20/05	Wed 1/4/06	[Light blue bar from 12/20/05 to 1/4/06]																																			

Date: Mon 9/12/05 Page: 1	Task		Rolled Up Task		External Tasks	
	Progress		Rolled Up Milestone		Project Summary	
	Milestone		Rolled Up Progress		Group By Summary	
	Summary		Split			

**Groundwater Operable Unit I
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006												2007																							
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S											
Groundwater Operable Unit I	1544 days	Tue 5/8/01	Fri 4/6/07	[Project Summary Bar]																																															
Work Plan	757 days	Tue 5/8/01	Wed 3/31/04	[Milestone Bar]																																															
Draft Work Plan	29 days	Tue 5/8/01	Fri 6/15/01	[Task Bar]																																															
Review	33 days	Mon 6/18/01	Wed 8/1/01	[Task Bar]																																															
Final Work Plan	369 days	Fri 11/1/02	Wed 3/31/04	[Task Bar]																																															
Field Investigation	22 days	Mon 9/13/04	Tue 10/12/04	[Task Bar]																																															
Sample Analysis/Validation	63 days	Wed 10/13/04	Fri 1/7/05	[Task Bar]																																															
RI Report	295 days	Mon 1/10/05	Fri 2/24/06	[Milestone Bar]																																															
Draft RI Report	190 days	Mon 1/10/05	Fri 9/30/05	[Task Bar]																																															
Review	60 days	Mon 10/3/05	Fri 12/23/05	[Task Bar]																																															
Final RI Report	45 days	Mon 12/26/05	Fri 2/24/06	[Task Bar]																																															
FS Report	88 days	Mon 2/27/06	Wed 6/28/06	[Milestone Bar]																																															
Draft FS	34 days	Mon 2/27/06	Thu 4/13/06	[Task Bar]																																															
Review	43 days	Fri 4/14/06	Tue 6/13/06	[Task Bar]																																															
Final FS	11 days	Wed 6/14/06	Wed 6/28/06	[Task Bar]																																															
PRAP	89 days	Thu 6/29/06	Tue 10/31/06	[Milestone Bar]																																															
Draft PRAP	32 days	Thu 6/29/06	Fri 8/11/06	[Task Bar]																																															
Review	45 days	Mon 8/14/06	Fri 10/13/06	[Task Bar]																																															
Final PRAP	12 days	Mon 10/16/06	Tue 10/31/06	[Task Bar]																																															
Public Comment Period	34 days	Wed 11/1/06	Mon 12/18/06	[Task Bar]																																															
ROD	79 days	Tue 12/19/06	Fri 4/6/07	[Milestone Bar]																																															
Draft ROD	24 days	Tue 12/19/06	Fri 1/19/07	[Task Bar]																																															
Review	43 days	Mon 1/22/07	Wed 3/21/07	[Task Bar]																																															
Final ROD	12 days	Thu 3/22/07	Fri 4/6/07	[Task Bar]																																															

Date: Fri 9/9/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Groundwater Operable Unit III
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006															
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Groundwater Operable Unit III	571 days	Mon 8/29/05	Mon 11/5/07																												
Work Plan	120 days	Mon 8/29/05	Fri 2/10/06																												
Draft Project Plans	45 days	Mon 8/29/05	Fri 10/28/05																												
Review	45 days	Mon 10/31/05	Fri 12/30/05																												
Final Project Plans	30 days	Mon 1/2/06	Fri 2/10/06																												
Field Investigation	10 days	Mon 2/13/06	Fri 2/24/06																												
RI Report	120 days	Mon 2/27/06	Fri 8/11/06																												
Draft RI Report	45 days	Mon 2/27/06	Fri 4/28/06																												
Review	45 days	Mon 5/1/06	Fri 6/30/06																												
Final RI Report	30 days	Mon 7/3/06	Fri 8/11/06																												
FS Report	105 days	Mon 8/14/06	Fri 1/5/07																												
Draft FS	30 days	Mon 8/14/06	Fri 9/22/06																												
Review	45 days	Mon 9/25/06	Fri 11/24/06																												
Final FS	30 days	Mon 11/27/06	Fri 1/5/07																												
PRAP	66 days	Mon 1/8/07	Mon 4/9/07																												
Draft PRAP	21 days	Mon 1/8/07	Mon 2/5/07																												
Review	30 days	Tue 2/6/07	Mon 3/19/07																												
Final PRAP	15 days	Tue 3/20/07	Mon 4/9/07																												
Public Comment Period	30 days	Tue 4/10/07	Mon 5/21/07																												
ROD	120 days	Tue 5/22/07	Mon 11/5/07																												
Draft ROD	30 days	Tue 5/22/07	Mon 7/2/07																												
Review	30 days	Tue 7/3/07	Mon 8/13/07																												
Draft Final	15 days	Tue 8/14/07	Mon 9/3/07																												
Review	30 days	Tue 9/4/07	Mon 10/15/07																												
Final ROD	15 days	Tue 10/16/07	Mon 11/5/07																												

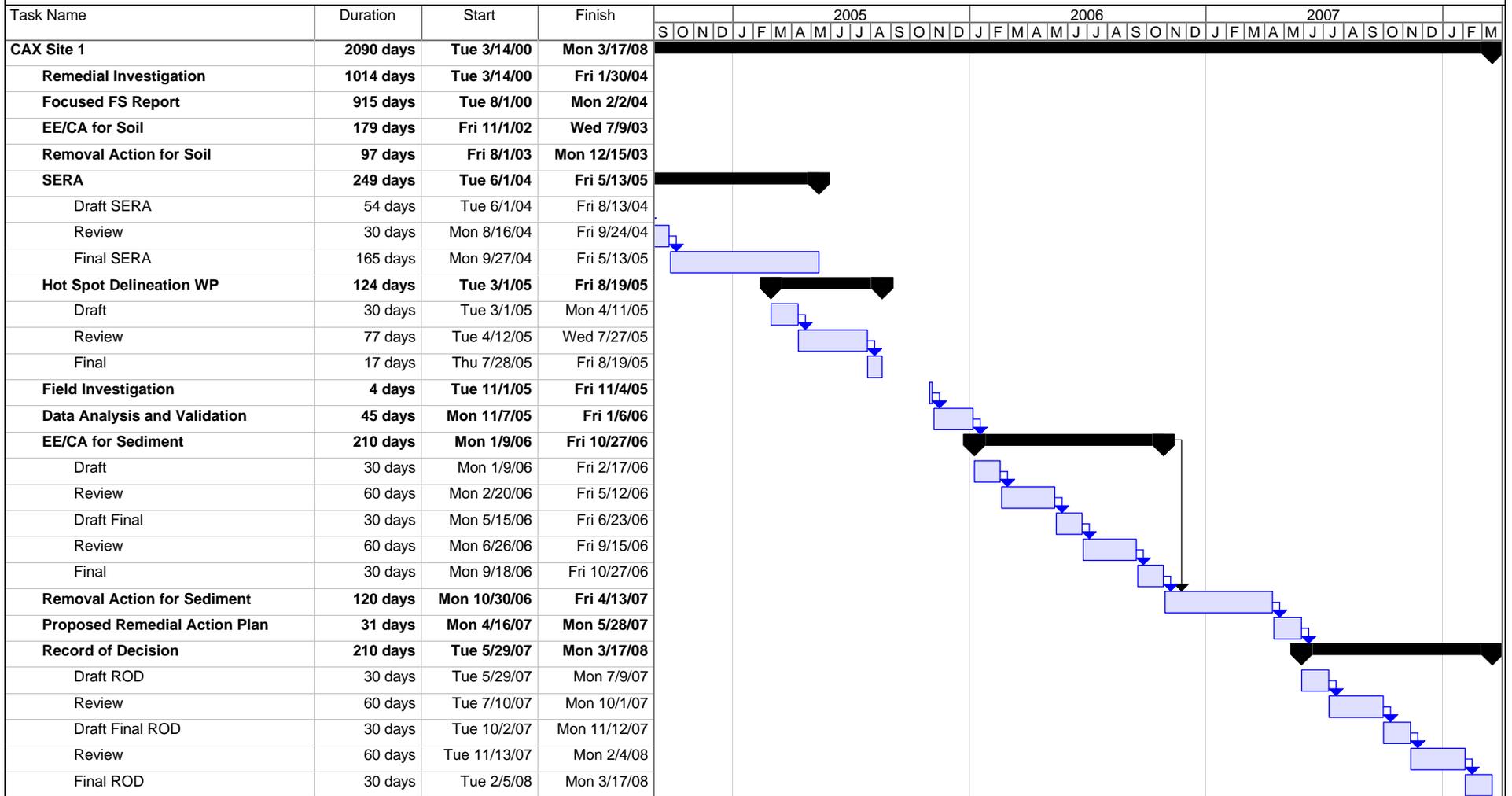
Date: Fri 9/9/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Groundwater Operable Unit IV
Naval Weapons Station Yorktown**

Task Name	Duration	Start	Finish	2005												2006																	
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D		
Groundwater Operable Unit IV	571 days	Mon 8/29/05	Mon 11/5/07																														
Work Plan	120 days	Mon 8/29/05	Fri 2/10/06																														
Draft Project Plans	45 days	Mon 8/29/05	Fri 10/28/05																														
Review	45 days	Mon 10/31/05	Fri 12/30/05																														
Final Project Plans	30 days	Mon 1/2/06	Fri 2/10/06																														
Field Investigation	10 days	Mon 2/13/06	Fri 2/24/06																														
RI Report	120 days	Mon 2/27/06	Fri 8/11/06																														
Draft RI Report	45 days	Mon 2/27/06	Fri 4/28/06																														
Review	45 days	Mon 5/1/06	Fri 6/30/06																														
Final RI Report	30 days	Mon 7/3/06	Fri 8/11/06																														
FS Report	105 days	Mon 8/14/06	Fri 1/5/07																														
Draft FS	30 days	Mon 8/14/06	Fri 9/22/06																														
Review	45 days	Mon 9/25/06	Fri 11/24/06																														
Final FS	30 days	Mon 11/27/06	Fri 1/5/07																														
PRAP	66 days	Mon 1/8/07	Mon 4/9/07																														
Draft PRAP	21 days	Mon 1/8/07	Mon 2/5/07																														
Review	30 days	Tue 2/6/07	Mon 3/19/07																														
Final PRAP	15 days	Tue 3/20/07	Mon 4/9/07																														
Public Comment Period	30 days	Tue 4/10/07	Mon 5/21/07																														
ROD	120 days	Tue 5/22/07	Mon 11/5/07																														
Draft ROD	30 days	Tue 5/22/07	Mon 7/2/07																														
Review	30 days	Tue 7/3/07	Mon 8/13/07																														
Draft Final	15 days	Tue 8/14/07	Mon 9/3/07																														
Review	30 days	Tue 9/4/07	Mon 10/15/07																														
Final ROD	15 days	Tue 10/16/07	Mon 11/5/07																														

Date: Mon 5/2/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Site 1
Naval Weapons Station Yorktown
Cheatham Annex**



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Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

**Site 7
Naval Weapons Station Yorktown
Cheatham Annex**

Task Name	Duration	Start	Finish	2004												2005														
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S		
CAX Site 7	580 days	Mon 2/9/04	Fri 4/28/06	[Gantt bar from Feb 2004 to Apr 2006]																										
Trenching/Sampling Field Activities	50 days	Mon 2/9/04	Fri 4/16/04	[Gantt bar from Feb 2004 to Apr 2004]																										
Trenching and Limited Field Investigation Report	87 days	Mon 2/16/04	Tue 6/15/04	[Gantt bar from Feb 2004 to Jun 2004]																										
Draft	25 days	Mon 2/16/04	Fri 3/19/04	[Task bar]																										
Review	46 days	Mon 3/22/04	Mon 5/24/04	[Task bar]																										
Final	16 days	Tue 5/25/04	Tue 6/15/04	[Task bar]																										
Action Memorandum for TCRA	68 days	Mon 3/1/04	Wed 6/2/04	[Gantt bar from Mar 2004 to Jun 2004]																										
Draft	34 days	Mon 3/1/04	Thu 4/15/04	[Task bar]																										
Review	30 days	Fri 4/16/04	Thu 5/27/04	[Task bar]																										
Final	4 days	Fri 5/28/04	Wed 6/2/04	[Task bar]																										
TCRA Design and Specifications	39 days	Tue 5/18/04	Fri 7/9/04	[Gantt bar from May 2004 to Jul 2004]																										
35% Submittal	13 days	Tue 5/18/04	Thu 6/3/04	[Task bar]																										
Review	2 days	Fri 6/4/04	Mon 6/7/04	[Task bar]																										
75% Submittal	9 days	Tue 6/8/04	Fri 6/18/04	[Task bar]																										
Review	5 days	Mon 6/21/04	Fri 6/25/04	[Task bar]																										
100% Submittal	10 days	Mon 6/28/04	Fri 7/9/04	[Task bar]																										
Removal Action	150 days	Mon 10/3/05	Fri 4/28/06	[Gantt bar from Oct 2005 to Apr 2006]																										

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Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

**Site 11
Naval Weapons Station Yorktown
Cheatham Annex**

Task Name	Duration	Start	Finish	2005												2006											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
CAX Site 11	121 days	Thu 2/28/02	Thu 8/15/02																								
Work Plan	53 days	Thu 2/28/02	Mon 5/13/02																								
Draft Work Plan	11 days	Thu 2/28/02	Thu 3/14/02																								
Final Work Plan	21 days	Mon 4/15/02	Mon 5/13/02																								
Field Investigation	19 days	Mon 6/10/02	Thu 7/4/02																								
Data Analysis & Validation	31 days	Thu 7/4/02	Thu 8/15/02																								
RI Report	870 days	Mon 9/2/02	Fri 12/30/05																								
Draft RI Report	478 days	Mon 9/2/02	Wed 6/30/04																								
Review	153 days	Thu 7/1/04	Mon 1/31/05																								
Final RI Report	239 days	Tue 2/1/05	Fri 12/30/05																								
FS Report/EE/CA	95 days	Mon 1/2/06	Fri 5/12/06																								
Draft Report	35 days	Mon 1/2/06	Fri 2/17/06																								
Review	30 days	Mon 2/20/06	Fri 3/31/06																								
Final Report	30 days	Mon 4/3/06	Fri 5/12/06																								
PRAP/Action Memo	75 days	Mon 5/15/06	Fri 8/25/06																								
Draft	30 days	Mon 5/15/06	Fri 6/23/06																								
Review	30 days	Mon 6/26/06	Fri 8/4/06																								
Final	15 days	Mon 8/7/06	Fri 8/25/06																								
Public Comment Period	30 days	Mon 8/28/06	Fri 10/6/06																								
Removal Action	60 days	Mon 10/9/06	Fri 12/29/06																								
ROD	120 days	Mon 10/9/06	Fri 3/23/07																								
Draft ROD	30 days	Mon 10/9/06	Fri 11/17/06																								
Review	30 days	Mon 11/20/06	Fri 12/29/06																								
Draft Final ROD	15 days	Mon 1/1/07	Fri 1/19/07																								
Review	30 days	Mon 1/22/07	Fri 3/2/07																								
Final ROD	15 days	Mon 3/5/07	Fri 3/23/07																								

Date: Mon 5/2/05 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	