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Updated Final

Community Relations Plan

Naval Weapons Station Yorktown
Yorktown, Virginia

And

Cheatham Annex
Williamsburg, Virginia



Prepared For
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Prepared by

CH²M HILL
Federal Group, Ltd.

Baker
Environmental, Inc.

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirements
AST	Aboveground Storage Tank
Baker	Baker Environmental, Inc.
CAX	Cheatham Annex
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CECLIS	CERCLA Information System
CLEAN	Comprehensive Long-Term Environmental Action Navy
CRP	Community Relations Plan
DOD	Department of Defense
DON	Department of the Navy
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Disposal
ERP	Environmental Restoration Program
ESI	Expanded Site Inspection
ESS	Explosive Safety Submission
FFA	Federal Facility Agreement
FS	Feasibility Study
FY	Fiscal Year
HRS	Hazard Ranking System
HRSD	Hampton Roads Sanitation District
IAS	Initial Assessment Study
LANTDIV	U. S. Navy, Atlantic Division
LANTNAVFACENCOM	Atlantic Division Naval Facilities Engineering Command
NAVFACENCOM	Naval Facilities Engineering Command
NCP	National Contingency Plan
NEDED	Naval Explosives Development Engineering Department
NEESA	Naval Energy and Environmental Support Activity
NFRAP	No Further Response Action Planned
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
ORC	Office of Regional Counsel
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PAH	Polynuclear Aromatic Hydrocarbons
PAO	Public Affairs Officer

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

PCB	Polychlorinated Biphenyl
PRAP	Proposed Remedial Action Plan
PW	Public Works
RA	Remedial Action
RAB	Remedial/Advisory Board
RBC	Risk Based Concentration
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	Hexahydro-1,3,5-trinitro-1,3,5-triazine
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SERA	Screening Level Ecological Risk Assessment
SI	Site Investigation
SMP	Site Management Plan
SSA	Site Screening Area
SSP	Site Screening Process
STP	Sewage Treatment Plant
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TCDD	2,3,7,8 Tetrachlorodibenzo-p-dioxin
TCE	Trichloroethylene
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 Yorktown	Naval Weapons Station Yorktown, Yorktown, Virginia

1.0 OVERVIEW OF THIS COMMUNITY RELATIONS PLAN

This Community Relations Plan (CRP) for the Naval Weapons Station (WPNSTA) Yorktown, Virginia and the Cheatham Annex site (CAX) Williamsburg, Virginia is designed to present the community relations program for the Department of the Navy (Navy) Environmental Restoration Program (ERP) at these facilities and to document the program activities to date. The purpose of the CRP is to provide techniques to ensure effective communication among stakeholders involved in the ERP, including the Naval Facilities Engineering Command Mid-Atlantic (NAVFAC Mid-LANT), WPNSTA Yorktown, the regulatory agencies, and the community. This CRP focuses on informing the public, local officials, interested parties, and regulatory agencies; eliciting responses to form the basis of two-way communication; and providing a central point of contact for inquiries. As a revised final document it also evaluates ERP activities conducted to date.

Baker Environmental, Inc. (Baker) has prepared this CRP under the Navy's Comprehensive, Long-Term Environmental Action Navy (CLEAN) program.

This CRP has been prepared in general accordance with the following guidelines:

1. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (Public Law 96-510), as amended, including Section 117 of the Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499, October 17, 1986).
2. EPA's Public Involvement in the Superfund Program (WH/FS-86-004) and CERCLA Compliance with other environmental statutes (Federal Register 50[20]:5928-59321).
3. Community Relations in Superfund: A Handbook (Office of Solid Waste and Emergency Response [OSWER] Directive Number 9230.0-3A, March 1986).
4. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

This CRP is divided into six sections. Section 2.0 provides background information on WPNSTA Yorktown and CAX. Sections 3.0 and 4.0 present summaries of the WPNSTA Yorktown and CAX sites included in the ERP, respectively. Community background, community involvement, and key community concerns are included in Section 5.0. The community relations program is outlined in Section 6.0 and Section 7.0 provides a program summary. References are included in Section 8.0.

2.0 LOCATION, HISTORY, AND REGULATORY FRAMEWORK

2.1 WPNSTA Yorktown Facility Description

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 2-1). 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.

2.2 CAX Facility Description

CAX is located northwest of WPNSTA Yorktown. 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 (Figures 2-1 and 2-2). 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 Yorktown.

2.3 Regulatory Framework and CERCLA Process Activities

WPNSTA Yorktown was included on the United States Environmental Protection Agency (USEPA) National Priorities List (NPL) on October 15, 1992, primarily due to the facility's proximity to wetlands and the potential impact on the surrounding environment. Prior to the NPL listing, there were a number of investigation reports completed through the ERP including an Initial Assessment Study (IAS) (July 1984), two Confirmation Study Reports (June 1986 and June 1988), a Remedial Investigation (RI) Interim Report (July 1991), a Site 21 Site Inspection Report (February 1992). In September 1994 the Navy, USEPA and the Virginia Department of Environmental Quality (VDEQ) entered into a Federal Facilities Agreement (FFA) to ensure that environmental impacts associated with past and present activities at WPNSTA Yorktown were thoroughly investigated and the appropriate remedial action is taken to protect public health and the environment. The FFA requires that the Navy follow the requirements of CERCLA as amended by SARA and the NCP. The FFA identified 16 sites, 19 Site Screening Areas (SSAs) and 21 Areas of Concern (AOCs) that required investigation. Figures 2-2 and 2-3 show the locations of the ER Sites at Weapons Station Yorktown.

For a more detailed discussion of the activities at individual Sites at Weapons Station Yorktown and Cheatham Annex see the 2006-2007 Site Management Plan (Baker, 2005a).

On December 1, 2000, CAX was included on the NPL. Prior to this, all ERP actions initiated at CAX were voluntary and consistent with other Navy installations. The CAX FFA identified 12 sites and 7 AOCs. These sites and AOCs are shown in Figures 2-2 and 2-4.

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 Remedial Investigation/Feasibility Study (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 2-5.

2.3.1 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).

2.3.2 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 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.

2.3.3 Remedial Investigation/Feasibility Study Process

The RI/FS phase is generally the most involved step in the CERCLA process. Figure 2-5 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 Record of Decision (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:

- 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.

2.3.3.1 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.

2.3.3.2 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).

2.3.3.3 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 this 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).

2.3.3.4 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 (1993)
- Final Round Two RI for Sites 1 and 3 (1998)
- Final Round Two RI for Sites 2, 8, 18, and SSA 14 (2004)
- Final Round Two RI for Sites 4, 21, and 22 (2001)
- Final Round Two RI for Sites 6 and 7 (1998)
- Final Round Two RI for Sites 9 and 19 (1997)
- Final Round Two RI for Sites 11 and 17 (1997)
- Final Round Two RI for Site 12 (1996)
- Final Round Two RI for Site 16 and SSA 16 (1995)
- Draft Final Round One RI for Sites 23, 24, 25, and 26 (2002)
- Final Round One RI for Sites 27, 28, 29, and 30 (2005)
- Final RI for CAX Site 1 (2004)
- Draft RI for CAX Site 11 (2004)

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

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

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

- Final FS for Sites 1 and 3 (1997)
- Draft FS for Sites 2, 8, 18, and SSA 14 (1998)

- Final FS for Sites 4, 21, and 22 (2001)
- Final FS for Sites 6 and 7 (1998)
- Final FS for Sites 9 and 19 (1997)
- Final FS for Sites 11 and 17 (1999)
- Final FS for Site 12 (1996)
- Final FS for CAX Site 1 (2000)

The following Proposed Plans have been completed at WPNSTA Yorktown:

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

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

- Final ROD for Sites 1 and 3 (1999)
- Draft ROD for Site 4 (2005)
- Final ROD for Site 5 (1994)
- Final ROD for Sites 6 and 7 (1998)
- Final ROD for Sites 9 and 19 (1998)
- Final ROD for Sites 11 and 17 (2000)
- Final ROD for Site 12 (1997)
- Final ROD for Site 16 and SSA 16 (1995)
- Draft ROD for Site 18 (2005)
- Final ROD for Site 21 (2003)
- Final ROD for Site 22 (203)

2.3.4 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 (NTCRAs) are defined as actions, 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 2-4 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 3.0 and 4.0.

2.3.5 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 Section 3.0.

2.3.6 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.”

2.3.7 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.
- Reduce cost and performance uncertainties for treatment alternatives to acceptable cleanup levels to aid in remedy selection.

2.3.8 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.

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 within 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 CAX:

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

2.3.9 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.

2.3.9.1 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.

2.3.9.2 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.

2.3.9.3 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.

3.0 WPNSTA YORKTOWN SITE AND SSA DESCRIPTIONS

This section describes the history at each of the 25 WPNSTA sites and 17 SSAs at WPNSTA Yorktown. A summary of the significant CERCLA documents completed for each site is presented chronologically. The site descriptions are presented in numerical order for ease of reference. Site locations are shown on Figures 2-2 and 2-3. CAX sites and AOCs are described in Section 4.

3.1 WPNSTA Yorktown Site Descriptions

3.1.1 Site 1 - Dudley Road Landfill

Site 1 is an approximately 6-acre area located just north of the headwaters of Indian Field Creek. The solid waste landfill was in use from approximately 1965 to 1979 for general disposal, with one area used for disposal of plastic lens grinding waste until 1983. The solid waste landfill operated under a conditional permit (No. 287) issued by the Commonwealth of Virginia. The site was originally used for sand mining. Two unfilled borrow pits were found at this site. One was located within the eastern portion of the site. The other borrow pit was located in the southwest portion of the site and accumulated surface water runoff. The water within this borrow pit fluctuated throughout the year from a few inches to two feet deep. Seasonal ponding also occurred in the southeastern section of the site. 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 during the time in which the site was in use. Currently, the landfill is covered by approximately 2 feet of soil and the abandoned sand reclamation area is covered by 8 feet of soil.

A Final ROD was signed in June 1999. The ROD specifies debris removal and excavation/disposal of arsenic contaminated soil and reestablishment of the soil cover over the solid waste landfill portion of the site. A draft remedial design is in progress which specifies land use control implementation and maintenance actions, including periodic inspections and long-term monitoring (LTM) of the groundwater.

3.1.2 Site 2 - Turkey Road Landfill

Site 2 is a 5-acre disposal area located east of Turkey Road in a wetland area adjacent to the southern branch of Felgates Creek. Operations at the landfill reportedly began in the 1940s and ceased in 1981. Wastes disposed in this landfill 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 tributaries to the southern branch of Felgates Creek. Hard waste material was removed during the summer of 1994 at Site 2. 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.

A Round Two RI was completed in 2004, it indicated that there were potentially unacceptable total site risks. Samples for a pre-removal characterization of the soil were collected in June of 2005. Depending on the results, an EE/CA and Remedial/Removal Action will be conducted, if necessary.

3.1.3 Site 3 - Group 16 Magazine Landfill

Site 3 is a 2-acre area located behind the Group 16 magazines, just south of Site 1 (separated from Site 1 by a ravine), along the headwaters of Indian Field Creek. The landfill is named for its proximity to the Group 16 Magazines but this landfill is unrelated to them. The landfill area was reportedly in use from 1940 to 1970 and received an estimated 90 tons of waste during the time in which the site was in use. The site was originally used for sand mining. Wastes disposed within the depression created by sand mining include solvents, sludge from boiler cleaning operations, grease trap wastes, Imhoff tank skimmings containing oil and grease, and animal carcasses. Currently, most of the site, which is overgrown with trees, is covered by approximately 2 feet of soil with some scattered surface debris.

The Final ROD for this site was signed in June 1999. The ROD specifies debris removal, excavation of a PAH hotspot, and off-site disposal of a small volume of soil. Between July 1999 and April 2000 a remedial action was performed to clean the site. During this removal action PAH contaminated soil and debris were removed and disposed. The area was then backfilled and restored. Long-term monitoring has been put in place at this site.

3.1.4 Site 4 - Burning Pad Residue Landfill

Site 4 is an approximately 10-acre landfill. The site is bordered by the Explosives Burning Facility 1401 (Site 22) to the southwest, Site 21 (the Battery and Drum Disposal Area) and an unnamed drainage way to the southeast, West Road to the northeast, and a gravel road leading to the burning facility to the northwest. This area was used as a land disposal area from 1940 until 1975. The landfill received an estimated 595 tons of waste during the time in which the site was in use. The landfill 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.

A removal action was conducted at Site 4 during the summer of 1994 and the area has been revegetated. 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 suspect UXO devices also were encountered and identified as inert. Approximately 7,285 tons of material were removed from the site including 2,460 tons of ash, 3,025 tons of batteries, 1,295 tons of soil, and 510 tons of debris.

A Round Two RI was completed in January 2001 to assess the condition of Site 4 post 1994 removal action. The results showed low-level PAH-contamination in surface soil which led to the 2005 Removal Action. After 57,600 tons of contaminated soil was removed it was confirmed that the site no longer posed a threat. Therefore, a No Further Action ROD was finalized and is waiting to be signed.

3.1.5 Site 5 - Surplus Transformer Storage Area

Site 5 is located near Barracks Road in the northeastern portion of the Station adjacent to the south end of Building 76. Site 5 is also referred to as OU I. The area is approximately 1,000 square feet in size and is fenced. Two concrete pads are located within the fenced area; the remainder of the area is covered with gravel. 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. After 1981, only non-leaking transformers were stored at this location. Currently, the stored transformers have been removed and the site is no longer used as a transformer storage area.

An estimated 300 pounds of PCB-containing fluids reportedly leaked from stored transformers. A cleanup effort, conducted in December 1982, included the removal of contaminated soil at Site 5. However, the success of this removal effort was not documented (i.e., no information on the amount of soil removed, verification samples, and type and source of backfill). The recently completed Round One RI investigation and a Risk Evaluation confirmed that the contaminated soil was successfully removed during this effort. Based on the results of the Risk Evaluation and limited confirmational sampling by USEPA Region III, a No Action ROD was finalized for Site 5 (OU I) on September 29, 1994.

3.1.6 Site 6 - Explosives-Contaminated Wastewater Impoundment

Site 6 contains a 3-acre, unlined, surface impoundment located adjacent to wetlands along a small 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 (wash down 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).

In addition, north of the impoundment and northwest of Building 1249, a previously excavated area

has been identified via aerial photography. This area is currently wooded, but concrete rubble and miscellaneous debris are evident.

A ROD for this site specifies removal of contaminated soil and sediment from the flume area and onsite 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. Treated soil and sediment will be reused at the site or elsewhere at the Station. The ROD for Site 6 was signed on October 5, 1998.

A remedial action for Site 6 began in 1999 and is on-going. It includes excavation and ex-situ bioremediation of contaminated soil at the biocell near Site 24 and excavation with in-situ bioremediation of contaminated soil in the treatment cell at the Impoundment Area. Institutional controls and long-term monitoring are in place at this site.

3.1.7 Site 7 - Plant 3 Explosives-Contaminated Wastewater Discharge Area

Site 7 is a 300-foot long (approximately) drainage area located adjacent to wetlands and 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 1945 and 1975. In 1975, a carbon adsorption tower was installed to treat the contaminated wastewater prior to discharge into the drainage way. An 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 HRSD. The site reverted to a natural drainage area and received no discharge from the Plant 3 complex after 1986. This area has been excavated to provide soil/sediment for a field-scale pilot study of nitramine/nitroaromatic contamination of bioremediation (OHM, 1997).

The Final ROD for Site 7 specifies 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. The ROD for Site 7 was signed on October 5, 1998. Institutional controls and long-term monitoring are in place at this site.

3.1.8 Site 8 - NEDED Explosives-Contaminated Wastewater Discharge Area

Site 8 is a 300-foot 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. Currently, the site has reverted to a natural drainage area.

The completion of a Round Two RI in 2004 indicated that unacceptable risks were present at Site 8 and SSA 14. A pre-removal characterization of soil was completed in 2005 and will support a future removal/remedial action. A Final EE/CA and Action memo were completed December 2005.

3.1.9 Site 9 - Plant 1 Explosives-Contaminated Wastewater Discharge Area

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 down-slope from 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. 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.

A Final ROD for Sites 9 (OU VII) and 19 (OU VI) was finalized for soil, surface water, and sediment in March of 1998. No additional action is the selected alternative for Site 9. Site 9 groundwater will

be evaluated at a later date.

3.1.10 Site 11 - Abandoned Explosives Burning Pits

Site 11 is an area of approximately 0.5-acres 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 are 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. Currently, the area is thickly vegetated.

The Round Two RI conducted in 1996 revealed that this site had a potential for adverse ecological effects due to exposure. In October 2000 a ROD was signed specifying that soil contaminated with copper and mercury were going to be removed from the site during the 2000 Remedial Action. During the Remedial Action, 655 tons of contaminated soil was removed and disposed off site.

3.1.11 Site 12 - Barracks Road Landfill

Site 12 is a 4-acre landfill located east of Barracks Road, north of the community of Lackey, and northwest of the Colonial National Historical Park along a drainage swale leading to Ballard Creek. This area operated from approximately 1925 to the mid-1960s. Wastes reported to have been disposed in the landfill 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 are two incinerators (Solid Waste Management Unit [SWMU] 142 and SWMU 143) formerly used to burn a variety of waste, both industrial and non-industrial. 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. Located approximately 400 feet east of Site 12 is the Wood/Debris Disposal Area (formerly SWMU 164 and now considered a part of Site 12), which is approximately 4 acres in size. This area consists of a steep ravine in which wooden pallets and construction debris has been disposed. Each area is currently vegetated and drains toward Ballard Creek. Based on the results of the risk evaluation, a ROD was finalized for Site 12 (OUs III, IV, and V) on May 16, 1997 and

remediation of Area A was completed in November 1997. Miscellaneous debris at Area B/C was removed in May and June of 1998. Institutional controls and long-term monitoring are in place at this site.

3.1.12 Site 16 - West Road Landfill

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. Site 16/SSA 16 also is referred to as OU II. 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 (Baker/Weston, 1993a) 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 included glass containers, cans, and newspapers. Landfill boundaries are not evident from visual observation of the area. The site is wooded, except the northern portion along West Road, which is covered with grasses. A removal action was conducted at Site 16 during the summer of 1994 to eliminate drums, scrap metal, batteries, and construction debris. Site 16 was evaluated in conjunction with SSA 16 because of its proximity and geophysical data which indicate overlap between the two areas. Wastes encountered at this site included drums filled with silica gel desiccant, dry cell carbon/zinc batteries, surface debris, steel cables, underwater mine casings, and scrap ordnance. An approximate total of 420 tons of batteries, 60 tons of debris, 125 tons of silica gel, and the following ordnance items were removed: three Mk 13 torpedo sections, three Mk 51 Underwater mines, 29 Mk 10 Mod 3 mines, eight 500-pound general purpose bombs, three 2000-pound general purpose bombs, three Mk 36 mines, two AN&M fragmentation bombs, 10 Mk 13 mines, one Zuni rocket motor, one 1,000-pound armor piercing bomb, and 90 Burster tubes. All ordnance items were certified inert. Based on the results of the risk evaluation and limited confirmational sampling by USEPA Region III, a "No Further Remedial Action with Institutional Controls" ROD was finalized for Site 16/SSA 16 (OU II) on September 29, 1995. Institutional controls are in place at this site.

3.1.13 Site 17 - Holm Road Landfill

Site 17 is a 2-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 include 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 during the period the landfill was in use. Currently, the site is overgrown with mature trees and no evidence of surficial waste is apparent. In addition, results from the geophysical investigation of this site during the Round One RI did not indicate any evidence of buried material.

A Round Two RI was conducted in 1996 that indicated there was a potential for unacceptable human health risks from exposure to cPAHs. In October 2000 a ROD was signed identifying the remedy as excavation with off-site disposal. A remedial action was conducted from May to August 2000 which removed 940 tons of PAH contaminated soil.

3.1.14 Site 18 - Building 476 Discharge Area

Site 18 is a one-quarter mile long, unlined drainage ditch located north of Building 476 in the southeastern area of the Station along a small tributary leading to Lee Pond. This area was in use for approximately 20 years from the 1940s to the 1960s. The discharge into the area 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 metal may have been discharged during the operational period. Battery acid waste is no longer discharged from Building 476 into this drainage way. As no unacceptable human health or ecological risks were found at Site 18, a No Action ROD was signed in September 2005.

3.1.15 Site 19 - Conveyor Belt Soils at Building 10

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 concrete 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.

In 1998, the conveyer belt was dismantled and the metallic components were heat decontaminated to remove residual explosives. Asbestos components of the conveyor belt were double bagged and sent

to a special 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 SABRE7 technology. The former site of the conveyor belt has been revegetated.

A ROD was completed in March 1998. The selected remedy was dismantling and disposing of the conveyor belt, removal of contaminated soil, and transporting the soil for treatment at the biocell. The remedy was completed in 1998.

3.1.16 Site 21 - Battery and Drum Disposal Area

Site 21 covers approximately 1 acre and is located south of West Road adjacent to the ravine that separates Site 21 from Site 4. Historical information for this site is limited. Wastes identified in this area include various sized cans and drums, dry carbon-zinc batteries (Leclanche), empty solvent containers, and scrap metal. A removal action was conducted at Site 21 during the summer of 1994. Wastes encountered at this site consisted primarily of batteries, empty drums, scattered debris and seven drums of unknown oils. A total of 6,070 tons of batteries and screened soil, 90 tons of soil, 650 tons of debris, and four drums of hazardous waste liquids were removed from the site. The site has been revegetated in those areas affected by the removal.

Samples for a Round Two RI were collected in 1996 which indicated that unacceptable risks to terrestrial ecological receptors were present. This finding prompted the excavation and off-site disposal of approximately 145 cubic yards of contaminated soil, which was completed in the fall of 2002. A No Further Action ROD was signed in September 2003.

3.1.17 Site 22 - Burn Pad

Site 22 covers approximately 9 acres and is located in the central portion of the Station between Sites 4 and 21. A circular array of 11 steel burning pans was used for burning waste plastic explosives and spent solvents. The pans surrounded a 150-foot inch diameter circular area. The site became an area used for a treatability study for the treatment of explosive-contaminated soil in 1996. As a part of the treatability study, a biocell was constructed which measured 153-feet long by 86-feet wide by 7-feet deep. Soil samples were obtained from the "footprint" of the biocell prior to the placement of liners and footers for the rail system, upon which a gantry rests. The cell was completed in 1996 and was

expanded to accommodate soil from Site 19. The use of the biocell ended in 1998 and the biocell was demolished.

A Round Two RI was completed in January 2001 and determined that unacceptable risks to ecological receptors were present. A Feasibility Study and Proposed Plan were both completed in 2001 followed by a Remedial Action in 2002, which removed 3,450 cubic yards of soil. A No Further Action ROD was signed in September 2003.

3.1.18 Site 23 - Building 428 Teague Road Disposal Area

Site 23 (a portion of former SSA 1) is approximately 2.8 acres in size and is located northeast of Building 428, in the northeast portion of the Station along the Station boundary. The site is comprised of five smaller areas of SSA 1 which are adjacent to the railroad tracks and the unnamed ditch and within the western portion of the former SSA boundary. The York River is located to the north of Site 23 and Roosevelt Pond bounds the area to the west/northwest. The area is wooded and bisected by a railroad track constructed in 1919.

Disposal activities reportedly began in 1940 and ceased in 1960. A pier fire occurred in the mid-1950s and debris from this fire was 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. However, a land survey, conducted in the fall of 1993 as part of a removal action, indicated discrete piles of debris that appear to have been dumped on top of native soil, while other areas of debris 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.

A removal action was conducted during the summer and early fall of 1994 to remove surface debris present at Site 23. Items removed 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 non-hazardous 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 5,800 tons of TNT and trinitrobenzene-contaminated ash/soil also were removed from an area north of the railroad tracks at the northeast portion of the site. Contaminants of potential concern at Site 23 include PAHs that may be associated with former disposal activities. Additional ERP activities will include investigation of

subsurface contamination and impacts on shallow groundwater and an ecological evaluation/habitat evaluation of the unnamed ditch.

A Round One RI was conducted in 1997 and 1998 and resulted in the recommendation of a second Removal Action. This Removal action was conducted in spring of 2003 with the excavation and off-site disposal of 1,025 tons of contaminated soil and buried debris. Due to a miscommunication of the clean up goal, the site was not cleaned up well enough. A third Removal Action was conducted in January 2004, which removed and disposed of zinc-contaminated soil. A revised RI for Sites 23, 24, 25 and 26 is in progress.

3.1.19 Site 24 - Aviation Field

Site 24 (a portion of former SSA 6) is an area approximately 15 acres in size located around the helicopter landing pad. It is 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 PCB-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. A helicopter pad and an air control tower are now present on the AV 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.

Soil samples were collected for a Round One RI in September of 1997. The revised RI for Sites 23, 24, 25 and 26 is in progress.

3.1.20 Site 25 - Building 373 Rocket Plant

Site 25 (a portion of former SSA 7), the Rocket Plant, is approximately 0.14 acres in size and is located immediately northwest of Building 373. Site 25 consists of a 500-gallon (approximately) precast concrete pipe, which was used as an underground storage tank (UST), and the associated cast

iron piping. The concrete pipe was installed vertically into the ground with a bottom section cast in the concrete pipe. A 500-gallon fuel oil UST was removed from the area in 1998. The area around the 500-gallon fuel oil UST is not considered to be a part of Site 25.

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 which was installed to contain the wash/rinse water. From the 1960s to 1980s, the UST received batch wastes from NEDED assembly 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 tanks consisted of binders, curatives, catalysts, stabilizers, and explosives.

In addition to the above areas, USEPA Region III personnel reportedly found "hard waste" (empty mine casings and other miscellaneous wastes) in the woods south/southeast of SSA 7. A removal action was conducted in June/July 1996 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 the UST was removed. There were no visible signs of staining along the sides of the UST or in the soil surrounding the sides of the UST. A strong solvent odor was noted during the removal activities.

A Round One RI has been started but not finalized for Site 25. The revised RI for Sites 23, 24, 25 and 26 is in progress.

3.1.21 Site 26 - Building 1816 Mark 48 Waste Otto Fuel Tank

Site 26 (formerly SSA 18) is approximately 6.7 acres in size and is located in the central portion of the Station 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 consists 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 was removed along with an 8,000-gallon UST located in the vicinity. Site 26 has been retained as an ERP site because of chlorinated volatiles detected in shallow groundwater. The extent of this contamination has not yet been adequately defined.

A Round One RI has been started but not finalized for Site 25. The revised RI for Sites 23, 24, 25 and 26 is in progress.

3.1.22 Site 27 - Building 1751 Chemistry Laboratory Neutralization Unit and Drainage Area

Site 27, formerly SSA 9, occupies an area of 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). This SSA consists of a below-grade cylindrical unit into which acids from the Chemistry Lab were discharged for neutralization. Because it is below the ground, the integrity of the unit is unknown. The unit operated from 1969 to early 1995. The drainage 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.

A Round One RI was completed for Site 27 in July 2005 (Baker 2005b). A Proposed Plan was issued in November 2005 and following the public comment period, a No Further Action ROD will be issued.

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

Site 28, formerly SSA 10, is located at Building 28 in the south central portion of the Station and occupies an area of approximately 5.8 acres. The X-ray process began in the late 1960s. Before silver recovery units were installed, the tanks may have stored hazardous wastes. The area consists of a septic tank drain field that receives sanitary wastewater from the X-Ray Facility at Building 28. It was assumed that by the end of Fiscal Year 1997, wastewater would be diverted to the sanitary sewer and ultimately to HRSD. This was accomplished in the later part of 1998.

A Round One RI was completed in July 2005 (Baker 2005b), at Site 28, that indicated that there are potential human health risks. A Baseline Ecological Risk Assessment investigation is planned for Site 28.

3.1.24 Site 29 - Lee Pond

Site 29, formerly SSA 20, is an approximately 4.1 acre pond located in the east central portion of the Station. The pond receives drainage from Building 10 at Site 9 located due east of the pond. The drainage area is approximately 500 to 600 feet in length and was subjected to a limited removal action in 1994. Site 29 also receives stormwater runoff from the industrial area and sites therein such as Sites 18 and 19 and SSAs 8 and 22.

Lee Pond empties into a channel which in turn flows around the Site 16/SSA 16 study area into Felgates Creek. The pond has been investigated by the Commonwealth of Virginia in 1994 and as part of a Focused Biological Sampling and Preliminary Risk Evaluation (Baker/Weston, 1993b). Water levels in Lee Pond are raised and lowered during summer and winter respectively for support of the local ecology. The SSP Report (Baker, 1998a) for Lee Pond indicates that additional RI/FS activities are necessary to address the site and area groundwater as an operable unit.

A Focused Biota Study was conducted and indicated low levels of pesticides in fish and shellfish and low levels of SVOCs in the sediment. A Round One RI was completed in July 2005 (Baker 2005b). A baseline Ecological Risk Assessment is planned for Site 29

3.1.25 Site 30 - Bracken Road Incinerator and Environs

Site 30, formerly SSA 24, is in an area approximately 0.1 acres located north of Site 5 (Surplus Transformer Storage Area), northeast of a cooling pond (76A), and south of railroad tracks. The USEPA collected samples and detected metals and nitramine compounds exceeding regulatory screening levels. Additional investigation under the SSP was, therefore, necessary to determine potential human health risks and ecological concerns associated with this SSA. The SSP Report (Baker, 1998a) indicates that additional RI/FS activities are necessary to address environmental concerns at this site.

A Round One RI was completed for Site 30 in July 2005 (Baker 2005b). Further investigation may be required for this site prior to site closure.

3.2 WPNSTA Site Screening Area Descriptions

This section describes the history of past disposal practices at each of the SSAs at WPNSTA Yorktown. The information contained in the following sections has been adapted from the SSP reports (Baker, 1997a, 1998a, 2001a, 2004b).

3.2.1 SSA 2 - Former EOD Burning/Disposal Area

SSA 2 is an irregular, U-shaped area located at the north end of the existing Explosives Ordnance Disposal (EOD) range which 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 earth-moving equipment has been used historically 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. 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. Based on the results of the SSP, no further RI/FS activities will be conducted at SSA 2; however, long-term monitoring of groundwater will be conducted as part of the Part B RCRA permit. Specifications of the long-term monitoring will be presented as part of the final permit.

3.2.2 SSA 3 - Fire Training Pits and Vicinity

SSA 3 occupies an area of approximately 2.7 acres and is located just north of Main Road and Site 16, the West Road Landfill, in the north central portion of the Station. The area consists of three

concrete oil pits; one is T-shaped and the other two are rectangular. One rectangular pit is located at the eastern end of the field, the second rectangular pit is located in the western end of the field, and the T-shaped pit is located in the central section of the field, where a patch of stressed vegetation is 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 is open on the bottom and placed directly on the soil. The inside of the trailer is blackened and burned. A removal action was conducted during the late spring/early summer of 1996 to remove the fire training pits. Based on the results of the SSP Report (Baker, 1998a), no further RI/FS activities are suggested at this SSA. A No Further Action Decision Document was signed in May 2004 (Baker, 2004b).

3.2.3 SSA 4 - Weapons Casing/Drum Disposal Area

SSA 4 occupies approximately one-half 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. There is a flat, grassy area just along the roadway, indicating 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. A removal action was conducted at SSA 4 during the summer and early fall of 1994 to remove surface debris in the ravine. The wastes encountered included various types of ordnance, empty drums, miscellaneous construction/demolition debris, fire extinguishers, and nominal amounts of paint wastes and paraffin wax. Based on the results of the SSP Report (Baker, 1998a), no additional RI/FS activities are suggested for this SSA. A No Further Action Decision Document was signed in May 2004.

3.2.4 SSA 5 - Bypass Road Landfill

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.

Metal debris, with lesser amounts of concrete and miscellaneous materials, was present at SSA 5.

Two empty drums were present. No wood was identified among the surface debris. A removal action was conducted at SSA 5 during the summer of 1994 to remove the small amount of ordinary debris including empty drums, pipes, scrap metal, and rubble. Based on the results of the SSP Report (Baker, 1998a), no additional RI/FS activities are suggested for this SSA. A No Further Action Decision Document was signed in May 2004 (Baker, 2004b).

3.2.5 SSA 8 - Building 350 Rail Roundhouse Maintenance Area Trench Outfall

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 the Station. Within Building 350, there is one concrete trench, which was (and is presently) used to access train engines from below. The trench is used for train maintenance and there are no records of any releases from the trench. During train maintenance liquids may have dripped into the trench, but were covered with absorbent material and 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. The Final SSP Report for SSA 8 (Baker, 1997) concluded that this area should not be retained as an ER site for further investigation.

3.2.6 SSA 11 - Building 3 Neutralization Unit

SSA 11 is located at the southeast corner of Building 3 in the eastern section of the Station (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. The Final SSP Report for SSA 11 (Baker, 1997) concluded that this area should not be retained as an ER site for further investigation.

3.2.7 SSA 12 - Public Works Storage Yard/Building 683 Vicinity

SSA 12 is approximately 1.5 acres in size and is located in the Public Works (PW) storage yard and the surrounding area in the eastern portion of the Station 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 (Kearney, 1992). Historically, the area was used to store 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 indicated that wastes may have been stored in this area in the past. In addition, there is a formerly wooded area where demolition debris was reportedly deposited. Concrete debris is visible at the edge of the area. Currently, approximately one-half of the area is used for vehicle storage.

In September 1994, a soil investigation was conducted by Baker at SSA 12 related to the proposed location of a new building (P-518). This investigation involved the sampling of surface and subsurface soil to determine if site soil was contaminated, and thus, affecting the construction of the new building (Baker, 1995a).

In February 1996, an 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. This tank was removed prior to any formal UST program; therefore, records of the removal are not available. The Final SSP Report for SSA 12 (Baker, 1997) concludes that this area should not be retained as an ER site for further investigation.

3.2.8 SSA 13 - Building 529 Battery Drainage Area

SSA 13 occupies an area of approximately one-half acre and is located outside Building 529 in the eastern portion of the Station near Site 12 and SSAs 11 and 12. The area consists of pavement where neutralized battery wash water, created from washing the external portion of the batteries and neutralizing the wash water 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. The Final SSP Report for SSA 13 (Baker, 1997) concludes that this area should not be retained as an ER site for further investigation.

3.2.9 SSA 14 - Building 537 Discharge to Felgates Creek

SSA 14 occupies an area of approximately 0.4 acres and is located outside Building 537 between Site 8 (NEDED Explosives-Contaminated Wastewater Discharge Area) and SSA 9 (Building 1751 Chemistry Laboratory Neutralization Unit and Drainage Area), in the north central portion of the Station. This SSA consists of a pipe leading from the building, through which nitramine-contaminated wastewater was reportedly discharged to Felgates Creek. Some rubble and rusted piping were found where this pipe was reportedly located.

A Relative Risk Ranking Data Collection Investigation was conducted for SSA 14 in late October 1995, which showed explosives in one surface soil sample, one surface water sample, and one sediment sample (Baker, 1995b). A Round Two RI field investigation was conducted in 1997 with additional sampling in 2000. Results from the Final Round Two RI indicated that unacceptable total site risks exist to hypothetical future young child and adult residents (Baker, 2004c). A Pre-Removal Characterization of Soil was conducted in June 2005 in preparation of a future Removal Action (Baker, 2005b). A Final EE/CA and Action Memorandum are complete for Site 8 and SSA 14 and a removal action will be conducted in the future.

3.2.10 SSA 15 - Sewage Treatment Plant #1/Sludge Drying Beds and Discharge Area

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 Station, east of Buildings 3 and 4, and south of Site 12 (Barracks Road Landfill). This site covers approximately 0.3 acres and consists 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 Yorktown personnel have reported, during the operation of STP #1, a mercury-containing bearing on the trickling filter cracked, allowing mercury to be released. Also, WPNSTA Yorktown personnel indicated that sludges from SSA 15 were transported to SSA 6 and land farmed. Currently, substantial vegetation is present in the sludge drying bed. Based on the results of the SSP, no further RI/FS activities will be conducted. However, because of the site's proximity to Site 12 and the Industrial Area, a final action at SSA 15 was addressed in the Site 12 ROD. Additional investigative efforts for SSA 15 or AOCs 5, 6, and 7 were not recommended.

Demolition activities at the sewage treatment plant were conducted in 2001. Sediment samples were collected after demolition, which indicated the presence of mercury. Therefore, further investigation may be required.

3.2.11 SSA 16 - Building 402 Metal Disposal Area and Environs

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 in size, where scrap metal was stored. Site 16/SSA 16 also is referred to as OU II. Dumpsters containing scrap metal are 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. Based on the results of the risk evaluation and limited confirmation sampling by USEPA Region III, a "No Further Remedial Action with Institutional Controls" ROD was finalized for Site 16/SSA 16 (OU II) on September 29, 1995.

3.2.12 SSA 17 - Building 1456 Mark 46 Waste Otto Fuel Tank

SSA 17, which occupies an area of approximately 330 feet by 310 feet, is located northwest of SSA 18 in the central portion of the Station. This SSA is located approximately 400 feet north of Sharpe Road and approximately 2,000 feet northwest of the intersection of Sharpe and Lee Roads. This area previously consisted of an inactive, 5,000-gallon, underground steel tank and a network of ancillary drain pipes; the tank was located under the parking apron. This tank was used to store waste Otto fuel generated during cleaning procedures associated with MK 46 torpedo activities. 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. Based on the results of the SSP, no further RI/FS activities will be conducted at SSA 17.

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

SSA 19, which occupies an area of approximately 164 acres (3,000 feet by 3,500 feet), 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 the northwest perimeter of the SSA. SSA 19 is circumjacent to SSA 2. The area is used for explosive waste destruction. The EOD range began operations in 1970 when the former disposal range (SSA 2) was taken out of service. Soil is stacked approximately 40 feet above ground surface, holes are dug about 12 to 20 feet into the mound of soil, the holes are filled with explosive ordnance, and 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. The Navy is currently planning an investigation of SSA 2 and SSA 19.

3.2.14 SSA 21 - Roosevelt Pond

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. The pond has been subjected to limited investigations by the Commonwealth of Virginia in 1994 and a Focused Biological Sampling and Preliminary Risk Evaluation (Baker/Weston, 1993b). The SSP Report (Baker, 1998a) for SSA 21 indicates that no additional RI/FS efforts are needed to address environmental concerns at this SSA. A No Further Action Decision Summary was signed in May 2004 (Baker, 2004b).

3.2.15 SSA 22 - Sand Blasting Grit Pile

Site Screening Area 22 (formerly AOC 4) is an area which consists of approximately 0.5 acres in the eastern portion of WPNSTA Yorktown adjacent to Building 530. Building 530 was built and put into operation in 1945 and operated 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. The dust, which was accumulated in the dust collector, may have been deposited in the vicinity of the northern side of Building 530. AOCs were investigated in 1995 by Baker. Elevated concentrations of cadmium were detected in SSA 22 soil samples which warranted its retention for further investigation under the SSP.

Based on the results of the SSP Report (Baker, 1998a), no further RI/FS activities are recommended for SSA 22. A removal Action was conducted in 1998, which removed soil from 6 inches to 2 feet below ground surface. This removal action reduced soil contamination to below the remedial action levels. A No Further Action Decision Document was signed in May 2004.

3.2.16 SSA 23 - Coal Storage Area

SSA 23 is an area of approximately 1-acre adjacent to Building 708. Coal was stored in this area from 1953 to the late 1970s. The coal pile was surrounded by a 9-inch thick reinforced concrete wall. The walled storage area is referred to as Building 1827. Every 20 feet a hole 2- by 6-inches was

located at the ground surface of Building 1827 on the north side of the walled area. These holes were to release water from the coal storage area. Currently, only residual coal remains within the coal storage area. As with other AOCs, SSA 23 was investigated in 1997 and 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, therefore, necessary to determine potential human health risks and ecological concerns associated with this SSA. The SSP Report indicated that unacceptable risks were present at SSA 23 due to iron and arsenic in the surface and subsurface soil. Therefore, delineation and removal of the arsenic hot spot is recommended (Baker, 2001a).

A delineation of the arsenic hot spot was conducted in 1998 along with a remedial action in 1998 and a soil excavation in 1999. In May 2004 a No Further Action Decision Summary was signed based on the removal of inorganic-contaminated soil.

3.2.17 SSA 25 – Wetlands Downgradient of Beaver Pond

SSA 25 is located in the extreme eastern portion of the facility property. 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.

Final 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, 2005d). Initial sediment sampling was completed in late 2005. Additional field sampling is planned for the spring in 2006.

3.3 Operable Units

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 means a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, eliminates a release, mitigates a release, or threat of release, or pathway of exposure. OUs can address geographical portions of a site, 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.

3.3.1 WPNSTA Operable Units

At WPNSTA Yorktown, sites are designated as OUs when investigative activities are completed and a ROD is completed for the contaminated media. Assigning sites to OUs helps in selecting of remedial action alternatives and serves accounting purposes for sites with more than one contaminated media. For example a site may have both soil and sediment contamination. RODs have been completed for the following WPNSTA Yorktown sites with OU designations.

3.3.1.1 Operable Unit No. I (Site 5)

A "No Action" Record of Decision for Site 5 was signed in September 1994. There are no other ERP activities associated with this site.

3.3.1.2 Operable Unit No. II (Site 16/SSA 16)

A "No Further Remedial Action with Institutional Controls" Record of Decision for Site 16/SSA 16 was signed in September 1995. There are no other ERP activities associated with this site.

3.3.1.3 Operable Unit No. III (Site 12 Area A Soil)

A soil/clay equivalent cover was constructed on soil which contains lead above the USEPA lead action level (400 mg/kg). Erosion control measures and institutional controls were implemented.

Institutional controls include groundwater and land use restrictions. Long-term surface water monitoring of Ballard Creek also was implemented.

3.3.1.4 Operable Unit No. IV (Site 12 Areas B/C and Wood/Debris Disposal Area Soil)

A "No Action" Record of Decision for Site 12 Areas B/C and Wood/Debris Disposal Area soil was signed in May 1997. There are no other ERP activities associated with this OU.

3.3.1.5 Operable V (Site 12 Groundwater Across the Study Area and Surface Water and Sediment in Ballard Creek)

Long-term groundwater monitoring as per the NCP has been implemented. The NCP includes a review of the remedy every five years. In addition, surface water and sediment within Ballard Creek will be monitored as agreed to by USEPA, VDEQ, and Navy. The first long-term monitoring report will be available in spring, 1999.

3.3.1.6 Operable Unit No. VI (Site 19 Conveyor Belt Soil)

Removal of explosives-contaminated soil (i.e., 2,4,6-TNT greater than 15 mg/kg and RDX greater than 5 mg/kg) from beneath the conveyor belt (to a depth of 4 feet below ground surface) and biological treatment at the Site 22 biocell were conducted in 1998. Aluminum-contaminated surface soil (0-6 inch depth) was also excavated around Building 527 and placed in the bottom of the conveyor belt excavation. Excavated areas were backfilled with clean fill and revegetated. No monitoring or five-year reviews are necessary for this OU.

3.3.1.7 Operable Unit No. VII (Site 9 Soil, Surface Water and Sediment)

No Action is specified for this OU because human health risks fall within acceptable risk ranges and remediation would result in greater harm to the environment than the presence of low level contamination.

3.3.1.8 Operable Unit No. VIII (Site 1 Soil)

Surface debris and arsenic-contaminated soil (exceedances of 63 mg/kg) will be removed around

monitoring wells 1GW12A, and 1GW12B. Surface soil will be removed to a depth of two feet. Excavated areas will be backfilled with clean fill. The existing soil cover at Site 1 will also be restored where needed. In addition, institutional controls will be implemented, since contaminants are not being removed to residential levels.

3.3.1.9 Operable Unit No. IX (Site 3 Soil)

Surface debris and soil contaminated with polynuclear aromatic hydrocarbon (PAH) (exceedances of total carcinogenic PAHs of 10 mg/kg) in the northeast portion of the site will be removed. Surface soil will be removed to a depth of two feet. Excavated areas will be backfilled with clean fill and covered with six inches of topsoil.

3.3.1.10 Operable Unit No. X (Site 11 Soil, Groundwater, Surface Water, and Sediment)

No Action is specified for this OU because human health risks fall within acceptable risk ranges. A small amount of inorganic contaminated soil will be excavated at Site 11 and combined with soils removed from Site 17.

3.3.1.11 Operable Unit No. XI (Site 17 Soil and Groundwater)

Surface debris and PAH (exceedances of total carcinogenic PAHs of 10,000 ug/kg)-contaminated soil will be removed. Excavated areas will be backfilled with clean fill and covered with six inches of topsoil.

3.3.1.12 Operable Unit No. XII (Site 7 Soil, Groundwater, Surface Water, and Sediment)

No additional remedial action is specified for this OU because risks posed to human health and the environment have been mitigated by a removal action conducted in support of a full-scale pilot study for bioremediation of explosive-contaminated sediment.

3.3.1.13 Operable Unit No. XIII (Site 6 - Drainage Flume Area Soil and Sediment)

The remedial action specified for this OU includes the removal of soil and sediment contaminated

with explosives, VOCs, and nickel from the flume area. Excavated areas will be backfilled with clean fill and a six-inch layer of topsoil. In addition, the sewer outlet at SWMU 179 will be plugged and grouted and sludge will be removed from the trenches under Building 109 AOC C).

3.3.1.14 Operable Unit No. XIV (Site 6 - Excavated Area Soil)

In the excavated area at Site 6, the cadmium- and zinc-contaminated soil will remain in place. Placement of eight inches of backfill and four inches of topsoil as a cover will prevent contact with contaminated surface soil. In addition, a permanent fence will be installed to prevent disturbance in this area.

3.3.1.15 Operable Unit No. XV (Site 6 - Impoundment Area Surface Water, Sediment, and Study Area Groundwater)

No further remediation is proposed for this area. Long-term monitoring of groundwater, surface water, and sediment for nitramine/nitroaromatics, chlorinated volatile organics, and inorganics will be conducted to assess the efficacy of the flume area remediation (OU XIII) and evaluate environmental concerns associated with contaminants left in place.

3.3.1.16 Operable Unit No. XVI (Site 4 - Burning Pad Residue Landfill Soil)

No additional remedial action is specified for this OU because risks posed to human health and the environment has been mitigated by a soil removal action.

3.3.1.17 Operable Unit No. XVII (Site 22– Burn Pad Soil)

No additional remedial action is specified for this OU because risks posed to human health and the environment has been mitigated by a soil removal action.

3.3.1.18 Operable Unit No. XVIII (Site 21 – Battery and Drum Disposal Area Soil)

No additional remedial action is specified for this OU because risks posed to human health and the environment has been mitigated by a soil removal action.

3.3.1.19 Operable Unit No. XVIII (Site 21 – Battery and Drum Disposal Area)

No additional remedial action is specified for this OU because risks posed to human health and the environment has been mitigated by a soil removal action.

3.3.2 CAX Operable Units

No operable units have been identified at CAX.

4.0 CAX SITE AND AOC DESCRIPTIONS

This section describes the history at each of the 12 CAX sites and 7 AOCs at Cheatham Annex. A summary of the significant CERCLA documents completed for each site is presented chronologically. The site descriptions are presented in numerical order for ease of reference. Site locations are shown on Figures 2-2 and 2-4.

4.1 CAX Site Descriptions

4.1.1 Site 1 - Landfill Near Incinerator

Site 1, which covers approximately 1.3 acres, is located along the York River behind the old incinerator. The incinerator 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. The landfill was not used after 1981. An estimated 34,500 tons of solid waste were buried at the landfill. The surface of the landfill is relatively flat and is overgrown with vegetation most of the year. In 1981 the landfill was closed and a 2-foot soil cover was placed over the debris. The areas immediately adjacent to the former landfill are wooded.

There is a steep drop to the York River 25 feet below the landfill. The bank of the York River adjacent to the landfill is extremely steep and is not vegetated. Baker conducted a limited shoreline erosion assessment of the riverbank in the vicinity of Site 1. The assessment concluded that the erosion of the riverbank is caused by high water levels and wave action.

A TCRA was conducted to remove the debris that had collected on the beach area (December 1999) and to stabilize the toe of the bank in the erosion area (January 2000). Three sand-filled geosynthetic tubes were installed to stabilize the toe of the landfill. This TCRA stabilized the site until the long-term solution for the management of the Site 1 landfill was implemented. The Final Action Memorandum for the TCRA was prepared by Baker in August 1999 (Baker, 1999).

Based on the analytical data collected during investigations at the site, soil and sediment in the

vicinity of the landfill have been affected by contaminants. The most significant contamination consists of semi-volatile organic compounds (SVOCs), PAHs, and metals (including lead and other heavy metals). PCBs were also detected at potentially actionable levels (i.e. greater than 1.0 parts per million [ppm]) in soil and sediment. A Round One RI was completed in 2004 which indicated that unacceptable risks were present in the soil but no unacceptable risks in the groundwater (Baker, 2004d). A Focused Feasibility Study was submitted in November 2001 which laid out the remedial alternatives (Baker, 2000a). In 2003 a Removal Action began which removed approximately 18,700 cubic yards of contaminated soil, 1,100 cubic yards of surface debris. A riverbank stabilization project was included with the removal action (Baker, 2003a). In April 2005, a SERA +3a refinement report was finalized for the wetland area adjacent to the landfill (Baker, 2005e). A Pre-Removal field investigation to characterize the extent of potential hotspots in the wetland was completed in the fall of 2005. Additional hotspots may be removed based on the results of this investigation.

4.1.2 Site 2 - Contaminated Food Disposal Area

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 was the result of a leak that developed in one of the cold storage rooms. The food was buried with cellophane wrappers and boxes intact. The site was overgrown at the time of the IAS (NEESA, 1984). The IAS concluded that additional study was not warranted for the site because the wastes buried at the site would naturally decompose. A No Further Response Action Planned (NFRAP) Decision Document was signed in August 2003 (Baker, 2003a).

4.1.3 Site 3 - Submarine Dye Disposal Area

This site is located at the northeastern corner of Building CAD 15. The area is presently used as a storage lot. The 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 fluorescein 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 (NEESA, 1984).

The IAS concluded that additional study was not warranted for the site because the dye no longer

posed an environmental hazard. A NFRAP Decision Document was signed in August 2003 (Baker, 2003a).

4.1.4 Site 4 - Medical Supplies Disposal Area

Site 4 is located along the 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 and empty IV bottles, and one-inch metal banding were unloaded down a bank in this area and covered with soil. Much of this 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 Youth Pond. The IAS concluded that additional study was not warranted for the site due to the inert nature of the materials disposed. 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.

In May 1998, Reactives Management, Inc. removed surficial debris. 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.

The Final Site Inspection Report (Baker, 2001b) 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.

In November 2001, Baker conducted some trenching at Site 4 to define the lateral extent of the debris. In June 2005, a SERA for Sites 4 and 9 was finalized. The SERA recommended that Sites 4 and 9 continue to Step 3a of the Navy ERA process but it concluded that there was insufficient data available to conduct a Step 3a (Baker, 2005f). Further investigation may be needed at this site.

4.1.5 Site 5 - Photographic Chemicals Disposal Area

In 1967 or 1968, outdated photographic chemicals (developers and fixers) were reportedly disposed in a pit of unknown dimensions. This site was originally a "marl pit" located behind (southeast) of

the old DuPont munitions factory area, near Second Street. The IAS concluded that, based on the small quantity and the non-hazardous nature of the chemicals that were disposed, further study was not warranted.

In June 1998 Baker and the 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 seen. Based on the small quantity of the chemicals that were reportedly disposed and the lack of evidence of contamination, the site is not considered to be a significant source of contamination. A NFRAP was signed in August 2003 (Baker, 2003a).

4.1.6 Site 6 - Spoiled Food Disposal Area

Site 6 is located to the west of the old DuPont ammunition factory. Reportedly, approximately 750 cubic yards of food spoiled in cold storage was buried in a 12 to 15 foot deep pit around 1970. The IAS concluded that additional study was not warranted for the site because the decomposed food was not hazardous. A NFRAP was signed in August 2003 (Baker, 2003a).

4.1.7 Site 7 - Old DuPont Disposal Area

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, wood) can be seen outcropping from the edge of the slope. 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.

According to the IAS, Site 7 received wastes from the City of Penniman and from the DuPont facility. The wastes were reported to be non-hazardous and/or inert. However, 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.

The Navy recognizes that sources of contamination may be present at the site. Further investigation and possible removal of sources of contamination may be required.

During a field investigation in 1999, it was determined that there was debris in a test pit south of the recreational cabin but it was determined that the debris was not old enough to be linked to the Penniman facility. A trenching study was completed in 2004 which identified potential soil contamination and recommended further investigation (Baker, 2004e). An Action Memorandum for a Time-Critical Removal Action (TCRA) was signed July 1, 2004 to address the shoreline stabilization along the York River. During mobilization and preparation of the site, a three-inch motor round was discovered and disposed. The TCRA has been put on hold while the Navy obtains an Explosives Safety Submission (ESS).

4.1.8 Site 8 - Landfill Near Building CAD 14

Site 8 is located approximately 300 feet north of Building CAD 14 and is estimated to be less than one-quarter acre in size. 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 Landfill near the Incinerator (Site 1) was opened. Waste was reportedly disposed of 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.

The IAS concluded that additional study was not warranted for the site because wastes disposed at the site was not hazardous. Based on the inert nature of the materials that were reportedly buried at Site 8, the site is not considered to be a significant source of contamination. A NFRAP was signed in August 2003 (Baker, 2003a).

4.1.9 Site 9 - Transformer Storage Area

This site is approximately 7,000 square feet in size and located adjacent to the northwest corner of Building CAD. Between 1973 and 1980, electrical transformers, some of which contained PCBs, were reportedly stored at the site for repair or disposal. Between six and thirty transformers were stored at the site at a time. The storage area surface was not paved although 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 (NEESA, 1984).

The IAS recommended additional study due to the potential for PCB contamination. The Confirmation Study Step 1A (Verification), Round One (Dames and Moore, 1986) included collection of 13 soil samples from Site 9 for analysis of PCBs and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). Arochlor 1260 was the only PCB detected (eight of 13 samples). TCDD was not detected in any samples. Detected concentrations of Arochlor 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.

A Draft Final NFRAP Decision Document was submitted for the site in December 1999. The document was reviewed by the VDEQ and USEPA and further investigation and an ecological risk assessment were recommended. Further discussion is required to determine the action to be taken at this site.

In June 2005, a Screening Level Ecological Risk Assessment (SERA) for Sites 4 and 9 was finalized. The SERA recommended that Sites 4 and 9 continue to Step 3a of the Navy ERA process but it concluded that there was insufficient data available to conduct a Step 3a (Baker, 2005f). Further investigation may be needed at this site.

4.1.10 Site 10 -Decontamination Agent Disposal Area Near First Street

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) was 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. Whether the DS-2 was neutralized prior to disposal is not clear.

The IAS recommended that a magnetometer survey be performed to locate metallic containers of DS-2. A magnetometer survey of Site 10 was performed in December 1985 (Geosight, 1985). The mounds of soil present in the wooded area appeared to contain 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.

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. Groundwater samples were collected from each well. The site investigation report concluded that low levels of contamination in soil and groundwater did not appear to be related to DS-2.

In 1997, as part of the SSP investigation Baker re-sampled the three Site 10 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.

A NFRAP was signed in August 2003 (Baker, 2003a).

4.1.11 Site 11 - Bone Yard

Site 11 encompasses an estimated 2.7-acre area located approximately 250 ft south of Antrim Road, behind the public works facility. The site was reportedly used between 1940 and 1978 to dispose oil, asphalt, and gasoline. These wastes were contained in 15 barrels and two 500-gallon above-ground tanks at the time of the IAS. It was reported that unspecified wastes might also have been buried at the site.

During the IAS, scrap metal, old containers (fuel oil, mixing tanks, etc), fence posts, and abandoned cars were found inside the gate within an estimated 1-acre area. Various discarded clamshell buckets and other surplus metal objects used in heavy construction were also located throughout the area. Approximately ten 5-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, and reported spills and waste burial, the IAS recommended additional study for Site 11.

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 B one composite sample from each of the monitoring well borings, and six discrete samples 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 that were installed during Round One.

The Final Remedial Investigation Interim 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 burial site, summarized the findings of the Confirmation Study.

The Site Investigation for Site 11 (Weston, 1994) included a soil-gas survey, collection of 14 surface soil samples, installation of two 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 eight locations, and collection of five 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.

The SSP investigation (Baker, 1997a) included collection of an additional round of groundwater samples from each of the Site 11 monitoring wells. No organic compounds were detected. Concentrations of total (unfiltered) metals were significantly lower in the 1997 samples than in previously collected samples. Low-flow sampling was used during the SSP investigation. The SSP report concluded that no additional investigations be conducted at Site 11.

At the time of the SSP groundwater investigation (August 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 Draft Removal Closeout Report (Baker, 2000b) summarizes removal activities that have occurred at Site 11. A Draft RI for Site 11 was completed in 2002. This document will be revised to include a Baseline Ecological Risk Assessment (Baker, 2004f)

4.1.12 Site 12 - Disposal Site Near Water Tower

Site 12 is located approximately 2000 feet west of Jones Pond. The site 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 were disposed at the site. Because the materials disposed at the site were reportedly not hazardous, the IAS recommended no further study.

A limited field investigation of Site 12 was conducted in June 2002 and a Source Release Investigation was conducted in March 2004. After these investigations a no further action recommendation was made with a NFRAP Decision Document signed in March 2004 (Baker, 2004a).

4.2 CAX AOC Descriptions

This section describes the history of past disposal practices at each of the AOCs at Cheatham Annex.

4.2.1 AOC 1 - Scrap Metal Dump

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.

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.

The Final Site Inspection Report (Baker, 2001b) 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 that is present at the site. Additional Investigations are planned for this site.

4.2.2 AOC 2 - Dextrose Dump

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. The area contains several rows of concrete foundation piers which, at one time apparently 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 probable 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 which are present may also indicate buried materials. Additional buried drums may be located in this area.

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.

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 (Baker, 1999) 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. 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 (Baker, 2001c), 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 Engineering Evaluation/Cost Analysis (EE/CA) and removal action be completed for this site.

4.2.3 AOC 3 - CAD 11/12 Pond Bank

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, north of D Street. The pond is situated between Buildings 11 and 12. 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 the Navy, USEPA, and VDEQ representatives.

During the 1999 field investigation, two soil samples and two sediment samples were collected next to the metal banding pile. Results of the sample analyses were included in the Site Inspection Report Site 4 and AOC 1. The site is not currently considered to be a significant source of contamination.

This area will be managed separately from Site 4. 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. Removal of the metal banding pile or other actions at the site are not currently scheduled or funded.

4.2.4 AOC 4 - ER SITE 4 B Medical Supplies Disposal Area

During 1998, AOC 4 was identified as a new AOC by the Navy. 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 separate entity.

4.2.5 AOC 5 - Debris Area

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

4.2.6 PENNIMAN AOC

There are five sub-areas within this AOC:

- Ammonia Settling Pits B 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.
- Trinitrotoluene (TNT) Graining House Sump B 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 B 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 B This area consists of waste metallic slag material that is located throughout the shell loading area, predominantly along the railroad tracks.
- 1918 Drum Storage B This area was used for the storage of 55-gallon drums when the shell loading area was active.

Based on an agreement among the Navy, VDEQ, and Baker, only three of the five sub-areas will be addressed in the upcoming field investigation: Ammonia Settling Pits, TNT Graining House Sump, and TNT Catch Box Ruins. All parties agreed that there was insufficient evidence of site-related activity to warrant further investigation at the Waste Slag Material and 1918 Drum Storage sub-areas.

The following investigative activities are proposed at the Penniman AOC: collection of soil samples, collection of surface water and sediment samples, and installation of temporary monitoring wells.

These sub-areas of the Penniman AOC have not yet been investigated. Detailed figures presenting the site plan have not been developed.

5.0 COMMUNITY BACKGROUND

In the following sections, background community information, including demographics, employment and community involvement history, is summarized.

5.1 Community Demographics

Approximately 75 percent of the Yorktown Naval Weapons Station is located within York County, and the remainder is situated in James City County and Newport News. CAX is located within York County. The Station, including CAX, is located within the Hampton Roads statistical area, which includes four cities and four counties on the Virginia Peninsula and five cities to the south. Population for the region is 1.5 million. Detailed demographic data was collected for York County; and generalized data was collected for the surrounding areas of James City, Williamsburg, Gloucester, and Newport News.

Initially, most of the demographic information presented in this section was gathered from the County of York, Virginia: Demographic Profile and Protection. A Report of the York County Comprehensive Plan, January 1990, by the York County Planning Commission. Updated information was gathered from the 2000 U.S. Census and demographic data was collected from the York County web site (<http://www.yorkcounty.gov/planning>) and from regional business publications. Table 5-1 presents a summary of demographic information for York County.

5.1.1 Population

An average population growth of 27 percent was recorded in York County during the 1980s. The projected growth for the area was expected to be approximately 20 percent slower for the 1990s. The substantial population growth in York County during the 1980s -- the fastest rate in the York-James Peninsula -- can be attributed to a relatively strong rate of incoming migration, lower death rate, and larger population over the age 65. Naval Weapons Station on-base population was relatively stable, reportedly growing approximately 4 percent during this same time. The York County Updated Comprehensive Plan (2005) lists York County's population at approximately 63,000.

TABLE 5-1

YORK COUNTY AT A GLANCE

Current Population (2)	63,000	Land Area	108.5 sq. mi.
White	80%	No. of Households (2)	22,350
Black	13%	Avg. Household Size (2)	2.78 persons
Other	7%	Housing Units (2)	23,270
Male	49.1%	Median Age (1)	36.5 years
Female	50.9%	Median House Value (2)	\$220,000 (2004)
School Membership (9/2004) (3)	12,652	Median Household Income (1)	\$57,956 (1999)
Elementary (K-5)	5,333	Civilian Labor Force (1)	28,636
Middle (6-8)	3,058	Military Personnel (1)	3,501
High (9-12)	4,261	On-Base Military Population	6,443
2003 Unemployment Rate (2)	2.5%		

Information is based on data from:

- (1) 2000 U.S. Census
- (2) York County Updated Comprehensive Plan (Adopted December 6, 2005)
- (3) York County School Division

The median age for York County residents during the 1970s was 23.8 years; during the 1980s was 28.6 years; and during the 1990s was 36.5 years. The Peninsula is following the national trend of aging, with a growing population over 65 years of age. Some of this aging population can be attributed to the popularity of the region for retirement, particularly for military retirees.

During the 1980s, York County's number of households increased faster than the population growth, reflecting more people living alone or in single parent households. This trend is also expected to slow somewhat, corresponding with the general trend of a less rapid, more moderate growth.

5.1.2 Employment

York County experienced a change in both the types and numbers of jobs available: a substantial civilian employment growth coinciding with a loss of government (mainly federal) employment. During 1980, the public sector encompassed slightly over half of the employment growth, falling approximately one-third of that growth by 1988. Approximately 34,000 new private sector jobs were available, while the non-military public (government) employment declined by approximately 500

jobs.

Primary businesses in the region include military installations, shipyards, and tourism. The largest private sector employer is Newport News Shipbuilding. Major tourist attractions include Colonial Williamsburg, Busch Gardens, and Water Country in addition to historic sites at Jamestown and Yorktown and beaches at Virginia Beach. Manufacturing and service industries have also been attracted to the area and there are approximately 120 foreign-based firms in the region. The area is becoming a technology hub; because of the military, NASA (located at Langley Air Force Base), the number of federal contractors, and the shipbuilding industry, the area has a high concentration of engineers and scientists, one of the highest concentrations in the country.

The Hampton Roads area has been dominated by the military and military employment, but this domination is decreasing. In 1975, 50 percent of the jobs in the region were military; by 1996 this percentage had declined to 31 percent. From 1988 to 1997 46,999 Navy jobs were lost: 23,000 military jobs; 11,000 civilian support jobs; and 12,000 shipyard jobs. To make up for this decline, economic development organizations are attracting new employers to the region.

5.1.3 Proximity to Area Residents

According to topographic maps, the nearest residents to the hazardous waste sites are all located within the boundaries of WPNSTA Yorktown. The closest home to any site is located within a circle of 19 multifamily dwellings approximately 0.5 miles upgradient from the Dudley Road Landfill, Site 1. The second nearest residential area is the Rochambeau Village, commonly called "Skiffes Creek Annex" which consists of approximately 102 family dwellings. The dwelling of closest proximity is approximately 1.75 miles from Site 18, the discharge area of Building 476. Outside the WPNSTA Yorktown perimeter, the small community of Lackey is located directly across from WPNSTA Yorktown Gate 1.

The nearest residents for the sites on CAX are the base residents and the homes along Road 641 more than a mile west and up-gradient of the sites.

5.1.4 Proximity to Schools or Playgrounds to the Site

Within the limits of the four-mile radius of WPNSTA Yorktown are the Yorktown High School, Intermediate, and Elementary Schools. In addition, the Douglass School and the Queens Lake School are within the four-mile radius of CAX.

5.1.5 Presence of Livestock, Crops, or Other Vegetation

There are no large commercial farms in the area. A dairy farm is located in Lee Hall, at the southwestern corner of the four-mile radius. A small family farm also is located just off Route 238, near WPNSTA Yorktown Gate 1. Some WPNSTA Yorktown residents may maintain their own small gardens.

5.1.6 Location of a Public Water Supply

The nearest reservoir is the Skiffes Creek Reservoir, located in Lee Hall. This water supply system is operated by the City of Newport News, and supplies WPNSTA Yorktown and other surrounding area residents. This area is not a drainage receptor for any of the sites.

5.1.7 Proximity to Recreational Lakes, Ponds, Rivers, Streams, and Parks

Several unnamed ponds are used for fishing at the Station. The main surface water drainage receptors for WPNSTA Yorktown, Felgates Creek and Indian Field Creek, are not thought to be used for recreation. However, the York and James Rivers are heavily used for both commercial and recreational fishing and crabbing. Commercial and pleasure boat traffic is moderate along these rivers.

Penniman Lake, Jones Pond, and Cheatham Pond on CAX are used for recreation.

The surrounding area also has several parks including the Colonial National Historical Park, Monument Park, the Yorktown battle trenches and battlefields, and the Yorktown Victory Center. Several public and private golf courses are situated nearby, and a golf course is located at WPNSTA Yorktown.

5.2 Community Involvement History - WPNSTA Yorktown

WPNSTA Yorktown has maintained a low profile in the community due to the nature of its mission and the nature of materials handled at the Station. The Station employs many people in the surrounding areas; thus, the nearby communities have a close working relationship with WPNSTA Yorktown. For these two reasons, the low profile and good neighbor policy, WPNSTA Yorktown did not have a formal Community Relations Plan until 1991. Instead, the Station responded to community concerns as they arose.

The Public Affairs Office maintained a working relationship with the public, elected officials and media throughout the years. When an information inquiry was received, the Public Affairs Officer (PAO) addressed the query, and if it did not deal with classified information, the PAO prepared the desired data for release. Tours of the Station had been given in the past to public officials and media representatives to establish a relationship of mutual understanding.

WPNSTA Yorktown participated in community events and celebrations to foster closer ties with the community. WPNSTA Yorktown assisted civic ventures by setting up bandstands for parades and special celebrations, and by helping to clear highway litter. WPNSTA Yorktown also had on-site community activities such as the Red Cross Blood Drive and seasonal festivals.

Insofar as negative community activities concerning the site, only several protests were documented in the mid 1980s. All demonstrations were peaceful and without incident.

As part of the requirements of the Community Relations Program, community interviews were conducted from July 29 to August 1, 1991 by the Baker Environmental Community Relations Specialist and the WPNSTA Yorktown Public Affairs Officer. A WPNSTA Yorktown Environmental Protection Specialist and the NAVFAC Remedial Project Manager (Project Engineer-in-Charge) also participated in some of the interviews. These interviews were conducted to inform the community, primarily through elected officials, public agencies, interest groups and concern citizens, of the ERP and the sites at WPNSTA Yorktown. Additionally, it was of paramount concern to obtain feedback from the community at large on the perception of WPNSTA Yorktown, and the reaction concerning placement of WPNSTA Yorktown on the NPL as a Superfund Site.

The team interviewed 26 individuals. The WPNSTA Yorktown PAO interviewed additional citizens. Attempts were made to speak with a wide variety of individuals representing local and state government, community groups, and educational groups. Citizens representing the area closest to the station, the community of Lackey, were also interviewed. Appendix A includes the list of individuals interviewed and the Community Interview Questionnaire used to guide the interviews.

The interview results indicated that the community was concerned with three main issues: water, money, and validity of information. Those who rely on the York River for their income and public officials voiced concern about water. Surrounding areas, like James City County, have water supply problems and citizens were concerned with possible migration of WPNSTA Yorktown contaminants to the water supply. Additionally, one of the reservoirs for Newport News is located within four miles of WPNSTA Yorktown. The working watermen of the Gloucester area had concerns with York River pollution because fishing and crabbing depend on the water quality of the York River. York County has approximately 200 miles of shoreline, which is vital to the tourist economy. "No Fishing/Swimming" signs had already appeared on parts of the shoreline, and citizens were concerned about beach closures due to contamination or other causes. Lastly, many people expressed concern for the possible effects of York River pollutants upon the Chesapeake Bay.

The second issue, money, centered on adequate funding availability to clean up the hazardous waste sites. Citizens and officials alike expressed a lack of confidence with waste site cleanup in Virginia, and doubted whether sufficient funds would be appropriated, or if the sites would actually be cleaned up.

The third and last main issue was the concern with validity of information. Due to the high security nature of WPNSTA Yorktown, the PAO could not release all requested information to the public. However, the Navy planned to release all environmental information to the public. Citizens expressed surprise at this change information release policy, but expressed concern that WPNSTA Yorktown would be thought to be hiding a larger problem or masking information. Citizens commented that WPNSTA Yorktown would always be thought to be telling only part of the story based upon past history. In general, misunderstanding and misinformation was cited as a major concern, having the potential to fuel rumors and cause WPNSTA Yorktown to lose credibility.

As an example of lack of appropriate information and communication, several citizens cited the fear and panic created by a previous hazardous waste incident in the area. Others in a nearby community

discussed the "inborn fear" they have concerning WPNSTA Yorktown operations stemming from a November 15, 1943 explosion that killed six people. The citizens added that the accident was minimized and the community was not well informed concerning the situation. The community was apprehensive of, but also generally supportive of, WPNSTA Yorktown.

Reviewing all the interview responses, it appeared that skepticism of the government's commitment, financial and otherwise, would be a community relations concern until actual cleanup progresses, and the community can see the physical progress. The overall response from the community interviews was otherwise very positive.

After the community relations interview with a reporter, an article appeared, describing the hazardous waste sites. Except for two misquotes, the article was factual. No citizen calls in reaction to the article were recorded by the PAO. This article is one of the first published with detailed site information.

Since the initial community relations program was implemented in the late 1980s and early 1990s, regular community relations activities have been conducted to support the ERP. These activities have included fact sheets, brochures, and presentations to explain work at specific sites; regularly conducted RAB meetings; and public notices, public meetings, and a public comment period for applicable milestones at specific sites. Site tours and briefings have been conducted, as needed, primarily for RAB members. Because of the amount of information disseminated to the public, there has been virtually no conflict with the surrounding community. Public meetings attract small groups of local residents and media interest has been sparse. All community relations activities are documented in the community relations section of the Administrative Record. The Administrative Record is maintained by the NAVFAC Atlantic Librarian and Records Manager at (757) 322-4785 or Bonnie.Capito@navy.mil.

5.3 Community Involvement History - CAX

Initially, CAX was part of the Naval Supply Center and community relations activities were conducted in conjunction with Yorktown Fuels and Craney Island. On December 1988, the first Technical Review Committee (TRC) was established. Letters were sent to a variety of local organizations and government agencies asking them to nominate two potential TRC members, one from the organization and one from the community.

The first TRC meeting was held on January 6, 1989 at Yorktown Fuels. It included an introduction to the ERP and a windshield tour of the sites. Members included representatives from local government and the National Park Service as well as community members.

Approximately a month after the first TRC meeting was held, an article on CAX appeared in the local newspaper discussing the ERP at York County Navy facilities including CAX. Two specific issues, a dye spill in the York River and waste syringes that had been found in deer hooves, were discussed. Both of these issues were historic and had been resolved. CAX was also mentioned in a number of articles that discussed regional environmental issues on military facilities.

A Community Relations Plan for three naval supply center facilities, including CAX, was prepared in 1992. To prepare the plan, the Navy conducted community interviews using the questionnaire in Appendix A. At the time the CRP was developed, there appears to have been minimal interest in CAX. This may be a result of the environmental issues at Yorktown Fuels and Craney Island, which attracted more public attention.

In 1993, an introductory fact sheet was developed for CAX and made available to the public. At that time, Sites 1, 10, 11, and 13 were being investigated as part of the ERP. The fact sheet discussed the program in general and provided photographs and background information on the four sites.

Public interest in the ERP continued to wane until the TRC was disbanded. Since CAX has been reassigned to WPNSTA Yorktown, the WPNSTA RAB addresses community concerns at CAX.

6.0 COMMUNITY RELATIONS PROGRAM

WPNSTA Yorktown has always had a cooperative relationship with the community, but until the ERP, WPNSTA Yorktown had never had to focus on informing and educating the public about environmental issues. The effectiveness of the WPNSTA Yorktown CRP is based on timely and accurate information dissemination, feedback from the public, WPNSTA Yorktown response to community concerns, and an effective dialogue with the regulatory agencies. WPNSTA Yorktown is committed to a proactive CRP, supplying complete information to the community in a timely fashion and in a clear, concise form.

This CRP has been prepared to accommodate local community issues of concern as expressed in part through community interviews and historical newspaper review. As community response is an integral component of the CRP's success, it has been purposefully designed to provide concerned citizens, elected officials, interest groups and others an avenue to express their ideas and concerns. Finally, an open channel between regulatory agencies, the community, and WPNSTA Yorktown is necessary to foster the free flow of ideas, information, and mutual trust.

6.1 Goals and Objectives

The main goal of the WPNSTA Yorktown CRP is to achieve effective, open communication between the communities of York County, James City County, Gloucester County, the City of Newport News, and Williamsburg; WPNSTA Yorktown and CAX; the Virginia Department of Environmental Quality, and USEPA Region III.

Informing the public of ERP activities, providing the public with an avenue for input and comments, and eliciting responses will be achieved through several media and strategies. A site photo album detailing the ERP sites has been prepared, as have a site slide show and site brochure. The ERP data is available at the WPNSTA Yorktown' Environmental Office library. Additionally, public comment will be received through regularly held Remedial Advisory Board (RAB) meetings. Public comment will also be solicited at significant milestones of the remedial process for sites, SSAs, and OUs via notices in the local press.

The main objectives of the community relations program are to:

1. Inform all participants in the ERP of the CRP and encourage their cooperation.
2. Assure the community at large that the health, welfare, and safety of their environment is of the utmost importance to WPNSTA Yorktown and CAX.
3. Provide information, in layman's terms and in a proactive manner, concerning the ERP in general, and the sites at critical stages in the process to all members of the civilian and military community, elected officials, and federal and state regulatory agency staff in a timely manner.
4. Provide all interested members of the civilian and military community, elected officials, and federal and state regulatory agency staff opportunities and avenues to present opinions and ideas during the ERP process.
5. Provide the media with interviews, briefings, and requested information, as available, in a timely manner to ensure accurate coverage of the ERP events.
6. Swiftly and effectively respond to expressed concerns of the civilian and military community, elected officials, and federal and state regulatory agency staff.
7. Cultivate and maintain a cooperative and productive, two-way dialogue with the civilian and military community, elected officials, and federal and state regulatory agency staff by a proactive PAO to ensure a climate of trust and understanding during the ERP process.
8. Provide one point of contact through which all inquires are directed to ensure continuity and reduce confusion.
9. Constantly evaluate the effectiveness of the CRP during the ERP process and revise its methods and activities as deemed appropriate.

6.2 Responsibilities

The Commanding Officer, WPNSTA Yorktown has responsibility for CRP implementation. WPNSTA Yorktown is fully committed to the ERP process and the remediation of hazardous waste sites resulting from past disposal which may be a threat to human health and the environment.

The Commanding Officer has assisted in the CRP implementation by sharing tasks with the WPNSTA Yorktown PAO, WPNSTA Yorktown military and civilian personnel, state and federal regulatory agencies, and technical personnel contracted by WPNSTA Yorktown to assist in the ERP process. These main responsibilities are outlined below.

1. WPNSTA Yorktown, Virginia and CAX:
 - a. Implements the CRP; and
 - b. Hold/participates in any public meetings regarding site activities.

2. WPNSTA Yorktown Public Affairs Officer (PAO):
 - a. Plans, schedules, and coordinates all activities and necessary requirements for implementing the CRP. Activities may include specific communication techniques for regulatory agencies, the local community, media, military personnel, and resident and civilian work force as listed in the following sections;

 - b. Informs and coordinates with Naval Facilities Engineering Command, (NAVFAC) Mid-Atlantic, as appropriate, the development and distribution of news releases and fact sheets relating to the site investigation;

 - c. Provides an on-the-scene spokesperson for the WPNSTA Yorktown site investigation program and responds to media queries using statements or plans prepared in conjunction with NAVFAC Mid-Atlantic;

 - d. Informs the state and all appropriate federal agencies of activities and findings relative to the sites, in a timely manner;

 - e. Insures that Freedom of Information Act requests are properly coordinated;

- f. Remains sensitive to the needs and concerns of the local community regarding the sites, and implements activities of the CRP as appropriate; and
 - g. Updates the CRP as new developments and/or changes occur at the sites;
- 3. NAVFAC Mid-Atlantic:
 - a. Provides general public affairs guidance and support for the implementation of the WPNSTA Yorktown CRP;
 - b. Provides timely and accurate information to WPNSTA Yorktown regarding the site activities and technical data/results; and
 - c. Refers to appropriate technical and legal personnel for clearance and/or coordination of all material intended for public release that has not been previously cleared or specifically authorized for release in the WPNSTA Yorktown CRP.
- 4. United States Environmental Protection Agency (USEPA)
 - a. Acts as a spokesperson on policy or queries concerning programs within USEPA's area of responsibility;
 - b. Provides a spokesperson to respond to appropriate queries from briefings for local officials, interested community groups, citizens and the media; and
 - c. Responds to press queries, as required, and notifies other involved agencies of responses and potential concerns.
- 5. Virginia Department of Environmental Quality (VDEQ)
 - a. Acts as a spokesperson on policy or queries concerning programs within VDEQ's area of responsibility;

- b. Provides a spokesperson to respond to appropriate queries from briefings for local officials, interested community groups, citizens, and media; and
- c. Responds to press queries, as required, and notifies other involved agencies of responses and potential concerns.

6.3 Communication Activities and Techniques

Building and maintaining an effective communication network where the flow of information and dialogue is constant, timely, and unimpeded is paramount to successful community relations. Developing different communication techniques for several levels of audience and retaining the flexibility to adapt different tactics according to changes in the public attitude is imperative to cultivate and maintain this communication network were developed, in part, as a result of suggestions offered during the community interviews, from USEPA guidance documents, and from past experience.

6.3.1 Agency Communication Techniques

As emphasized in USEPA guidance, effective communication between WPNSTA Yorktown and CAX and state and federal regulatory agencies is necessary for a community relations program. These agencies must be updated to coordinate participation in the CRP. Previously, WPNSTA Yorktown personnel and the agencies have met primarily for annual inspections and coordinated review of past ERP documents. The following communication techniques should further improve agency/WPNSTA Yorktown relationship and coordination with respect to the ERP.

1. Partnering Meetings

Partnering with representatives from the USEPA Region III, VDEQ, NAVFAC Mid-Atlantic, and other agency groups as deemed appropriate, is held approximately eight times per year to review the progress of the ERP, community concerns, upcoming events, and the overall ERP schedule. These meetings are important to keep all parties informed and involved in the ERP and will be conducted on a

regular basis.

2. Technical Review Committee (TRC)/Restoration Advisory Board (RAB) Meetings

The TRC first met in March, 1989 to review the Remedial Investigation Interim Report. This consortium of agency representatives, public officials, technical and business people, and WPNSTA Yorktown personnel serves to provide technical review and public comment. TRC meetings were scheduled periodically, whenever a major project milestone was reached. The additional review by outside sources and the public involvement represented by the TRC meetings was very important to the CRP process. The TRC was later expanded to include more representation from the public at large and renamed the Restoration Advisory Board. A community meeting was held at this time to announce the formation of the RAB. Activities previously planned for special audiences (local officials, community groups) will be coordinated through the RAB. Appendix B contains a list of current RAB members. The current WPNSTA Yorktown RAB also addresses the CAX ERP.

3. Telephone Conference Calls

WPNSTA Yorktown and NAVFAC Atlantic will schedule routine telephone conference calls to appropriate regulatory agencies to maintain the lines of communication and flow of information.

4. News and Fact Sheet Releases

In order to give the USEPA, VDEQ, and local officials time to assess the information and prepare their response to public inquiry, all news releases, fact sheets, or other similar ERP site information will be provided to NAVFAC Atlantic, USEPA, VDEQ, and appropriate local regulators, officials, and public information agencies prior to release to the public.

5. Prior Notice of Scheduled Public Meetings

In order to ensure adequate scheduling time for attendance by the agencies and the

public, maximum advance notice is required. The notice for public meetings will be announced in the local newspapers.

6. Web Site

A project-specific web site will be developed to communicate ERP activities to the general public.

6.3.2 Local Community and Media Communication Techniques

The Public Affairs Officer (PAO) of WPNSTA Yorktown is the established general information and communication contact for the public and media. The PAO will serve as the main contact for implementing CRP activities. The following recommended techniques serve to expand the current communication network between WPNSTA Yorktown and the community.

1. Information Repository

Any WPNSTA Yorktown or CAX ERP documents that are available for public review are placed in the following library:

City of Newport News
Virgil I Grissom Public Library
366 DeShazor Dr.
Newport News, Virginia 23508
(757) 369-3190

2. Restoration Advisory Board Meetings

The WPNSTA Yorktown/CAX RAB meets approximately twice per year, typically in May and November. The RAB meets at the following location:

Charles E. Brown Park Community Building
Old Williamsburg Rd. (Route 238)

Lackey, Virginia

3. Fact Sheet/News Releases

Fact Sheets have been prepared to update the community, regulatory agencies, media, civic groups, elected and civic officials, and mailing list individuals about project milestones or major developments. For example, a fact sheet was prepared explaining the ERP process for WPNSTA Yorktown and CAX. Fact sheets are prepared in a clear, concise manner free of excessive technical jargon.

4. Site Slide Show Presentation

A slide show was developed in December 1991, containing text and color site photographs, to better explain site conditions to the public. Included in the slide show text was information concerning WPNSTA Yorktown's mission and history. This slide show was available for public meetings and for presentations to civic community groups. A copy of the slide show is included in the Administrative Record.

5. Special Briefings for Local Elected Officials

Typically, when community members have concerns or questions, they call their local elected officials to get information or to register a complaint. During interviews, local officials all expressed willingness to work with WPNSTA Yorktown, and each asserted the importance of being well informed about the progress and events of the ERP at the WPNSTA Yorktown. In order to keep these key people informed, meetings will be conducted periodically when major project milestones occur.

6. On-Site Tours

On-site tours are valuable in presenting a realistic view of the sites and fostering a better understanding of the investigation and remediation methods offered. Tours for RAB members are arranged on a frequent basis. Tours for the media, elected

and civic, state and local officials, and community group leaders can be arranged through the PAO.

7. Web Site

The Navy is in the process of developing a project-specific web site that will include material that is geared toward the public including site photographs, site histories, ERP background, and the public participation process. Eventually, the WPNSTA Yorktown photo album and Administrative Record will be launched on the web site. RAB members will be notified when the site is available.

6.3.3 Communication Techniques for WPNSTA Yorktown Personnel, Residents, and Civilian Work Force

An effective communication network with residents, military personnel, and civilian employees must be a priority due to the proximity of housing and office units to the sites.

1. Commander's Weekly Staff Meeting

The PAO or a member of the environmental staff chosen by the PAO will provide a weekly brief of the ERP site activities, conclusions, recommendations, and actions to the Commanding Officer and his staff to ensure WPNSTA Yorktown leaders are informed and aware of ERP progress or concerns.

2. WPNSTA Yorktown Administrative Record

The Administrative Record is maintained by the NAVFAC Atlantic Librarian and Records Manager, (757) 322-4785, or by contacting Bonnie.Capito@navy.mil

7.0 SUMMARY

Through the attentive implementation of this CRP, an effective communication network between WPNSTA Yorktown, the community, and regulatory agencies will address and respond to community concerns. Community surveys will be done to coincide with the decennial census and a special census to be completed in 2007.

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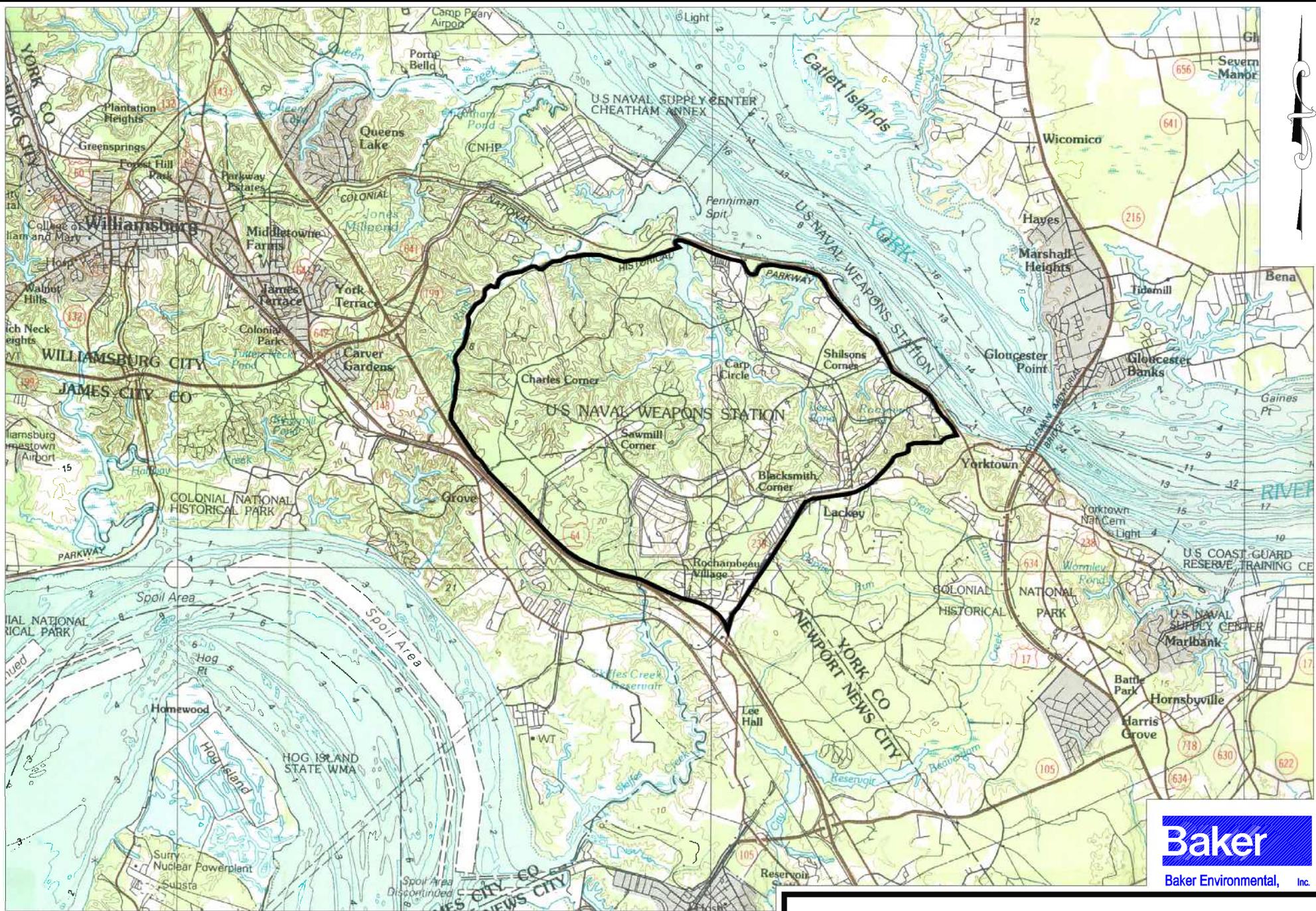
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FIGURES

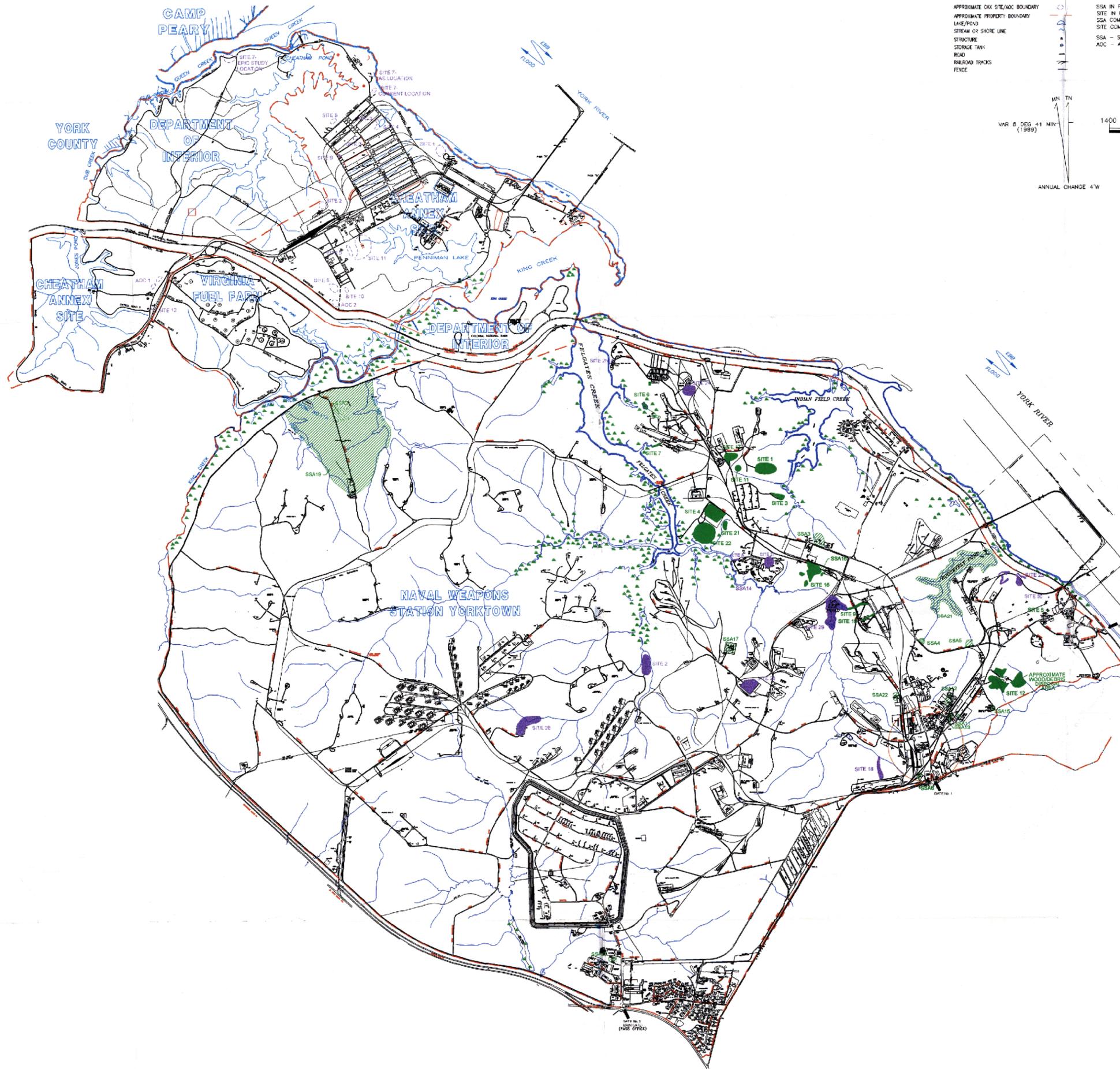


Baker
Baker Environmental, Inc.

FIGURE 2-1
LOCATION OF NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

8333 0 4166 8333 16666
1 inch = 8333 ft

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



LEGEND

APPROXIMATE TAX SITE/AOC BOUNDARY	SSA IN PROGRESS	BUILDINGS	STATION BOUNDARY
APPROXIMATE PROPERTY BOUNDARY	SITE IN PROGRESS	STRUCTURES	STATION BOUNDARY W/FENCE
LAKE/POND	SSA COMPLETE	ROADS: PAVED	MARSH SWAMP
STREAM OR SHORE LINE	SITE COMPLETE	ROADS: UNPAVED	GATE
STRUCTURE	SSA - SITE SCREENING AREA	TRACK/TRAIL	FENCES
STRAKLE TANK	AOC - AREA OF CONCERN	RAILROADS	WALLS
ROAD			TRANSFORMER
RAILROAD TRACKS			
FENCE			

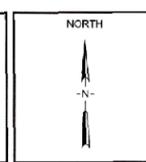
PLEASE NOTE: BORDERS SHOWN AROUND AREAS OF CONCERN ARE ARBITRARY AND ARE NOT NECESSARILY INDICATIVE OF SITE BOUNDARIES. ANY ISSUES INVOLVING SITES, SSAs, OR AOCs SHOULD BE ROUTED THROUGH THE LAND/ENVIRONMENTAL CODE.

VAR 8 DEG 41 MIN (1993)
ANNUAL CHANGE 4"W

1400 0 1400 2800 4200 5600 7000
1 INCH = 1400 FEET

REVISIONS	
1	
2	
3	
4	
5	
6	
7	
8	

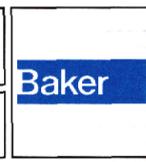
DSN/DWN:
CHK: KTW
S.O. NO.: 28007-105
FILE: 2185500C



NORTH

NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA AND
CHEATHAM ANNEX SITE, WILLIAMSBURG, VIRGINIA

Baker Environmental, Inc.
Coraopolis, Pennsylvania



SITE, SSA, AND
AOC LOCATIONS

SCALE: 1" = 1400'
DATE: JUNE 2001

FIGURE NO.
2-2



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

SSA 2-Former EOD
Burning/Disposal Area

Site 25-Building 373
Rocket Plant

Site 24-Aviation Field

Site 17-Holm Road Landfill

Site 11-Abandoned Explosives Burning Pit

Site 1-Dudley Road Landfill

Site 6-Explosives-Contaminated
Wastewater Impoundment

Site 3-Group 16 Magazine Landfill

Site 7-Plant 3 Explosives-Contaminated
Wastewater Discharge Area

Site 4-Burning Pad
Residue Landfill

Site 21-Battery and Drum
Disposal Area

SSA 21-Roosevelt Pond

Site 22-Burn Pad

SSA 3-Fire Training Pits and Vicinity

SSA 16-Building 402 Metal
Disposal Area and Environs

Site 23-Building 428 Teague
Road Disposal Area

Site 8-NEDED Explosives-Contaminated
Wastewater Discharge Area

Site 16-West Road
Landfill

SSA 14-Building 537 Discharge
to Felgates Creek

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

Site 29-Lee Pond

Site 30-Bracken Road
Incinerator and Environs

Site 5-Surplus Transformer
Storage Area

Site 2-Turkey Road Landfill

Site 9-Plant 1 Explosives-
Contaminated Wastewater
Discharge Area

SSA 4-Weapons Casing/
Drum Disposal Area

SSA 5-Bypass Road
Landfill

SSA 25-Wetlands Down-
Gradient of Beaver Pond

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

SSA 17-Building 1456
Mark 46 Waste Otto Fuel Tank

Site 19-Conveyor Belt
Soils at Building 10

Site 12-Barracks Road
Landfill

Site 26-Building 1816
Mark 48 Waste Otto Fuel Tank

SSA 22-Sandblasting Grit
Pile (Formerly AOC 4)

SSA 12-Public Works
Storage Yard/Building
683 Vicinity

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

Site 18-Building 476
Discharge Area

SSA 11-Building 3
Neutralization Unit

SSA 8-Building 350 Rail
Roadhouse Maintenance
Area Trench Outfall

SSA 13-Building 529
Battery Drainage Area

SSA 23-Coal Storage Area

Figure 2-3
Naval Weapons Station Yorktown
Environmental Restoration Sites/SSA Locations



ER Sites



SSA Sites

2000 0 2000 4000 Feet



- Site 7-Old DuPont Disposal Area
- AOC 3-CAD 11/12 Pond Bank
- Site 4-Outdated Medical Supply Disposal Area
- Site 1-Landfill Near Incinerator
- Site 3-Submarine Dye Disposal Area
- Site 8-Landfill Near Building CAD 14
- AOC 7-PCA Drum Site
- Site 9-Transformer Storage Area
- Site 2-Contaminated Food Disposal Area
- Site 12-Bone Yard
- Penniman Drum Storage Area
- Penniman Ammonia Settling Pits
- Penniman TNT Graining House Sump and Catch Box Ruins
- AOC 1-Scrap Metal Dump
- Site 12-Disposal Near Water Tower
- Site 5-Photographic Chemicals Disposal Area
- Site 6-Spoiled Food Storage
- AOC 2-Dextrose Dump
- Site 10-Decontaminated Agent Disposal Area Near First Street

Figure 2-4
Cheatham Annex
Environmental Restoration Sites/AOC Locations

	ER Sites
	AOC Sites

1400 0 1400 2800 Feet

FIGURE 2-5
CERCLA PROCESS

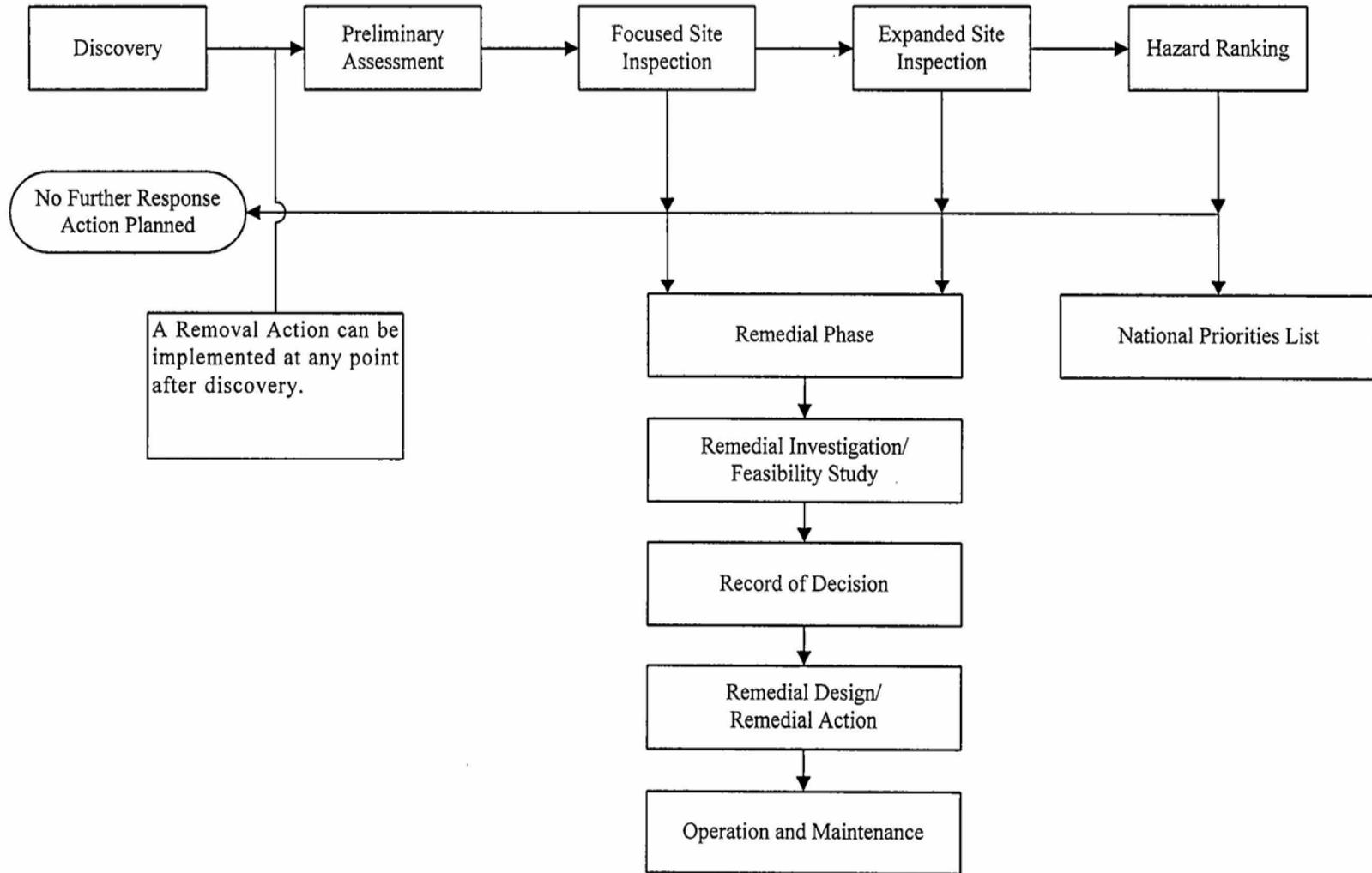
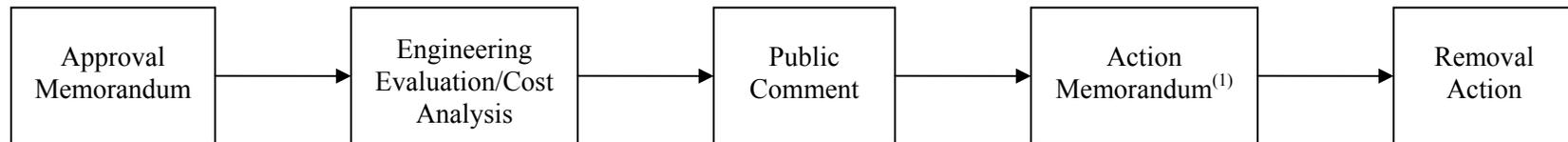


FIGURE 2-6

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



(1) Includes Responsiveness Summary to Public Comment

APPENDIX A
COMMUNITY INTERVIEWS

BAKER ENVIRONMENTAL, INC.

PHONE CALL REPORT

PROJECT/LOCATION: Yorktown NAVWPNSTA, Yorktown, VA

S.O. No.: 19018-50-SRN

DATE: 7-22-91

CONTRACT NO.: N62470-89-D-4814

To: Steve Williams

From: Melissa C. Davidson

Repres.: Water Control Board

Repres.: Baker - Navy CLEAN

Phone No.: (804) 527-5206

Phone No.: (412) 269-2020

SUBJECT: Complaints: "Not that I knew of"; try:

Marsha Hunter

(804) 527-5194

BAKER ENVIRONMENTAL, INC.

PHONE CALL REPORT

PROJECT/LOCATION: Yorktown NAVWPNSTA, Yorktown, VA

S.O. No.: 19018-50-SRN

DATE: 7-25-91

CONTRACT NO.: N62470-89-D-4814

To: Melissa C. Davidson

From: Richard Strauss

Repres.: Baker - Navy CLEAN

Repres.: Va. Dept. of Waste Management

Phone No.: (412) 269-2020

Phone No.: (804) 225-2667

SUBJECT: Returned my call of last week for file search of NAVWPN Yorktown files. Said he receives RCRA citizen's
complaints and does not recall any. He urged me to come and examine their Superfund and RCRA files,
just to be sure I have all data.

Referred me to Mohammad Hoehabibi (the head) in Inspections or Steve Frashier, who has done RCRA
inspections at NAVWPNSTA.

BAKER ENVIRONMENTAL, INC.

PHONE CALL REPORT

PROJECT/LOCATION: Yorktown NAVWPNSTA, Yorktown, VA

S.O. No.: 19018-50-SRN

DATE: 7-22-91

CONTRACT NO.: N62470-89-D-4814

To: Marsha Hunter

From: Melissa Davidson

Repres.: Water Pollution Control Board

Repres.: Baker - Navy CLEAN

Phone No.: (804) 527-5194

Phone No.: (412) 269-2020

SUBJECT: Violations and complaints from 7-85 to present on disk; like a library book - just check it out. Need

someone to pick up and sign for disk. Waiting list for disk. Call me when it's ready.

In Richmond, VA -- their office.

Manipulate data on database to search for any complaints.

If we have time, I'll pursue.

3:10 p.m.

PREPARED BY Melissa C. Davidson

TITLE Community Relations Specialist

PAGE 1 OF 1

BAKER ENVIRONMENTAL, INC.

PHONE CALL REPORT

PROJECT/LOCATION: Yorktown NAVWPNSTA, Yorktown, VA

S.O. No.: 19018-50-SRN

DATE: 7-22-91

CONTRACT NO.: N62470-89-D-4814

To: Ken Pinzel

From: Melissa C. Davidson

Repres.: State Air Board

Repres.: Baker - Navy CLEAN

Phone No.: (804) 424-6707

Phone No.: (412) 269-2020

SUBJECT: "No complaints. That facility is very isolated."

2:30 p.m.

BAKER ENVIRONMENTAL, INC.

PHONE CALL REPORT

PROJECT/LOCATION: Yorktown NAVWPNSTA, Yorktown, VA

S.O. No.: 19018-50-SRN
DATE: 7-25-91
CONTRACT NO.: N62470-89-D-4814

To: Jamie Walters
Repres.: Va. Dept. of Waste Management
Phone No.: (804) 225-2903

From: Melissa C. Davidson
Repres.: Baker - Navy CLEAN
Phone No.: (412) 269-2020

SUBJECT: She informed me that as per their agreement with the DoD, their office should have been involved with the site tour and interviews. She'll send me a copy of the agreement. She told me that many people are not aware of this requirement. She'll need draft copies of all CRP and wants to be put on mailing list for all comments.

She has not received any complaints and suggested that I try local officials.

11:15 a.m.

BAKER ENVIRONMENTAL, INC.

PHONE CALL REPORT

PROJECT/LOCATION: Yorktown NAVWPNSTA, Yorktown, VA

S.O. No.: 19018-50-SRN

DATE: 7-22-91

CONTRACT NO.: N62470-89-D-4814

To: Bob Thompson

From: Melissa C. Davidson

Repres.: EPA Region III

Repres.: Baker - Navy CLEAN

Phone No.: (215) 597-7858

Phone No.: (412) 269-2020

SUBJECT: Due to lack of time, made the regulatory file review over the phone. I knew what documents were in their files from the EMO Office at WPNSTA. I called to inquire what files they had and confirmed my list. Also checked on any citizen complaints. Bob said no complaints filed and called Yorktown a "quiet giant".

His total files: IAS 1984

Dames & Moore Interim

HRS '91

Photo Album

He needs final Dames & Moore to be up to date, and I'll update his photo album.

10:30 a.m.

PREPARED BY Melissa C. Davidson

TITLE Community Relations Specialist

PAGE 1 OF 1

BAKER ENVIRONMENTAL, INC.

PHONE CALL REPORT

PROJECT/LOCATION: Yorktown NAVWPNSTA, Yorktown, VA

S.O. No.: 19018-50-SRN

DATE: 7-22-91

CONTRACT NO.: N62470-89-D-4814

To: Ann Field

From: Melissa C. Davidson

Repres.: Va. Dept. of Waste Management

Repres.: Baker - Navy CLEAN

Phone No.: (804) 371-8713

Phone No.: (412) 269-2020

SUBJECT: File review and inquire about citizen complaints. Ann just started on this and referred me to several other people, including their CR person, Janice Walters.

She only has the IAS and mentioned that she and Brenda had spoken in the past about bringing the VADWM up to date on documents. She'll get in touch with Brenda.

Mentioned for future interest that there is a nesting bald eagle on the site.

Very helpful references.

11:00 a.m.

PREPARED BY Melissa C. Davidson

TITLE Community Relations Specialist

PAGE 1 OF 1

Yorktown Naval Weapons Station : List of Questions for the Community Survey

- (1) How long have you lived here?
- (2) Have you worked for the Naval Weapons Station or have any of your relatives? If so, when and for how long?
- (3) What are your general thoughts about having the Naval Weapons Station as a neighbor?
- (4) Have you had any past problems with the Station's activities? If so, did you bring your concerns to the attention of government officials? If not, why? And if so, do you feel as if your concerns were adequately addressed?
- (5) What is your understanding of the past and present activities at the Station? Do you feel that you have a good understanding of the facility and its operations?
- (6) Are you aware that the facility has sites that may be contaminated by hazardous waste and sites that have confirmed hazardous substance contamination?
- (7) Do you now feel that site activities could affect your health, property, employment, local waterways or parks in any adverse ways? If so, have you considered getting involved with any area community or civic groups to acquire more information or to voice your opinion?
- (8) What is your opinion of the government's commitment to cleaning up hazardous waste?
- (9) Would you like to receive information, relating to the hazardous waste sites, as it is released?
- (10) How do you think information about the sites can best be distributed to the public?
- (11) Can you think of any other person or group that should be interviewed to express their opinion of the site activities?
- (12) Do you feel that the media in this area has accurately represented your concerns?

The Yorktown Naval Weapons Station thanks you for your time in reviewing this list of questions. Your input during the upcoming interview is greatly appreciated.

COMMUNITY INTERVIEW PARTICIPANTS

York County

Martin C. Fisher, Environmental Services
John Carl, Public Information Officer
Jim Funk, Board of Supervisors
Jim Dishner, Fire Department
Lamont Myers, Industrial Development Authority

Virginia Institute of Marine Science

Dr. Robert Huggett

National Park Service

Chuck Rafkin, Environmental Manager

Newport News

Robert Walker, Marine Chemist
Louis Stark, Fire Chief
William Fitzgerald, Vice Mayor

Virginia House of Delegates

Shirley Cooper, York County
Harvey Morgan, Gloucester County

Victory Center

Nancy Perry, Director

Watermen's Museum

Marion Bowditch

James City County

Frank Tate, Russ Lowry, Fire Department
Perry De Pue, Board of Supervisors

Weapons Station Residents

Cdr. T.B. Stark, Executive Officer
Cdr. John Kotz, Public Works Officer
Ltjg. Len Cooke, Assistant PWO

Lackey Residents

Mary Giles
Alice Roache
Mrs. Redcross

ADDITIONAL INTERVIEWS BY THOMAS BLACK, PAO

Jim Gleason, Whittaker's Mill

Claire Fortier, Virginia Gazette

Marin Fisher, York County Environmental Services

Michael Fox, U. S. Congressman Bateman's Aide

Bobby Scott, Virginia Senator

Will Molineux, Editor

Sid Dixon, Chesapeake Bay Foundation, York County Chapter

Danny Stuck, York County Administrator

Charles Barbour, Candidate, Virginia House of Delegates

Mark Herzog, Campaign Manager

APPENDIX B
CURRENT NAVAL WEAPONS STATION YORKTOWN/CAX
RAB MEMBERS

**NAVAL WEAPONS STATION YORKTOWN/CHEATHAN ANNEX
RESTORATION ADVISORY BOARD**

NAVFAC Mid-Atlantic

Navy Co-Chair

Linda L. Cole, P.E.
Remedial Project Manager
NAVFAC Mid-Atlantic, Code EV3
9742 Maryland Avenue
Bldg N-26, Room 3208
Norfolk, VA 23511-3095
Work: (757)322-4734
Fax: (757)322-4415
INTERNET: LINDA.COLE@NAVY.MIL

ACTIVITY

Commanding Officer
Naval Weapons Station Yorktown
Attn: Code 950, Mr. Sean Heaney
Building 406
P. O. Drawer 160
Yorktown, Virginia 23691-0160
757-887-4086
Fax 757-887-4478
INTERNET: HEANEYSS@PWCNORA.NAVY..MIL

USEPA

EPA Region III
ATTN: mail Code 3HS11 Mr. Greyson Franklin
Office of Superfund Federal Facilities
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029
215-814-2333
Fax 215-814-3001
INTERNET: FRANKLIN.GREYSON@EPA.GOV

STATE

Commonwealth of Virginia
Department of Environmental Quality
Attn: Debra Miller - 4th Floor
Federal Facilities Project Officer
629 E. Main Street
Richmond, Virginia 23219
804-698-4206
Fax 804-444-4234
INTERNET: DAMILLER@DEQ.VIRGINIA.GOV

COMMUNITY MEMBERS

Community Co-Chair

Mr. Barry F. Moss
831 Sandy Bay Cove
Newport News, Virginia 23602
757-269-7942 (daytime)
757-898-8450 (evening)
INTERNET: BFMOSS@COX.NET

Ms. Elizabeth Rogers
210 West Queens Drive
Williamsburg, Virginia 23185
757-229-3779

Ms. Cynthia Irene Barbeau
102 Jean Place
Yorktown, Virginia 23693
757-322-4752 (daytime)
757-867-8261 (evening)
Group Affiliation: York County Business Association (YCBA)

Tom Bernard
Box 159
Gloucester Point, VA 23062
804-642-5124

Mr. Douglas L. Blount
110 Millside Way
Grafton, Virginia 23692
757-881-6557 (daytime)
757-898-3259 (evening)
York County Citizen

Mr. Greg B. Chevront
220 Harris Grove Lane
Yorktown, Virginia 23692
757-898-8317
York County Citizen

Mr. Mickey Russell
101 Appaloosa Drive
Yorktown, Virginia 23693
757-890-9312
Group Affiliation: York County Business Association (YCBA)

Mr. E. Yancey McGann
214 Kingswood Drive
Williamsburg, Virginia 23185
757-229-6492
Williamsburg Citizen

Ms. Patricia E. Grunow
112 Yorkwood Lane
Yorktown, Virginia 23692-3046
757-898-7423
Group Affiliation: York County Public Schools

Mr. Dan Story
101 Azalea Drive
Yorktown, Virginia 23692
757-898-4788
Group Affiliation: York County Historical Committee

RAB MEMBERS

Mr. Morris H. Roberts, Jr.
P.O. Box 816
Gloucester Point, Virginia 23602
804-693-3807
Fax 804-642-5559
INTERNET: MROB@CCSINC.COM

Mr. John Hudgins
Department of Environmental Services
105 Service Drive
P.O. Box 532
Yorktown, Virginia, 23690
757-890-3752

Mr. William Luton, Chief
James City County Fire Department
5077 John Tyler Highway
Williamsburg, Virginia 23185
757-220-0626

Mr. Stephen P. Kopczynski, Fire Chief
York County Fire and Life Safety
P.O. Box 532
126 Ballard Street
Yorktown, Virginia 23690
757-890-3626

CAPT Glen Cox
Newport News Fire Department
Station 6
685 Oyster Point Road
Newport News, Virginia 23602
757-881-5043

Mr. Dexter Haven
Chesapeake Bay Foundation
130 Lafayette Road
Yorktown, Virginia 23690
757-898-3227

NATURAL RESOURCE TRUSTEES

Mr. Peter Knight
NOAA Coastal Resource Coordinator 3
c/o U.S. Environmental Protection Agency (3HS41)
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029
215-814-3321
Fax 215-814-3001
NOAA Hazmat 206-526-6317
INTERNET: KNIGHT.PETER@EPAMAIL.EPA.GOV

Mr. John McCloskey
U.S. Fish and Wildlife Service
6669 Short Lane (Fed-Ex address)
P.O. Box 99 (Regular Mail address)
Gloucester, Virginia 23061
804-693-6694 extension 108
Fax 804-693-9032
INTERNET: R5ES_VAFO@FWS.GOV

Mr. Tom C Nash
Chief RM&V
U.S. National Park Service
Colonial National Historic Park
P.O. Box 210
Ranger Station
209 Read Street
Yorktown, Virginia 23690
Phone 757-898-2425
Main Phone 757-898-3400
INTERNET: TOM_C_NASH@NPS.GOV

Dr. Roy Irwin
Mr. Gary Rosenlieb
USDI
National Park Service
1201 Oakridge Drive, Suite 250
Fort Collins, Colorado 80525
970-225-3520
Fax 970-225-9965

Agency for Toxic Substances and Disease Registry (ATSDR)
Division of Health Assessment and Consultation
Federal Facilities Assessment Branch
ATTN: CDR Susan Neurath, PHD
1600 Clifton Road
Atlanta, Georgia 30333
404-639-6045/6070
Fax 404-639-6075