



Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

January 9, 2001

Captain Steven Johnson
9742 Maryland Ave.
Norfolk, Virginia 23511-3095

Dear Captain Johnson:

I wish to thank you and your staff for the cordial welcome and support extended to the Agency for Toxic Substances and Disease Registry (ATSDR) during our visit November 27-28, 2000 to the Naval Weapons Station Yorktown - Cheatham Annex Facility (Cheatham Annex), Virginia.

We consider our visit a success due to the cooperation and technical assistance provided by the Naval Facilities Engineering Command (NAVFAC), Navy Environmental Health Center (NEHC) and Navy Regional Engineer. Among the many who provided assistance were Scott Park, NAVFAC, Wendy Bridges, NEHC, and Jeff Harlow, Navy Regional Engineer, who accompanied us on a tour and reviewed the status of the contamination on the site, and fielded our many questions. Thanks to their efforts, our visit provided invaluable information for our health assessment process.

Environmental Health Issues

The purpose of our site visit was to gather information for our public health assessment (PHA) report as required by Congress in the 1980 Comprehensive Environmental Response Compensation and Liability Act. Based on the history of Cheatham Annex, the sampling information already gathered by the Navy, and information gathered during the site visit, we did not identify issues that posed an imminent public health threat, but did identify issues, including the four listed below, for which additional data, information, or followup is needed. We believe these issues may have public health significance and request your assistance in gathering the background information and sampling data necessary for the public health assessment. The issues are outlined below and described in more detail in the enclosed report.

- 1. Potential for future human exposure and health effects from soil and ground water contamination by petroleum associated with the Virginia Fuel Farm and fuel pipe line from the fuel farm toward the wharf area.*

To accomplish this evaluation, we request that the Navy provide results of soil and ground water sampling in the vicinity of the pipe lines running from the fuel tank farm to the

annex wharf area. In addition we will be working with the Virginia Department of Emergency Management for the analysis of the fuel tank farm.

2. Potential for human exposure and health effects from consuming seafood caught in this area of the York River and potentially impacted by contaminant releases.

To accomplish this evaluation, we request that the Navy provide results of shellfish and finfish sampled from the creeks and rivers surrounding the annex. In addition, we will also be requesting information from other state, academic, and private organizations.

3. Potential for future human exposure and health effects from remaining unexploded munitions and explosive material near the old Penniman shell loading operations.

To accomplish this evaluation, we request that the Navy provide results of environmental sampling performed after site remediation, and identify the planned land use strategy.

4. Potential for future human exposure and health effects from the contaminated sites or areas of concern identified by the Navy or Environmental Protection Agency.

To accomplish this evaluation, we request that the Navy provide results of environmental sampling performed after remediation, or to support the designation of 'no further action required'.

In addition to these issues, we will attempt to identify the specific community public health concerns, relevant to the Cheatham Annex area, by contacting local environmental and public health agencies, and meeting with community members. To date, we have talked with Dr. Carl Fisher, Elizabeth River Project; Dr. Morris Roberts, Virginia Institute of Marine Science; Mr. Chuck Rafkind, Department of Interior; and Mr. Brett Burdick, Virginia Department of Emergency Management. We look forward to meeting with the Virginia Department of Environmental Quality and members of the Restoration Advisory Board. We also hope to work with Mr. Harlow to include a few questions in the next survey to develop the Community Involvement Plan. Once identified, we will address these concerns in the public health assessment.

Relative Site Priority Ranking

ATSDR uses the site visit information to rank the annex for its relative hazard and to prioritize our schedule for completing the public health assessment. Based on a review of the available information, we have ranked the NWSY Cheatham Annex as a category "D", primarily because there is limited human exposure due to the current land use. As plans for land use changes emerge, it will be necessary to re-evaluate the ranking with respect to changes expected to the potential for people to be exposed to environmental hazards.

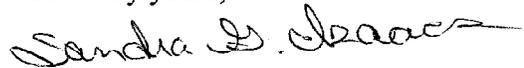
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Categories "A" represents our highest hazard priority and "E" the lowest. We have enclosed a "Note of Explanation" for more information on our ranking process. As a result of the ranking and the limited amount of environmental monitoring data currently available, we are targeting the completion of the public health assessment for the fiscal year 2002. However, ATSDR believes that the four issues listed should continue to be pursued as high priority items.

We will provide a report later next year describing the results of our efforts to address each of these issues. The information in that report will be based primarily on documents identified in the Installation Restoration Program administrative record and coordinated with your staff. If you have any questions, please contact the lead environmental health assessor for this site, Sue Neurath, at (404) 639-6055.

Again, thank you for your cooperation and we look forward to working with you and your staff on this project.

Sincerely yours,



Sandra G Isaacs, Chief
Federal Facilities Assessment Branch
Division of Health Assessment
and Consultation

Enclosures (2)

cc:

Mr. Jeff Harlow, Navy Regional Engineer
Mr. Bob Mann, RAB Co-chair
Mr. Scott Park, Navy Facilities Engineering Command
Ms. Andrea Lunsford, Navy Environmental Health Center
Ms. Wendy Bridges, Navy Environmental Health Center
Mr. Dave McConaughy, Navy Environmental Health Center
Mr. Chuck Rafkind, Department of Interior
Mr. Robert Stroud, U.S. Environmental Protection Agency
Mr. Steve Mihalko, Virginia Department of Environmental Quality
Mr. Brett Burdick, Virginia Department of Emergency Management
Dr. Morris Roberts, Virginia Institute of Marine Science
Dr. Carl Fisher, Elizabeth River Project
Dr. Kathleen Buchi, U.S. Army Center for Health Promotion and Preventative Medicine
Mr. Tom Stukas, ATSDR Region III

NOTE OF EXPLANATION OF THE ATSDR SITE RANKING

ATSDR health assessors conduct site visits at all hazardous waste sites that are proposed or listed on the U.S. Environmental Protection Agency's National Priorities List (NPL) including Department of Defense facilities. During the site visits, health assessors collect available data and information to be included in the public health assessment. The information that is collected documents the nature and extent of contamination, identifies site-related health issues of concern to the community, and provides insight into the health status of the community.

Because current resources at ATSDR are inadequate to write public health assessments at all of the Federal facilities listed on the NPL, ATSDR has developed an interim Site Ranking Process (57 FR 37382, August 18, 1992) as a planning tool to identify facilities that pose the greatest hazard to public health. Those sites posing a greater relative hazard to public health will receive public health assessments before sites posing a lesser relative hazard. This action ensures that ATSDR's resources can be directed to the most critical sites first.

Using the interim Site Ranking Process, ATSDR assigns points for contaminated media, populations within one mile, possible human exposures, and community health concerns. The points are totaled to give sites a single numerical score from 0 to 140 points. The 140 point scale is divided into five Site Ranking Categories based on their numerical ranges: Category A - 140 to 80; Category B - 79 to 55; Category C - 54 to 35; Category D - 34 to 20; and Category E - 19 to 0. The higher the score, the greater the relative hazard and, therefore, the higher priority in the public health assessment process.

ATSDR HEALTH CONSULTATION

**OUTLINING VARIOUS EXPOSURE ISSUES
FROM INITIAL SITE VISIT**

November 27–28, 2000

Navy Weapons Station Yorktown, Cheatham Annex

Williamsburg, Virginia

December 2000

Purpose and Description of Issues

The purpose of this document is to convey issues that the Agency for Toxic Substance and Disease Registry (ATSDR) determined need additional data, information, or followup. On November 27–28, 2000, ATSDR conducted a site visit of the Navy Weapon Station Yorktown Cheatham Annex (Cheatham Annex), located near Williamsburg, Virginia. The purpose of the visit was to begin collecting information necessary for conducting a public health assessment, to determine if immediate ATSDR public health actions were needed, and to prioritize the site for future public health activities. We observed the designated Installation Restoration Program (IRP) sites and other areas where hazardous substances have been released to the environment, briefly reviewed available site-specific information, and met with a few members of the local community, to identify potential public health concerns. As a result of the site tour, limited discussions with community members, and a cursory review of the data currently available, we identified four issues that we will be investigating further. *Although none of the issues represent an imminent public health threat, ATSDR believes that the four issues listed should be treated as high priority items.*

These issues are identified below, and more detail is provided in the Discussion section of this report.

- 1. Potential for future human exposure and health effects from soil and ground water contamination by petroleum, oils and lubricants associated with the Virginia Fuel Farm and fuel pipe line from the fuel farm toward the wharf area.*

To accomplish this evaluation, we request that the Navy provide results of soil and ground water sampling next to, and below, the fuel storage tanks and the pipe line. In addition we will be working with the Virginia Department of Emergency Management for the analysis of the fuel tank farm.

- 2. Potential for human exposure and health effects from consuming seafood caught in this area of the York River and potentially impacted by contaminant release.*

To accomplish this evaluation, we request that the Navy provide results of shellfish and finfish sampled from the creeks and rivers surrounding the annex. In addition, we will also be requesting information from other state, academic, and private organizations.

- 3. Potential for future human exposure and health effects from remaining unexploded munitions and explosive material near the old Penniman shell loading operations.*

To accomplish this evaluation, we request that the Navy provide results of environmental sampling performed after site remediation, and identify the planned land use strategy.

4. Potential for future human exposure and health effects from the contaminated sites or areas of concern identified by the Navy or the Environmental Protection Agency (EPA).

To accomplish this evaluation, we request that the Navy provide results of environmental sampling performed after remediation, or to support the designation of 'no further action required'.

Background

Location

The Cheatham Annex facility is located outside of Williamsburg in York County, Virginia. The annex is adjacent to the York River, between Queen Creek and King Creek, approximately 15 miles upstream from the Chesapeake Bay. The current facility is approximately 1,579 acres and exists as two separate sections on either side of the Colonial National Historical Parkway. The eastern section of Cheatham Annex is bounded by the entrance of Queen Creek into the York River to the north, the York River to the east, and King Creek to the south, the western boundaries are with Department of Interior (DOI) property. The Virginia Fuel Farm is across the Colonial Parkway, southwest of this section of the annex. The western section of Cheatham Annex is bounded to the north by the Colonial Parkway, and half of the eastern boundary is adjacent to the Virginia Fuel Farm. The remaining western, southern, and lower eastern boundary is adjacent to non-federal government land. There are several ponds on, or adjacent to the annex, including Penniman Lake, Youth Pond, Jones Pond, and Cheatham Pond. Overland drainage from the sources at the annex may flow into these ponds or the York River (USEPA, 2000; USEPA, 1999).

Figure 1, provides a MapQuest image of a map of the general area showing Williamsburg and Cheatham Annex with respect to Richmond and the eastern Virginia coast line. Figure 1-2 was provided by the Navy's Regional Environmental Group Naval Weapons Station Yorktown Cheatham Annex. This map shows the boundaries of the Cheatham Annex (CAX) with respect to the Department of Interior (DOI) property, and Virginia Fuel Farm. This map also shows the locations of the identified Navy Installation Restoration (IR) Sites and Areas of Concern. Specific details of these sites are not included in this consult but available in other documents prepared by the Navy and available through the public library. These figures are presented here to illustrate the spatial relationship between the annex, DOI, and Virginia Fuel Farm properties discussed below.

History

During World War I, prior to Navy ownership, a portion of what currently is Cheatham Annex was the location of a large powder and shell-loading plant, the duPont de Nemours Company's U.S. Penniman Shell Loading Plant. The Penniman Shell Loading Plant operated under contract to the U.S. government loading shells from 1917-1918. The facility consisted of approximately

3,300 acres and included what is now the Cheatham Annex, the United States Department on the Interior National Park Service (National Colonial Park), and the Virginia Department of Emergency Services fuel farm. Following the end of WWI in 1918, through 1926, the U.S. government operated the Penniman General Ordnance Depot to prepare manufactured ordnance and explosives for long-term storage and shipment to permanent U.S. ordnance depots. At the same time, E.I. duPont de Nemours Engineering Company was decommissioning military ordnance and dismantling the former Shell Loading Plant and TNT plant structures. From 1926 to 1942, the site was used for private farm land. In 1942, the Navy established the Cheatham Annex Supply Center. In 1979, the property for the National Colonial Historical Park was transferred to DOI, National Park Service. The former fuel farm was sold to the Virginia Department of Emergency Services in 1981 (USEPA, 1999).

Current Mission

Since 1943, the primary mission of the annex has been to receive, store, pack, and ship materials to federal facilities on the east coast and major distribution centers in Europe (USEPA, 2000).

Waste Generating Activities

Operations that have occurred at Cheatham Annex included: loading shells, shipping munitions, and material receiving/storage/shipping. These activities have resulted in contamination from the shell loading, storage, and shipping processes, disposal of outdated/excess material, and disposal of industrial and residential 'trash' (USEPA, 1999).

Wastes that have been generated and disposed at the annex include: explosives (TNT), solvents, inorganics, heavy metals, polychlorinated biphenyls (PCB), mixed municipal wastes (USEPA, 1999)

The EPA included eight sites in the Hazard Ranking System that was used to list the annex on the National Priority List (NPL). These sites were the Landfill Near Incinerator (Site 1), Transformer Storage Area (Site 9), Bone Yard (Site 11), Ammonia Settling Pits, TNT Graining House Sump, TNT Catch Box Ruins, Waste Slag Material, and 1918 Drum Storage Area (USEPA, 2000b).

The site was proposed as an NPL site on February 4, 2000 and formally added on December 1, 2000. The basis for the NPL listing was the Surface Water Overland /Flood Migration Component, specifically the Human Food Chain Threat Score (USEPA, 2000b). Contaminants migrating from the facility have impacted or might impact fisheries and sensitive environments located on, or adjacent to, the facility.

Limited EPA sampling of selected sources indicates contamination by semi-volatile organic compounds, explosives and metals. Limited Navy air sampling around selected sites indicates volatile compounds were not being released into the air at that time.

Discussion

Based on the history of Cheatham Annex, the sampling information already gathered by the Navy and EPA, and information gathered during the site visit; we identified four issues on which we will be focusing our evaluation. We believe these issues may have public health significance. The public health assessment will consider the concentration of the contaminant in the environment, the route of human exposure to the contaminant, and the toxicology of the contaminant to evaluate the potential for a contaminated area to adversely affect public health. We will consider each of these four issues, the identified contaminated sites and areas of concern, and the environmental health related questions and concerns raised by the site personnel, local community, and our own environmental health assessors. The proper evaluation of each site and especially the four issues may require site-specific environmental sampling to identify the chemical concentrations the public would be exposed to in the environmental media. In order to gather the background information and sampling data necessary for the public health assessment, we request the assistance of many organizations including: the Navy, Environmental Protection Agency, Department of Interior, Virginia Department of Environmental Quality, Virginia Department of Emergency Management, Virginia Institute of Marine Science, Elizabeth River Project, and National Oceanic and Atmospheric Administration.

The following information is provided to describe the potential for human exposure to environmental contaminants from areas that are, or once were, a part of what is now the Cheatham Annex. Following the description of each issue, is a brief description of the environmental data necessary to evaluate the issue.

1. Potential for future human exposure and health effects from soil and ground water contamination by petroleum associated with the Virginia Fuel Farm and fuel pipe line from the fuel farm toward the wharf area.

A total of 23 fuel storage tanks are located at the Virginia Fuel Farm, partially or completely buried. Eighteen concrete tanks were installed during the 1940's, and five steel tanks were installed during the Korean War. Each tank has the capacity to hold approximately 2 million gallons of fuel. The tanks have been disconnected from the two fuel delivery pipe lines that run from the tanks to the wharf area, and the pipe lines have been capped. Each pipe is approximately 12 inches in diameter. The fuel tanks were cleaned to industry standards in 1992 by pressure washing. The tanks and pipe lines are now considered empty. (Phone conversation with Mr. Burdick, VDEM, on December 27, 2000).

The fuel tank storage area is owned by the Commonwealth of Virginia and the remediation of the area is managed by the Virginia Department of Emergency Management (VDEM). VDEM has gathered soil and ground water samples in the vicinity of the tanks on the Virginia Fuel Farm property. The major contaminants of concern identified were petroleum and arsenic. Their monitoring program suggests that none of the contaminants are currently migrating off site. York

County is interested in obtaining this property for some future development. Currently, a transfer time schedule and development plans have not been formalized. (Phone conversation with Mr. Burdick, VDEM, on December 27, 2000).

We have two basic concerns associated with this site. First, it is our understanding that the soil and ground water around the pipe line has not been sampled to the extent necessary to determine if soil or ground water contamination exists along the pipe line route. If the ground water was contaminated by leaks from the pipe line, it is possible that the plume could migrate beyond the boundaries of the annex. Depending on the dominant ground water flow directions, the contaminants could impact a variety of surface water resources and potentially the quality of local shellfish and finfish.

Our second concern is for potential human exposure to contaminants in the soil column. Under the current land use plans for the annex and tank farm, there is limited potential for non-occupational, human exposure to the contaminants identified. Our concern is that future land use plans for these areas remain consistent with the level of contaminant concentration in the soil and ground water, measured at that time, to prevent human exposure that may cause adverse health effects. If contamination exists in the surface soil (0-3 inches) following development, there is the potential for inhalation, ingestion, and dermal exposures, especially for children, under many use scenarios. If contamination exists in the lower soil column, there is the potential for hydrocarbon vapors to migrate through the basement walls or foundation into the lower rooms of the buildings. In this case the depth to which soil should be sampled, and the thickness of the soil layer that should be analyzed, would depend on the proposed building architecture (i.e., would the structures include a basement?).

In addition to the petroleum lost from the fuel storage tanks, it is possible that leaks of petroleum also occurred from the pipe lines. Pipe line leaks could occur anywhere along the pipe line route and are especially common at joints and valves. We understand it would be difficult to sample the soil and ground water along the entire length of the pipe line. However, sampling is necessary to identify if leaks have occurred that could cause a human health concern. For the protection of public health, we recommend that samples be taken around currently existing buildings, areas between the pipe line and surface water resources, in the vicinity of pipe joints and valves, and at any location where contaminant migration is suspected. Additionally, we recommend that the locations of planned construction be sampled and remediated as necessary.

Our major concern is to prevent human exposure to contaminants released as a result of petroleum leaks from the fuel tanks or pipe line. To address this issue, we will consider the concentration of hydrocarbons in both the soil and ground water, and the future uses planned for the Virginia Fuel Farm and Cheatham Annex. To accomplish this evaluation, we request that the Navy provide results of soil and ground water sampling next to, and below, the fuel pipe lines as the data becomes available. We will also review the results of environmental sampling information for the tank farm, provided by VDEM.

2. Potential for human exposure and health effects from consuming seafood caught in this area of the York River and potentially impacted by contaminant release.

Several federal government and private industrial NPL sites are located within this general area along the York and Elizabeth Rivers. As a result a common community concern in this area questions the safety of eating locally caught seafood. Given the landfills located along the river banks, potential for ground water contamination, and potential for contaminant transport in the ground water and surface water to the river; there is the potential for shellfish and finfish contamination in the ponds, creeks, and rivers around the annex. Although the potential exists for contaminants from Cheatham Annex to impact the quality of local seafood it is not possible, and it is not our goal, to identify where/how seafood species come into contact with environmental contaminants. Our goal is to understand the capture, consumption patterns, and potential exposure of recreational and subsistence fishers in this area to contaminants of concern, and to understand how to provide adequate guidance to prevent exposures to concentrations of chemicals in the local seafood that could cause adverse health effects.

Our concern is for recreational and subsistence fishers in this general area, including, but not limited to, those fishing from and around Cheatham Annex. Because a variety of fishing locations and pollution sources exist in this general area, we will evaluate the safety of eating finfish and shellfish caught in, and around, the annex as a part of the evaluation of the safety of consuming seafood caught in this general area. To accomplish this evaluation, we request that the Navy provide results of shellfish and finfish sampled from the ponds, creeks, and rivers surrounding the annex. In addition, we will also be requesting information from other state, academic, and private organizations.

3. Potential for future human exposure and health effects from remaining unexploded munitions and explosive material near the old Penniman shell loading operations.

It appears that, to date, no unexploded munitions have been found on Cheatham Annex or the neighboring properties. Some explosive materials have been identified in soil samples from known munition operation locations. Limited EPA sampling has detected 2,4,6-TNT in the graining house sump and the catch box ruins of the old Penniman shell-loading facility. This area is south of Sanda Avenue on the annex in the vicinity of AOC 2, and Sites 5, 6, 10, and 11. EPA also located numerous "blast" holes on what is now DOI property north of the annex. This area is believed to have been used for ammunition magazines. Limited soil sampling identified arsenic and chromium, but nitroaromatics were not identified.

Although there appears to be only a very small potential for finding unexploded munitions on any part of Cheatham Annex or the DOI land, it will probably never be possible to guarantee that the entire area is free of unexploded munitions or explosive materials. Therefore we believe that it will

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Although there appears to be only a very small potential for finding unexploded munitions on any part of Cheatham Annex or the DOI land, it will probably never be possible to guarantee that the entire area is free of unexploded munitions or explosive materials. Therefore we believe that it will be important to analyze this potential impact on public health with respect to the expected land use strategy for this area. Knowledge of the land use strategy will be used to identify the appropriate exposure-based environmental sampling criteria and identification of human exposure routes required for the public health assessment.

Our primary concern is that individuals may inadvertently come into contact with unexploded munitions or explosive materials remaining on Cheatham Annex or the DOI property. To appropriately evaluate this potential, we will need to better understand the shell loading operational procedures and the storage practices. Specifically, what type of 'quality control testing' was performed on the loaded shells to ensure that they had been properly loaded? Were any of the shells exploded to ensure that they would fire appropriately in the field? Was this the purpose of the 'blast' holes? Could loaded shells have fallen from the assembly line and be buried somewhere within the ruins of the shell loading plant?

Our secondary concern is that individuals may come into contact with explosive materials, such as TNT, in the soil of the blast holes, ruins of the shell loading plant, or some other area not specifically identified as a Navy Installation Restoration site or Area of Concern. To evaluate these potential exposures, we request that the Navy 1) provide as much information as possible concerning the operational procedures used to load/test/store the munitions; 2) provide results of environmental sampling performed after remediation or the determination of 'no further action required' for the blast holes, ammunition magazines and production facility ruins; 3) identify the planned land use strategy for these areas; and 4) identify how future land use decisions are made to ensure the safety of the land users with respect to potential unexploded munitions or explosive materials. We understand the sampling may not yet be complete and ask that the data be supplied as available. We also request that the background and land use information be provided by February 15, 2001.

In addition to Navy support, we will be working with EPA and DOI to address all of the old Penniman facilities.

4. Potential for future human exposure and health effects from the contaminated sites or areas of concern identified by the Navy or EPA.

Many of the specific sites identified by the Navy or EPA as potentially contaminated areas will require additional sampling to evaluate the potential human health effects resulting from the

chemical concentration in the upper 3 inches of the surface soil. To evaluate the potential inhalation exposure to volatile organic compounds seeping from the soil into a basement, it would be more appropriate to consider the chemical concentration in a lower soil layer within the zone of soil contamination.

Our primary concern is that the public health assessment is performed with the most relevant exposure-based environmental sampling results and description of current and/or future land use. To accomplish this evaluation, we request that the Navy provide results of environmental sampling performed after remediation, or to support the designation of 'no further action required', as the data is available. If requested, ATSDR will review sampling plans and provide specific recommendations and descriptions of exposure-based environmental sampling strategies.

Community Participation in the Public Health Assessment Process

ATSDR believes that community involvement is invaluable and would appreciate community assistance. Restoration Advisory Board (RAB) members and other members of the community can assist by identifying community health concerns. Community members can also assist by identifying stakeholders that may have information such as effectiveness of the land use restrictions and fishing bans, frequency and consumption of seafood, and seafood sampling data. ATSDR will review RAB minutes, and Navy and EPA documents relevant to the Cheatham Annex.

RAB members and others may also contact ATSDR toll-free and leave a voice message at **1-888-42 ATSDR (extension) 6055**. We request that you refer to "Cheatham Annex" and leave your name and a return phone number.

Conclusions and Recommendations

ATSDR did not identify issues that posed an imminent public health threat, but did identify issues, including the four listed above, for which additional data, information, or followup is needed. Specific recommendations are listed with each issue. We will work with the Navy to develop a time line for Navy submission of required materials and ATSDR followup reports for each issue.

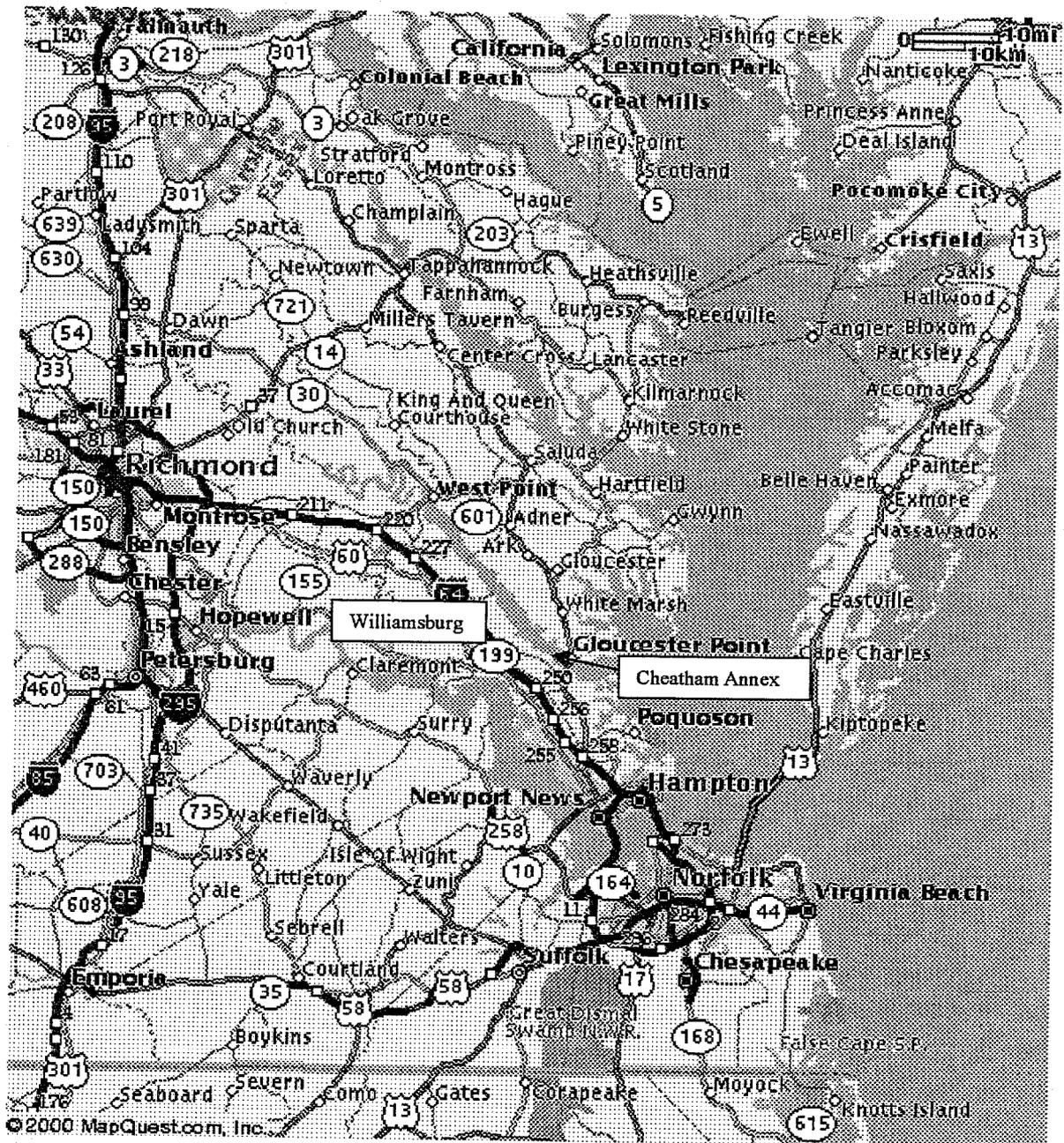


Figure 1. MAPQUEST Map showing general location of Williamsburg and the Naval Weapons Station Yorktown Cheatham Annex.

References:

ATSDR Site Visit Photos, NWSY Cheatham Annex, Copy on File ATSDR, Nov, 2000.

USEPA, 1999; *Final Data Acquisition/Summary Report Penniman Shell Loading Plant Site Williamsburg, York County, VA*. TDD No. 9901-45

USEPA, 2000; *Naval Weapons Station Yorktown Cheatham Annex Facility General Site Information*; (<http://www.epa.gov/reg3hwmd/super/cheatham/pad.htm>)

USEPA, 2000; *Naval Weapons Station Yorktown - Cheatham Annex Hazard Ranking System Documentation Record*; (<http://www.epa.gov/reg3hwmd/super/cheatham/hrs.pdf>)

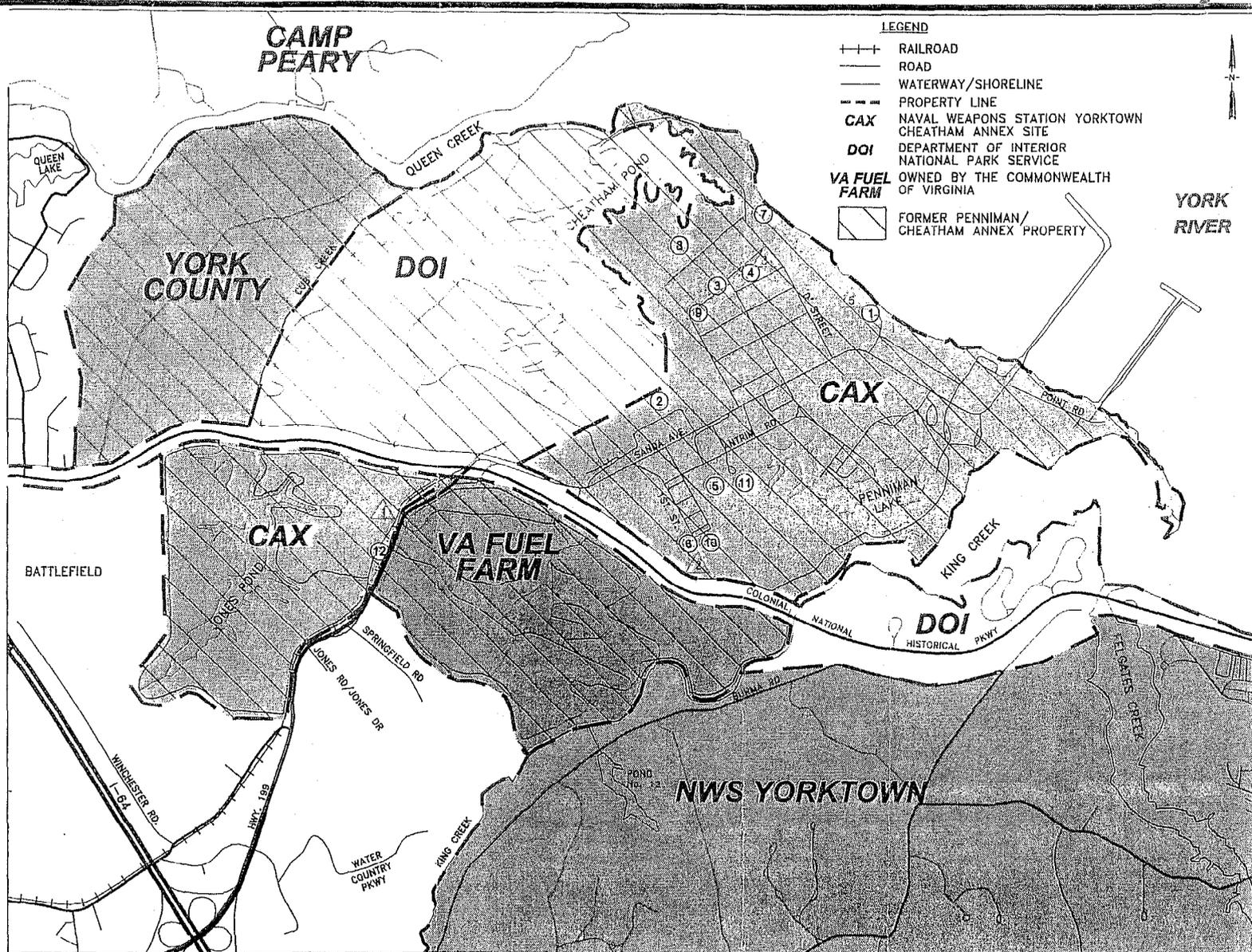
IDENTIFIED NAVY IR SITES

- ① LANDFILL NEAR INCINERATOR
- ② CONTAMINATED FOOD DISPOSAL AREA
- ③ SUBMARINE DYE DISPOSAL AREA
- ④ MEDICAL SUPPLIES DISPOSAL AREA
- ⑤ PHOTOGRAPHIC CHEMICALS DISPOSAL AREA
- ⑥ SPOILED FOOD DISPOSAL AREA
- ⑦ OLD DuPONT DISPOSAL AREA
- ⑧ LANDFILL NEAR BUILDING CAD 14
- ⑨ TRANSFORMER STORAGE AREA
- ⑩ DECONTAMINATION AGENT DISPOSAL AREA NEAR FIRST STREET
- ⑪ BONE YARD
- ⑫ DISPOSAL SITE NEAR WATER TOWER

IDENTIFIED NAVY IR AREAS OF CONCERN

- ▲ SCRAP METAL DUMP
- ▲ DEXTROSE DUMP
- ▲ CAD 11/12 POND BANK
- ▲ IR SITE 4 - MEDICAL SUPPLIES DISPOSAL AREA
- ▲ DEBRIS AREA

2000 0 1000 2000
1 inch = 2000 ft.



LEGEND

- +—+— RAILROAD
- ROAD
- WATERWAY/SHORELINE
- - - PROPERTY LINE
- CAX** NAVAL WEAPONS STATION YORKTOWN CHEATHAM ANNEX SITE
- DOI** DEPARTMENT OF INTERIOR NATIONAL PARK SERVICE OWNED BY THE COMMONWEALTH OF VIRGINIA
- VA FUEL FARM** FORMER PENNIMAN/CHEATHAM ANNEX PROPERTY



**FIGURE 1-2
OWNERSHIP MAP WITH NAVY IR SITES
AND AREAS OF CONCERN**

**NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA
CHEATHAM ANNEX SITE**