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FINAL

**Cheatham Wilderness Area
Preliminary Pre-Acquisition
Summary Report**

December 2003



Prepared by:

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1.0 Review Purpose

The Navy is considering the opportunity for acquiring the 786-acre Cheatham Wilderness Area from the Department of Interior, National Park Service. The National Park Service has agreed to return the property to Navy ownership.¹ The purpose of this report is to provide a preliminary summary of existing information about the property in preparation for a Phase I (modified) Environmental Baseline Survey. To understand the environmental liability associated with the property, the history of the land transactions and land-use associated with the property was reviewed. This review is structured around that land-use research starting with a general property location and description, followed by a review of property transactions and industrial usage, possible environmental impact from that usage, historical testing, and suggested conditions possibly needing verification.

To evaluate the property's environmental liability, the land ownership and its usage were pieced together. The acreage now referred to as the Cheatham Wilderness Area includes the Penniman Property. It has been part of a number of land transactions and has been referred to using different property names. The property was initially part of a DuPont land purchase and later became the Penniman TNT Plant, the United States Penniman Shell Loading Plant, the General Ordnance Depot, the Dozier Farms, the Colonial Monument Estate property, the Navy's Cheatham Annex property, and now is the National Park Service's Cheatham Wilderness Area. Throughout the changes in property ownership, the acreage has maintained its integrity and has primarily been kept in an undeveloped state. To clarify the property transactions and land use, the property will be referred to by its period name and linked to current boundaries.

2.0 Penniman Property Location and Description

The Cheatham Wilderness Area property is located in York County, Virginia along the south bank of the York River adjacent to the Naval Weapons Station Yorktown, Cheatham Annex facility. The acreage is near the city of Williamsburg and south of the Camp Peary Armed Forces Experimental Training Activity. This property is approximately 786 acres of forestland and reservoir owned by the National Park Service. The Navy agreed to manage the acreage under an interagency agreement signed by officials from Colonial National Historical Park and Cheatham Annex dated October 1992². The property is bounded by Queen Creek to the north, Weapons Station Yorktown, Cheatham Annex to the northeast, east, and southeast, Colonial Parkway to the south and southwest and York County property to the west (Figure 1).

3.0 Historical Land Usage

Pre-Modern Period (Before 1900) - Land usage in the vicinity of Weapons Station Yorktown, Cheatham Annex including the Penniman Property is presented in the Cheatham Annex Architectural and Archeological Survey.³ According to the survey, Europeans settled the land in the seventeenth century. From the time of European settlement until the start of World War I the land-use in this area was agricultural and the towns were farming communities.

¹ National Park Service letter to Admiral Architzel; March 03, 2003.

² Environmental Compliance Evaluation of Fleet and Industrial Supply Center Cheatham Annex; Atlantic Division, NAVFAC; 1997.

³ Phase I Architectural and Archeological Survey at Cheatham Annex, York County, Virginia, Volume I by R. Christopher Goodwin & Associates, Inc.; September 26, 1996.

PROPERTY OWNERSHIP IS DESIGNATED BY:

CAX = FISC CHEATHAM ANNEX
 VA FUEL FARM = STATE OF VIRGINIA PROPERTY
 YORK COUNTY = YORK COUNTY PROPERTY
 CAMP PEARY =
 NWS YORKTOWN =
 DOI = CHEATHAM WILDERNESS

PREPARED BY BAKER ENVIRONMENTAL INC.
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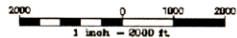
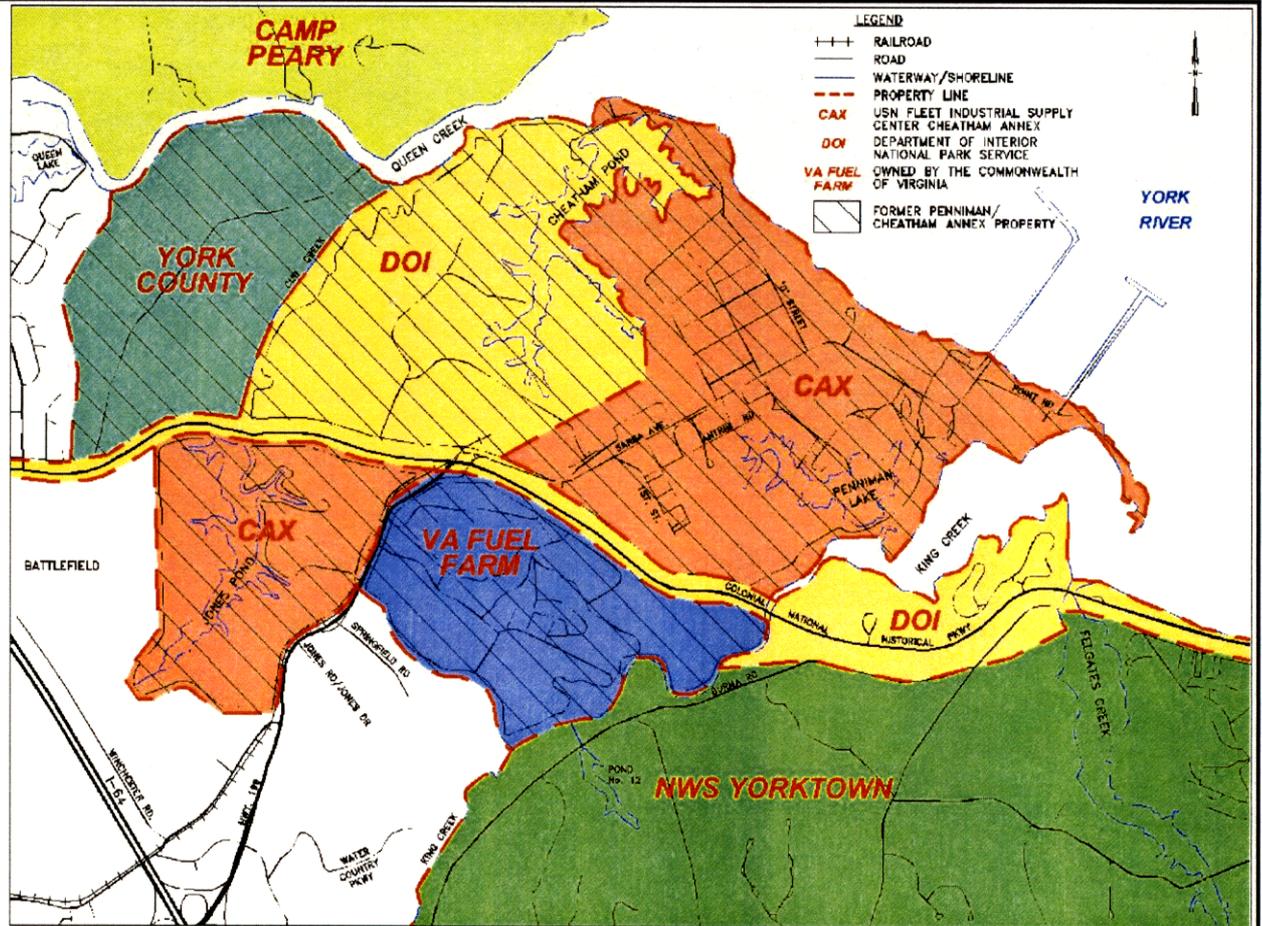


Figure 1
 REGIONAL LOCATION MAP SHOWING THE CHEATHAM WILDERNESS PROPERTY (DOI) POSITION
 RELATIVE TO ITS NATURAL AND PROPERTY BOUNDARY

OWNERSHIP MAP
 NAVAL WEAPONS STATION YORKTOWN
 YORKTOWN, VIRGINIA
 CHEATHAM ANNEX SITE

World War I Period (1914 – 1919) - The land remained primarily agricultural until just before World War I when E.I. DuPont de Nemours & Company purchased land in 1916 on which to site a TNT production facility. The TNT production facility named the Penniman TNT Plant was built on the site in 1916. The Plant site was located north of what is now Sanda Avenue³ and mostly on what is now Department of Interior property adjacent to the Cheatham Annex facility boundary. Three areas made up the plant and they were a nitrostarch area, a dynamite area, and a storage magazine area.³ (Figure 2) Most of these facilities were enclosed within blast revetments or berms. It is these berms that are identifiable on aerial photographs of the property.

After the United States entered the war, private firms were hired to erect government facilities and train employees, though the government retained the administration duties.⁴ DuPont was contracted by the United States government (Contract # G-1320-732-A and superceded by Contract #P-2337-1228-A) to build a shell loading facility adjacent to DuPont's Penniman TNT Plant.³ Under these contracts 655 acres of land were leased to the government for a shell loading plant and DuPont informally agreed that the government could use land in the Penniman TNT Plant storage (magazine) area. The shell loading facility property, with the exception of the storage area, is completely included within the current Cheatham Annex property boundary.

Post World War I (1919 – 1926) - With the completion of the loading plant the property reverted to government control. DuPont records indicate that: *Under date of February 19, 1919, when the plant equipment and material were turned over to the United States, the construction work had been completed with the exception of certain additional housing facilities which the United States considered advisable to provide in case it was necessary to increase the capacity of the plant. 952,064 shells and 1,477,918 boosters were loaded, assembled, and delivered to the Government during the period that the plant was operated.*⁴

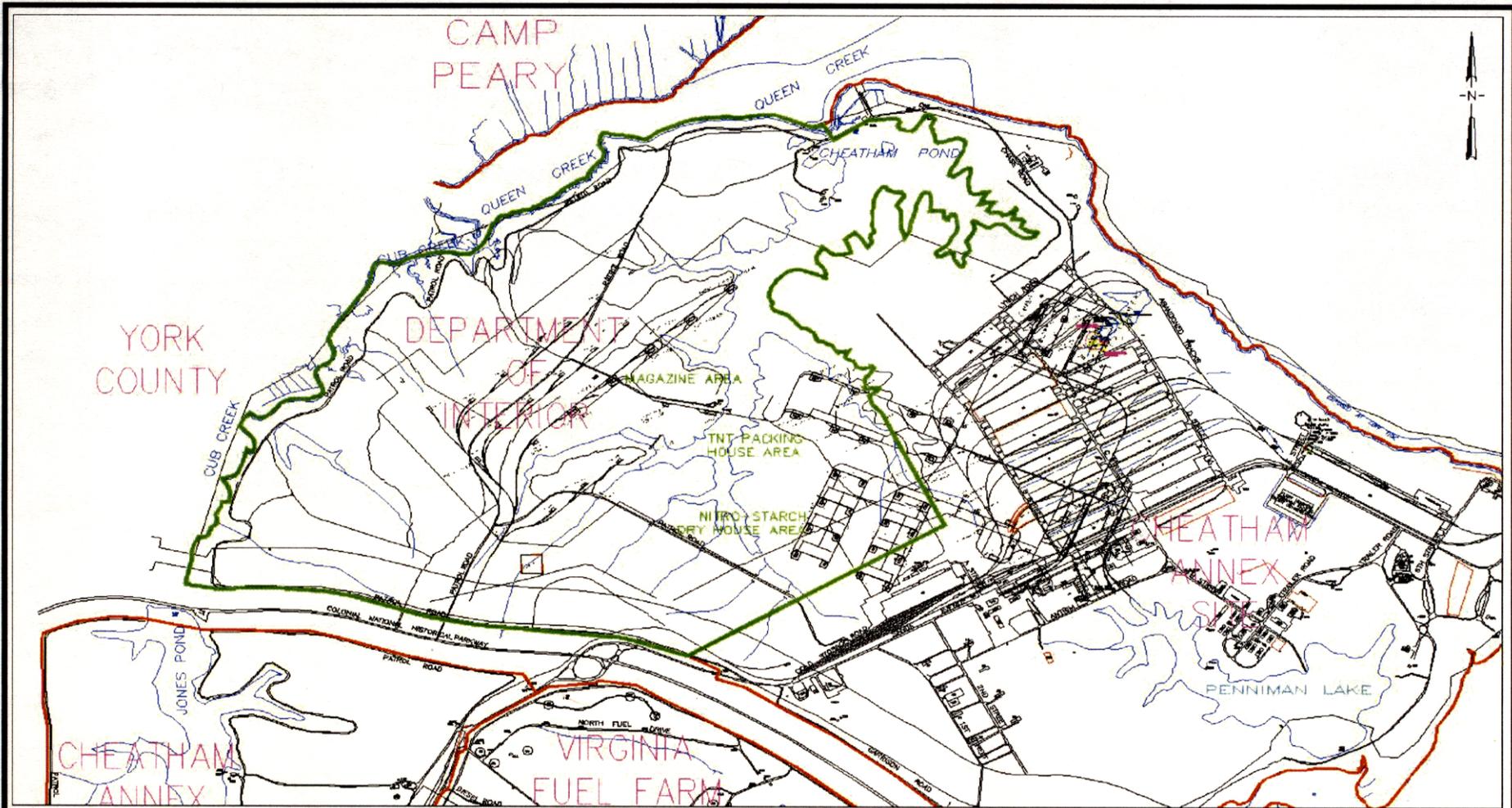
With the end of hostilities in Europe, the munitions production ceased. The government operated the facility for a time between the years of 1919 to 1926 as the Penniman General Ordnance Depot or the Penniman Ordnance Reserve Depot. (These site titles were contained in reviewed correspondence collected for LANTDIV study efforts.⁵) During this time the facility was demolished, the excess bulk explosives were sold, and the stored ammunition was either decommissioned or shipped to other depots. Most of the magazine area structures were decommissioned and demolished during the time that the government managed the shell loading facility, but at least one of the magazines (CAD 162) survived until 1996 because the structure was included in the architectural and archeological survey done at Cheatham Annex.

Colonial Parkway Development Period (1926 – 1942) - April 22, 1926 E.I. DuPont Company transferred its property ownership to Mr. J.M. Dozier.⁶ During the Depression steps were taken to develop the tourism industry based on the Area's colonial history. The Colonial Parkway was constructed to link the Yorktown Battleground to the historic town of Williamsburg. The Dozier

⁴ Hagley Museum and Library, Negotiations, Contracts, Accomplishments, Costs, Earnings, and Audits in connection with the DuPont Engineering Company Projects; 1917-1923.

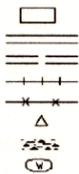
⁵ Correspondence from Commanding Officer, Penniman G.O. Depot to Contracting Officer, DuPont Eng. Co., and Correspondence from 1st Lt., Ordnance Dept. W.V. Randall, Penniman Ordnance Reserve Depot, to Major Charles R. Baxter, Ordnance Office; March 15, 1923.

⁶ Deed No. 121; E.I. du Pont de NEMOURS AND COMPANY to J.M. Dozier, verified and original re-recorded; July 3, 1928.



LEGEND

STRUCTURES
 ROADS: PAVED
 ROADS: UNPAVED
 RAILROADS
 FENCES
 TRANSFORMER
 MARSH, SWAMP
 LAKE, POND



DRAINAGE
 SHORELINE (NATURAL)
 SHORELINE (MANMADE)
 APPROXIMATE PROPERTY BOUNDARY
 PENNIMAN PROPERTY



NOT TO SCALE

FIGURE 2
 LOCATION MAP SHOWING THE LOCATION OF THE MAIN
 PRODUCTION FACILITIES OF THE PENNIMAN TNT PLANT
 AND THAT PLANT'S LOCATION RELATIVE TO CAX
 BOUNDARY AND THE ACREAGES NATURAL BOUNDARIES

property was conveyed on May 19, 1931⁷ to the Colonial Monument Estates, Incorporated as part of the tourist industry buildup. Included in this property transaction was the Penniman TNT Plant property. From this time of sale forward the Penniman property has been used mainly for agricultural, training, and recreational purposes.

World War II Period (1942 – 1967) – Development of the Annex - Just before the start of the Second World War, the United States government's interests returned to the Penniman Property area. The United States government decided to establish a naval supply facility on the York River and 1243 acres of land were appropriated for the purpose of developing a fuel and diesel oil storage and reserve supply base in 1942.⁸ Later (July 1942) the Navy condemned additional acreage to build the Cheatham Annex of the Yorktown Naval Supply Depot, and in June 1943 a bulk storage facility was established as a satellite unit of the Naval Supply Depot. Included in this condemnation action was the Dozier property (i.e., the Penniman TNT Plant property) then part of the Colonial Monument Estates, Incorporated property.⁹

By the mid-1940s the Cheatham Annex facility had grown to include extensive warehouse areas, a pipeline and fuel farm system, administrative buildings, two loading piers and barracks and housing areas. The site did not include any large industrial processes or areas, and its primary mission was the receiving, storing, packing, loading and shipping of military supplies to facilities on the east coast of the United States and to facilities in Europe. In the mid-1940s the Cheatham Creek was dammed and Cheatham Pond was formed. The Navy managed the Penniman acreage as part of the Cheatham Annex Facility and kept the acreage in an idle state until September 1975.

Recent Period (1975 to Present) - In 1975, approximately 981 acres of the land was declared excess by the Navy and conveyed to General Services Administration. The Department of the Interior received the 981 acres of land with improvements on March 30, 1978. The transaction was amended to 786 acres on 28 August 1979.¹⁰ This 786-acre parcel named the Cheatham Wilderness Area included parts of the Penniman TNT Plant acreage. The National Park Service managed the wilderness area, but Navy records indicate that the Navy continued to access parts of the area for training and recreational purposes. Navy and National Park Service officials formally agreed in 1992 to transfer the management of the Wilderness Area to the Navy. A copy of the 1992 Interagency Agreement is included in Appendix A. While owned by the National Park Service, the acreage remained undeveloped, remote and used by the Navy for training and recreational purposes. The United States Army Corps of Engineers reviewed the acreage history and found that the acreage was eligible for inclusion into the Defense Environmental Restoration Program-Formerly Used Defense Site (DERP-FUDS). An unsigned copy of the findings and determination of eligibility document is included in Appendix B.

The Navy first stated its interest in reacquiring the property in 1989 and in January 1992 the Navy again expressed interest in owning the property. As a comment to the National Park Service general management plan for the Colonial National Historical Park, the Navy stated that the land resources had been managed by the Navy and used for training purposes. The Navy stated in 1992 that it wished to continue using the acreage for training purposes.¹¹ The nature of the training done at the site during the National Park Service period was not described in detail in the comments, but the training was described

⁷ Certificate of Title 17; November 1942.

⁸ Ralph A. Bard; Order for Condemnation, ND5/N1-?/F-5-3/DWA/mz; August 29, 1942.

⁹ Condemnation Proceeding in the District Court of the United States of the Eastern District of Virginia, Newport News Division; May 10, 1944.

¹⁰ Government Services Administration Standard Form 118, Report of Excess Real Property N-VA-595A; August 28, 1979.

¹¹ Navy letter to National Park Service with attached comments from Commander, Naval Base Norfolk comments on the General Management Plan for the Colonial Historical Park; Dec 24, 1992.

as Orienteering Training in other documents¹². What impacts the training activities may have had on the site could not be determined from the available literature. The Navy has continued to express interest in acquiring the acreage since that time and the National Park Service now supports the transfer of this property back to the Navy.

4.0 Industrial Impact

Available Navy records indicate, and relevant research efforts into the history of the Cheatham Wilderness Area property found, that the acreage was initially industrialized during World War I. The Penniman TNT Factory was constructed on the land. The plant consisted of three industrial areas: a nitrostarch area, a TNT dynamite packing area, and a magazine storage area.¹³(Figure 2) While the reviewed records don't definitely state how the plant was used, the records do state that no dynamite production occurred at the plant. The reporting does not indicate exactly how those facilities were used, but records point out that prior to the TNT factory becoming active, the United States government contracted the DuPont Company to build and operate a separate shell loading plant on DuPont Company property adjacent to the TNT Plant site. The company did propose converting the existing Penniman TNT Factory into a shell loading plant, but the government opted to have the operation built on a separate but adjacent property that is now part of the Cheatham Annex facility. The TNT plant wasn't active when construction on the shell loading facility began and no record of the TNT plant start-up was found. What is fully explained is that the dynamite plant never went into production; in fact, as stated in the History of the Explosives Industry in America, "the plant never produced a pound of dynamite."¹⁴

Clues to how the magazine property was used are found in the Cheatham Annex Architectural and Archeological Survey report. That report stated that the building CAD162, a one-story, brick magazine located on property now owned by the National Park Service was used for general storage. The nature of that general storage is not identified, but the context of the report would indicate that the reference is to current and recent usage and not historic DuPont usage. Further, when the shell loading facility was active, the permanent storage magazines on the TNT plant property were not leased by the government and not used for government storage. Instead, temporary storage magazines were built on the TNT Plant property in the magazine area for government storage, and were used to store bulk TNT and ammonium nitrate for use at the shell loading facility.¹⁵ Beyond those references to general storage and bulk storage, the reviewed documents are silent to any other industrial land-use or the use of associated Penniman TNT Plant structures.

There was also evidence that the land during the period of the Navy's ownership was used for training exercises including battlefield training by battalion-sized units.¹⁶ A review of land management records indicate that Orienteering Training (compass and map reading) sessions for reserve officers, Army Rangers, and Navy SEALs were conducted on the property. This is low impact training. Aerial photography and property records do not show that permanent structures beyond the six magazines and a

¹² Integrated Natural Resource Management Plan, Fleet and Industrial Supply Center Installations, Virginia, Atlantic Division, Naval Facilities Engineering Command; March 1999.

¹³ Phase I Architectural and Archeological survey at Cheatham Annex, York County, Virginia, Volume I, R. Christopher Goodwin & Associates, Inc.; September 26, 1996.

¹⁴ History of the Explosives Industry in America; Arthur Pine Van Gelder and Hugo Schlatter: Columbia University Press; 1927.

¹⁵ Ordnance Department letter, The Commanding Officer, Penniman General Ordnance Depot, Penniman, Virginia, to Ordnance Office, Field Service, Ammunition Supply Division, Washington DC; August 13, 1919.

¹⁶ Navy letter to National Park Service with attached comments from Commander, Naval Base Norfolk comments on the General Management Plan for the Colonial Historical Park; December 24, 1992.

recreational cabin were constructed on the property or that the land was disturbed in a substantive way after the Penniman Plant period¹⁷.

The Navy has completed a number of contaminant evaluations on the Cheatham Annex facility as part of the Navy's Installation Restoration Program, but the Navy has not evaluated the Penniman TNT Plant property in detail. An Initial Assessment Study (IAS) was conducted in 1983 that included the Cheatham Annex site and the wilderness property. A total of 12 potential contaminated sites were identified, but no sites were located on Cheatham Wilderness Area tract. The IAS was followed with two rounds of confirmation studies that focused on sites located within the Cheatham Annex footprint.

A Remedial Investigation Interim Report that summarized available data on identified potentially contaminated Cheatham Annex sites was completed in 1991 and was followed by collective and individual site investigations in 1994, 1997, 1998 and 1999. The Penniman Shell Loading Plant site, a completely different facility from the Penniman TNT Plant, was singled out and combined into one area of concern, the Penniman area of concern, and will be investigated in the future. Cheatham Annex was included on the National Priorities List by the Environmental Protection Agency on December 1, 2000. Because the Cheatham Annex Facility sites and Wilderness Area sites are unrelated, the industrial impacts related to Cheatham Annex operations were not considered as a part of this discussion.

Evidence of the low impact caused by the industrial usage is found in a series of environmental assessments. The Environmental Protection Agency reviewed the acreage history and undertook a sampling event in January 1999. The Environmental Protection Agency directed Roy F. Weston, Inc. to complete a study and prepared a Data Acquisition/Summary Report¹⁸ for the Penniman Shell Loading Plant area, which includes both Cheatham Annex and the Cheatham Wilderness Area properties. A total of 29 samples were taken including 14 waste source (soil) samples, 9 sediment samples, 2 water samples, 1 drinking water sample, and 3 background samples. Of the 29 locations sampled, only seven sample locations (number of site samples was derived from a review of sample location maps found in the Data Acquisition/Summary Report) fell wholly or in part within the Wilderness Area.

The samples were tested for CLP TAL Inorganics, TCL Organics and SW 846 Nitroaromatics and of those analytical results only the inorganic metal results proved to be problematic. Some of the results from the metal tests were elevated when compared to screening level EPA Region III Risk Based Concentrations for residential use. However, all of the metal test results were below site-specific risk baseline concentrations that were calculated by the Navy Environmental Health Center¹⁹ to reflect site conditions as well as current and future land usage. These site-specific RBC levels were used in this report as a comparative tool. Additionally, because there were no concentrations of explosive residue found in the samples taken from the Wilderness Area sites, and because the metal concentrations fell mostly within the ranges expected for naturally occurring metals, there is little evidence that the property was adversely affected during its industrial history.

In August 2001 the Navy reported results from a field investigation during which surface water and sediment samples were collected from water bodies that included Cheatham Pond.²⁰ The surface water samples were tested for TCL organics, nitroamines/nitroaromatics, total recoverable and dissolved TAL

¹⁷ Refer to the Aerial Photographic Analysis USN Supply Center - Cheatham Annex, Williamsburg, Virginia, EPA; May 1998.

¹⁸ Final Data Acquisition Summary Report, Penniman Shell Loading Plant Site, Williamsburg, York County, VA, Weston for EPA; October 29, 1999.

¹⁹ Full set of considered exposure factors and resultant comparative result tables found in Appendix C.

²⁰ Baker Environmental, Inc. Final Pond Study Report, Naval Weapons Station Yorktown; Yorktown, Virginia, Cheatham Annex Site; August 8, 2001.

metals, cyanide, hardness and the herbicide Diaquat. The sediment samples were analyzed for TCL organics, explosive compounds, TAL metals, cyanide, total organic carbon, acid volatile sulfides, and simultaneously extracted metals. Sample results from Cheatham Pond surface water when compared with RBCs exhibited elevated concentrations of dissolved arsenic and dissolved thallium, and the pond sediment results exceeded residential soil RBCs for aluminum, arsenic, chromium, iron, manganese, thallium, and the herbicide Diaquat. These contaminant levels are linked to natural soil conditions or possibly operational practices related to the pond management, to overland storm water run off and to Cheatham Annex's practice of discharging storm water directly into the pond. Diaquat was used by the Navy to control water plant growth in the pond until 1995, and storm water collected from much of the north part of the facility is discharged into the pond. Storm water discharge can contain sediment and debris received from the facility's many material storage sites. Additionally, the pond is considered eutrophic. This is a common lake situation linked to excess amounts of dissolved nitrogen and phosphorus. In the case of Cheatham Pond, Navy practices exasperated pond conditions. Beginning in the 1950's and continuing until 1997, the Navy followed common wisdom that suggested applying nitrogen and phosphorous fertilizer to ponds was useful in suppressing aquatic vascular plant growth. Because the Navy acknowledges these pond conditions, and that their impacts are being investigated as part of the Installation Restoration program, the Pond's management and condition was not considered as part of this industrial legacy discussion.

5.0 Environmental Liability Discussion

Generally, a property's environmental liability is related to the property's land-use. This review was developed to investigate the Cheatham Wilderness Area property's land-use in order to allow the Navy to evaluate what environmental liability might be associated with acquiring the property. No human health or ecological risk assessment efforts were completed for this review, and this review is not intended for use as a human health or ecological risk evaluation. Additionally, since Cheatham Annex is an operational facility, any condition related to those operations is not considered part of this review and their environmental impact to the property is discounted. This has particular importance to any discussion concerning Cheatham Pond. This review considered three primary past land-uses associated with the Wilderness property: industrial, agricultural, and recreational.

Industrial Use - Ordnance Production - The property's industrial land-use environmental liability seems to be low risk. Regionally, land-usage prior to the World War I was predominantly agricultural and the properties making up the Cheatham Wilderness Area property were farmlands. The DuPont Company in 1916 seeing the opportunity to grow its explosives business purchased some of this farmland and built a TNT plant. Located mostly on what is now the Cheatham Wilderness Area property, the Penniman TNT Plant consisted of manufacturing and storage magazine facilities. Prior to the plant becoming active, the company changed its plans and decided not to use the facility, but rather, to construct a shell loading plant as per US Government request and contracts. This plant was built on land that is now within the Cheatham Annex boundary; however, the Penniman TNT Plant property was used to store supplies used at the shell loading plant. The shell loading plant was completed in mid 1918, and the war ended in November 1918. At the end of the war and after only a few months of production, the factory closed. After the war and up to 1926, DuPont continued to use the magazine area for ordnance supply storage until the last of the stores were shipped and the property was sold.

The chemical legacy related to a TNT plant and associated storage area from that period of time is TNT (trinitrotoluene) and ammonium nitrate. TNT is known to be persistent in a soils environment, but

Internet literature²¹ indicates that TNT is soluble in ground and surface waters and is biodegradable with limited bioaccumulation and no biomagnification. Ammonium nitrate is very soluble in water. The ammonium ion is adsorbed by soil, but the product is biodegradable and it does not show any bioaccumulation phenomena. The risk of adverse legacy associated with the property's historical industrial usage appears minimal. This observation is made after considering the age of the land-use period (60 years), the short duration of that industrial usage (6 months of production and 10 years of storage), the contaminants' reported persistence, and the lack of detection of nitroaromatics in soil samples taken from locations on the property.

Agricultural Use - The property since the end of World War I and certainly since 1926 has been in an undeveloped and idle condition. After the DuPont Company sold the property, the lands reverted to agricultural land-use. Analysis of aerial photographs of the area indicates that the Cheatham Wilderness Area property has been forested since at least 1942, and the 1937 photos exhibit mostly forested conditions with some openness in the magazine area. The persistently farmed areas in this area are sections that are now contained within the Cheatham Annex boundary. The types of contaminants normally associated with agricultural activities are fertilizers, pesticides, and petroleum hydrocarbons. The soils and the groundwater of the Cheatham Wilderness Area property were not monitored for fertilizer and pesticide contamination, but some soil samples were taken for metal analysis. Some trace metal detections were found in some of the soil samples taken at the site. The levels detected were within an order of magnitude of established the background ranges found at sites in the area, and for most of the metals, the levels were below EPA Region III Risk Based Concentrations for residential use. Because of the low problematic metal contaminant levels detected in the soil samples taken at the site and the lack of aerial photographic evidences for ground clearing and harvesting of timber, the conclusion that the site presents little risk for agricultural contaminant problems appears reasonable.

Recreational Use – Recreational use implies individual events of short duration and would indicate that an environmental risk associated with that use is limited. Problems with recreational use are metal contamination problems related to hunting activities, water and sediment contamination related to insect and weed control, landfill and burn pits related to trash disposal, and groundwater contamination related to sewage disposal.

Cheatham Annex was designated the Hampton Roads Navy Recreational complex in July 1987 and is currently providing recreational opportunities to military and civilian personnel. The Navy has managed the property since it was purchased at the beginning of World War II, and since 1970 the solid wastes generated through the operations at the site have been collected by private contractor and taken off the facility for disposal. The Navy tightly controls access to the property and regulates hunting activities. No hunting activities are allowed on National Park Service lands. Cheatham Pond is located within the Cheatham Wilderness Area property and it is the resource most susceptible to impact from recreational activities. As discussed earlier the Pond's sediment and surface water are contaminated. This condition isn't related to unknown recreational risks, but rather to Cheatham Annex operations or discontinued pond management practices. When the documented conditions related to Cheatham Pond are discounted and the restrictive controls the Navy maintains on the Wilderness property access and use are considered, the risk of undiscovered recreational impact related to the Wilderness Area property is minimal.

²¹ Agency for Toxic Substances and Disease Registry, *Toxicological Profile for 2,4,6-Trinitrotoluene (TNT) CAS#118-96-7*, <http://atsdr1.atsdr.cdc.gov/toxprofiles/tp81.html>; June 1995.

6.0 Conclusions and Recommendations for Future Work

Through this limited assessment a number of relevant investigative documents were reviewed and no condition or series of compounded conditions were uncovered that should be considered an impediment to the Navy's plan to acquire the Wilderness Area Property from the Department of Interior. The following situations were assessed:

- Prior to 1916 the property had been rural and used for agricultural purposes.
- From 1916 to 1926 the property now known as the Wilderness Area was owned by the DuPont Company and used to process and store munitions.
- From 1926 to 1942 the property was rural and either not used or used for agricultural purposes.
- In 1942 the Navy acquired the land, but left the acreage now known as the Wilderness Area Properties in an undeveloped state.
- In 1975 the Wilderness Area was conveyed to the General Services Administration, and in 1978 it was received by the National Park Service and used as buffer. The land remained undeveloped.
- In 1992 the Navy through an interagency agreement resumed management of this undeveloped acreage and continued to manage the property as wilderness lands with limited access and development.
- The Navy is considering acquiring the property for reasons of national security and for limited training and recreational uses.

No land-use related condition was uncovered during this assessment that would adversely impact the Navy's plans to acquire the acreage.

Some conditions could dampen this limited assessment. Underground utilities and piping associated with the industrial TNT production facilities have not been assessed, and while the soils or sediments contained within such utilities may be heavily contaminated, their impact should be minor. The property has been used for training at different times since 1942, and while the nature of that training is not well documented; there is little evidence of environmental disruption resulting from that training. The property was not used as a live fire weapons range. The nature of the round craters found in the magazine area of the Penniman Property and observed by the EPA investigation team are not well documented, and no cause for the craters was found in the literature examined. Soils within the craters were tested and some metal contamination was observed, but no ordnance wastes were found in the soil sample results. Finally, the soils in the vicinity of the magazines have not been sampled for contamination. While, this review was limited and the potential for additional industrial or agricultural impact is possible, a follow-on environmental baseline study (EBS) with limited sampling should resolve most concerns.

This EBS should verify the Navy's understanding of the property's environmental condition through a process of property document checks, personnel interviews, and a limited, but specific sampling effort. The results from this sampling may result in additional areas of concern that may require further investigations. Current site information indicates, however, that the likelihood of the need for expansive investigation and remediation is minimal and that the potential risk for environmental liability related to this property is low.

ATTACHMENTS:

Appendix A - NPS/CAX Interagency Agreement concerning management of wilderness acreage

Appendix B - Army Corps of Engineers Findings and Determination of Eligibility

Appendix C - Risk Based Concentration Assumptions and Calculations

IMPORTANT REFERENCES ON FILE at LANTDIV

E.I. duPont de Nemours and Company, Inc., Smokeless Powder Department, A History of the duPont company's Relations with the United States Government, 1802 – 1927, 1928.

NEESA, Initial Assessment study (IAS) of Naval Supply Center, Cheatham Annex and Yorktown Fuels Division, February 1984.

R. Christopher Goodwin & Associates, Inc. Phase 1 Architectural & Archeological Survey, 26 September 1996.

EPA Region III, Aerial Photographic Analysis, USN Supply Center – Cheatham Annex, Williamsburg, Virginia, May 1998.

BA&H Records Research Trip Report for Site 8 US Navy Fleet Industrial Supply Center Cheatham Annex (Penniman Shell Loading Plant), 22 May 1998.

Roy F. Weston, Inc. Report for Cheatham Annex Munitions and Material Review Request, 11 December 1998.

Roy F. Weston, Inc. Penniman Shell Loading Plant Site – LHP 1918 Panoramic Photographic Review, 2 March 1999.

CH2MHill Federal Group, Ltd. 1999, Site Management Plan - Fiscal Year 2000. Naval Weapons Station Yorktown, Cheatham Annex Site, July 1999.

Roy F. Weston, Inc. Final Site Inspection Narrative Report, Penniman Shell Loading Plant Site, 9 August 1999.

Roy F. Weston, Inc. Final Data Acquisition/Summary Report, Penniman Shell Loading Plant Williamsburg, Virginia, 29 October 1999.

Baker Environmental, INC. Final Pond Study Report, Naval Weapons Station Yorktown; Yorktown, Virginia, Cheatham Annex Site, August 8, 2001.

APPENDIX A

**NPS/CAX Interagency Agreement Concerning Management of
Wilderness Acreage**

FINAL

INTERAGENCY AGREEMENT

BETWEEN

COLONIAL NATIONAL HISTORICAL PARK

AND

THE UNITED STATES OF AMERICA
NAVAL SUPPLY CENTER - CHEATHAM ANNEX

Article I

Background and Objectives

WHEREAS, the United States of America, acting by and through the Commander, Naval Supply Center, Cheatham Annex, under the direction of the Secretary of the Navy (hereinafter Navy), and through the Superintendent, Colonial National Historical Park (hereinafter Park), a unit of the National Park Service, United States Department of Interior, have a genuine interest in the proper management of that area of land known as the Cheatham Pond Area (hereinafter Area), said Area being Park property surrounded by Navy property; and

WHEREAS, the National Park Service (hereinafter Service) administers the Park that was established as a unit of the National Park System, United States Department of the Interior pursuant to 16 U.S.C. 81-81a; and

WHEREAS, the Director of the National Park Service (or his delegate) is required pursuant to 16 U.S.C. 1a-1 to authorize only those uses of land within the Park that will not be in derogation of the values and purposes for which the Park was established, except as may have been or shall be directly and specifically provided by Congress; and

WHEREAS, the Navy and the Park recognize the unique geographical relationships created by the location and boundaries of the Cheatham Pond area and the potential for incidents and management decisions to overlap jurisdictional lines; and

WHEREAS, the Navy and the Park have determined that the provision of specified resource management aid across jurisdictional lines will increase their mutual ability to preserve, as well as utilize the Cheatham Pond area; and

WHEREAS, the National Park Service has determined that the use of the herein mentioned Park property for Navy recreation purposes is neither incompatible with the public interest nor inconsistent with the use of such lands for Park purposes; and

WHEREAS, the Navy has reserved certain perpetual rights-of-way over the land within the Park as specified in the transfer of title documents; and

WHEREAS, this Agreement is further expected to continue and increase the already substantial cooperation enjoyed between the Service and the Navy.

NOW, THEREFORE, both parties do mutually understand and agree as follows:

Article II Statements of Work

The Agreement herein made is subject to the following terms and conditions:

(1) In accordance with Title 36 Code of Federal Regulations, all hunting activities within this area are prohibited. Exceptions to this regulation will only be allowed for the purpose of resource management, and then only on a case by case basis with the written approval of the Superintendent, Colonial National Historical Park (hereinafter Superintendent).

(2) The Navy will retain the right to fish in Cheatham Pond in accordance with regulations contained in Title 36 CFR and those promulgated by the Commonwealth of Virginia.

(3) Boats will not be permitted to be launched or landed across the Park property boundary along the York River or Queens Creek except in an emergency and to perform pier maintenance. The Navy will retain the right to continue existing recreational boating activity on Cheatham Pond by personnel authorized by the Navy. All such boating shall be conducted in accordance with applicable federal and state law.

(4) Access to the Area will be controlled by the Navy. All gates leading into the Area will have both a Navy and Park lock so placed that either Agency can gain access without the presence of the other.

(5) The Navy will retain the right to use the existing cabins in the Area in the same manner and under the same procedure as existed prior to transfer of title. The Navy is responsible for maintenance and upkeep on the structures and appurtenances. No new structures or appurtenances will be constructed without the specific written approval of the Superintendent.

(6) In accordance with Title 36 CFR, no open campfires will be permitted, except in grills or fireplaces provided at cabins.

(7) In accordance with Title 36 CFR, no camping will be permitted except in areas mutually agreed upon by the Superintendent and the Navy.

(8) In accordance with the title of transfer, the Navy reserves the perpetual rights-of-way for the operation and maintenance of its railroad trackage, water lines and utility lines with the right of access thereto as now constructed or extended within the Area. Any extension of existing utility lines will require prior written approval of the Service, to insure compliance with the National Environmental Policy Act and Section 106 requirements concerning cultural resource protection.

(9) The Service is granted access to all parts of the Area at any time. The Service will advise Cheatham security personnel of the presence of Service personnel in the Area.

(10) The Navy will maintain all existing road systems within the area in a safe and mutually acceptable manner. No new roads will be constructed or established without the specific written approval of the Superintendent.

(11) All insect and vegetation control procedures utilized will be in accordance with the Service biocide program and approved in advance by the Superintendent.

(12) The eradication or partial removal of any native or exotic species of vegetation or wildlife will only be accomplished with the prior written approval of the Park.

(13) All firefighting activities will be in accordance with the current Memorandum of Understanding covering this activity.

(14) All emergency operations for lost and injured persons will be conducted jointly where possible, with available manpower. The Service shall have primary responsibility for such activities. Whichever Agency first learns of the lost or injured person in the Area shall immediately contact the operations branch of the other Agency and arrange for proper response. Each Agency shall be responsible for its own costs for any such operation.

(15) Management and use of this Area will be in compliance with the National Park Service Management Policies, NPS-77 (Natural Resource Management), NPS-28 (Cultural Resource Management) applicable to natural resource management subzones, and applicable Federal, state and local laws and regulations related to rare, threatened and endangered species, water

quality, erosion and sedimentation control, air quality, Chesapeake Bay regulations, floodplain protection, and tidal and nontidal wetlands protection. All actions will be guided by an overall management plan approved by the Superintendent with proper NEPA compliance.

(16) The Service has primary responsibility for law enforcement for the Area. The Navy will notify the Park of any law enforcement incident that occurs in the Area. Navy personnel will assist the Park in any contacts within the Area involving military or civilian Navy personnel, or other persons in the Area in conjunction with Navy activities.

(17) The Navy will investigate and be responsible for any accidents and injuries to any personnel or equipment they allow into the Area. The Navy will immediately notify the Park of such incidents, and will supply the Park with a copy of any reports resulting from said investigation.

(18) The Navy agrees to obtain the permission of the Superintendent (or his delegate), before any construction or other changes to the Area are implemented. Any such change or construction will require prior compliance with the National Environmental Policy Act and Section 106 requirements concerning cultural resource protection.

(19) Upon termination of this Agreement, any changes or improvements made to the Area will be removed at Navy expense or will become the property of the Service.

(20) This Agreement shall not be construed as a grant of permanent interest or as an abandonment of use and occupancy, but shall be considered a permitted use of the land as herein described, anything herein contained to the contrary notwithstanding.

(21) The Navy shall comply with all applicable National Park Service regulations and Federal laws and other existing regulations promulgated thereunder in their use of the Area.

(22) The Navy agrees that upon expiration, revocation or termination of this Agreement the Area shall be left in as nearly the original condition as possible, as directed and approved by the Superintendent.

(23) The Navy agrees that this Agreement shall be subject to the express condition that the exercise thereof will not unduly interfere with the management and administration by the National Park Service of the lands affected thereby.

(24) Any alterations to this Agreement must be in writing and signed by the parties hereto. Renewals will be subject to regulations existing at the time of renewal and such other terms and conditions deemed necessary to protect the public interest.

(25) Both parties agree that this Agreement will in no way modify or supersede any agreements presently in effect involving either party to this Agreement.

(26) Except during emergency situations, the Superintendent, Colonial National Historical Park, shall be notified in writing no less than two weeks prior to the start of any previously approved construction, maintenance or repair on Park lands. This section does not include those items considered to be normal day to day structure maintenance. An on-site meeting will be conducted no less than one week prior to start of construction between representatives of the Park and the Navy construction-maintenance supervisor to determine and clarify the scope of the project and Park expectations. The Navy construction-maintenance supervisor will contact the Park on the morning of the first days work and each morning thereafter prior to entering the Park, advising the location and extent of work crews in the Park. Except in extraordinary situations, as determined at or prior to the on-site meeting above, all work on Park lands will be conducted on a Monday through Friday, 7:00 am through 5:00 pm basis. The Navy shall notify the Park of emergency situations as soon as practical. All work on Park lands shall be completed to the satisfaction of the Superintendent or his representative.

(27) The Service agrees that the Navy may, from time to time, conduct Wilderness Training sessions involving Navy personnel utilizing the area described herein. This training will be of a non-destructive type and will last no more than two weeks per session. The Navy will contact the Service no less than two weeks prior to each session.

(28) The Navy agrees to be responsible for administration and/or payment of any and all claims for property damage or personal injuries which may arise out of Navy activities authorized by this Agreement in accordance with the provisions of the Federal Tort Claims Act.

Article III Term of Agreement

The Agreement hereby made shall terminate five (5) years from the effective date hereof, at noon, Virginia time, unless prior thereto it is relinquished, abandoned, or otherwise terminated pursuant to the provisions of this Agreement or of any

applicable Federal law or regulation. In addition, the Agreement will expire at the end of the specified term unless formally reaffirmed or rewritten if necessary. The effective date of this Agreement shall be the date of its execution by the Superintendent (or his delegate).

Unless relinquished, abandoned, or otherwise terminated pursuant to the provisions of the Agreement or of any applicable Federal law or regulations, the Agreement will be considered for renewal.

Article IV Key Officials

This Agreement is subject to the conditions of the Superintendent or his representative, and shall comply with the regulations of the Secretary of the Interior and other applicable conditions as outlined herein.

Superintendent
Colonial National Historical Park
P.O. Box 210
Yorktown, Virginia 23690

The Officer in Charge for the Naval Supply Center, Cheatham Annex, or his delegate, shall direct operations and measures agreed to in this instrument.

Officer in Charge
Cheatham Annex, Naval Supply Center
Williamsburg, VA 23187-8792

Article V Property Utilization

Not applicable.

Article VI Prior Approval

Not applicable.

Article VII
Reports

Not applicable.

Article VIII
Termination

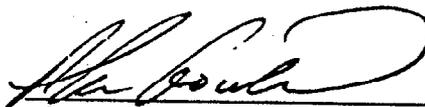
This Agreement may be terminated upon breach of any of the conditions herein or at the discretion of the Superintendent, Colonial National Historical Park. In addition, either party may terminate the Agreement by providing sixty (60) days written notice to the other.

Article IX
Required Compliance

During the performance of this Agreement, the participants agree to abide by the terms of Executive Order 11246 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex or national origin.

No member or delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

IN WITNESS WHEREOF, the Superintendent of Colonial National Historical Park, acting on behalf of the United States, in the exercise of the delegated authority from the Secretary of the Department of the Interior, has caused this Agreement number IA 4290-92-9002 to be executed this 29 day of September, 1992.



Alec Gould
Superintendent
Colonial National Historical Park

ACCEPTED THIS 2nd DAY OF OCTOBER, 1992.



CAPT K.R. Chase, SC, USN
Commanding Officer
Naval Supply Center, Cheatham Annex

APPENDIX B

Army Corps of Engineers Findings and Determination of Eligibility

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FOR FORMERLY USED DEFENSE SITES
FINDINGS AND DETERMINATION OF ELIGIBILITY
PENNIMAN SHELL LOADING PLANT
YORK COUNTY, VIRGINIA
SITE NO. CO3VA107400

FINDINGS OF FACT

The Penniman Shell Loading Plant was approximately 4,000 acres of land located on the York River. It was in a village called Penniman, on the Virginia middle peninsula in what is now York County, Virginia. E. I. DuPont purchased the site April 16, 1916. The U. S. Army Ordnance Department entered a contract with E. I. DuPont de Nemours and Company for construction and operation of a loading plant for shells and casings at this site on December 31, 1917. A new agreement was entered with DuPont on April 12, 1918, for a venture that included the lease of 645 acres of land to the Government in support of this project. As shown below, Dupont disposed of this property at the end of World War I. In April 1942, as part of the World War II effort, the Navy re-acquired a portion of this land. This became the U. S. Naval Mine Depot, and is now known as the Yorktown Naval Weapons Station, Cheatham Annex. Over the years, the Navy acquired a total of 3,363.45 acres.

The World War I Government site was divided into three sections being a village, a manufacturing, and a magazine area. The village had housing for the workers as well as other daily living amenities such as a post office, YMCA, YWCA, hotel, hospital, bank, drug store, etc. It was located along the York River in the northeast portion of the site. The manufacturing part of the plant had three areas with four filling lines in each. The plant was completed in mid-1918, at which time they began production. The magazine area was northwest of the manufacturing area and was used to receive raw materials and to ship the finished products from the site. It was arranged in two rows of five magazines each and one row of three magazines. Records indicated that the building construction was to be temporary in nature and said buildings were to be dismantled at the end of the Government contract. From World War II through today, Cheatham Annex has remained an active Naval Supply Depot.

At the end of World War I, November 11, 1918, the plant ceased operation, closed and building ownership reverted to DuPont on December 31, 1918. They were responsible for prompt removal of the plant and buildings from the leased land according to Article XVI of the April 12, 1918 agreement. This site was previously reported as Ordnance Plant, Inspector's School and General Supply Ordnance Depot. Much of the land reverted to agricultural use after World War I. Disposals reported in DERP-FUDS Report CO3VA02750, NSC Cheatham Annex are as follows: 544.96 acres to York County on 15 June 1976, 786 acres to the Department of Interior, 4 September 1979, 460 acres to the Commonwealth of Virginia on 6 May 1981. The Navy's records show they presently have accountability for 1,577.74 acres.

DETERMINATION

Based on the aforementioned findings of fact, it has been determined that all of the acreage except the 1,577.74 acres presently used by the Navy are eligible as a Defense Environmental Restoration Program-Formerly Used Defense Site (DERP-FUDS).

RECOMMENDED

DATE

ALLEN B. CARROLL
Colonel, Corps of Engineers
Commanding

APPROVED

DATE

M. STEPHEN RHOADES
Brigadier General USA
Commanding

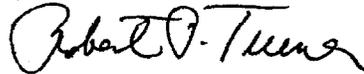
CENAO-RE-A (405-80a)

October 28, 1999

MEMORANDUM FOR Kirk Stevens
Programs and Project Management

SUBJECT: DERP-FUDS-Penniman Shell Loading Plant, York County, Virginia

1. Per your request, we are providing an updated findings and determination report on the subject site.
2. Point of contact for this action is Mr. David Parson at X7735.



ROBERT P. TURNER
Chief, Real Estate Division

Encl

CF:
Cheryl Fromme, CENAO-EN-G
Real Estate Division

APPENDIX C

Risk Based Concentration Assumptions and Calculations

The following tables were developed by the Navy Environmental Health Center located in Portsmouth Virginia. The first table is a list of exposure factors used as parameters in calculations used to derive site specific risk based comparative criteria. These calculated site-specific criteria are then compared with sample analytical results derived from soil and sediment samples collected in the Cheatham Annex Wilderness Area.

EXPOSURE FACTORS

FACTOR	AVERAGE	RME	SOURCE
DERMAL			
Surface Area Exposed	4500 cm ² /day	4500 cm ² /day	Dermal Assessment, EPA 2000
Adherence Factor	1 mg/cm ²	1 mg/cm ²	Dermal Assessment, EPA 2000
INGESTION			
Intake Rate	200 mg/day	200 mg/day	Standard Default Exposure Factors, EPA 1991
GENERAL			
Fraction of Contaminated Source	0.33	0.33	Assuming an 8 hour work-day
Exposure Frequency	30 days	90 Days	Site Specific
Exposure Duration	3years	3years	Standard Default Exposure Factors, EPA 1991
Body Weight	70 kg	70 kg	Risk Assessment Guidance Part A, EPA 1989
Averaging Time	1095 days	1095 days	Risk Assessment Guidance Part A, EPA 1989
Averaging Lifetime	25550 days	25550 days	Risk Assessment Guidance Part A, EPA 1989

*Recreational Activity - Sediment Sampling at Cheatham Wilderness Area

	PEN1-06	PEN1-07	PEN1-08	PEN1-09	EPA Region III RBC	Background	Site-Specific RBC
Arsenic	2.3 mg/kg	6.7 mg/kg	2.5 mg/kg	4.2 mg/kg	0.4258 mg/kg	<0.87 mg/kg	2.23E+1 mg/kg
Chromium	7.3 mg/kg	20.5 mg/kg	7.2 mg/kg	4.9 mg/kg	23.46 mg/kg	2.6 mg/kg	8.53E+5 mg/kg
Lead	52.05 mg/kg	11.5 mg/kg	3.7 mg/kg	5.1 mg/kg	400 mg/kg	11 mg/kg	NA
Manganese	220 mg/kg	101 mg/kg	6.4 mg/kg	20.8 mg/kg	156.43 mg/kg	16.08 mg/kg	1.00E+6 mg/kg
2,4,6-trinitrotoluene	0.25U mg/kg	0.25U mg/kg	0.25 U mg/kg	0.25U mg/kg	21 mg/kg	<0.25 mg/kg	3.32E+2 mg/kg

** Field Training Exercises - Surface Soil Sampling at Cheatham Wilderness Area

Analyte	PEN1-09	PEN1-10	PEN1-11	PEN1-12	EPA Region III RBC	Background	Site-Specific RBC
Arsenic	3.5 mg/kg	2.8 mg/kg	11.9 mg/kg	11.8 mg/kg	0.4258 mg/kg	<0.87 mg/kg	3.32E+1 mg/kg
Chromium	8.5 mg/kg	7.3 mg/kg	49.3 mg/kg	36.3 mg/kg	23.46 mg/kg	2.6 mg/kg	9.37E+5 mg/kg
Lead	42.3 mg/kg	28.9 mg/kg	13.4 mg/kg	9.8 mg/kg	400 mg/kg	11 mg/kg	NA
Manganese	95.83 mg/kg	122.5 mg/kg	81.58 mg/kg	67 mg/kg	156.43 mg/kg	16.08 mg/kg	4.84E+5 mg/kg
2,4,6-trinitrotoluene	0.25U mg/kg	0.25U mg/kg	0.25 U mg/kg	0.25U mg/kg	21 mg/kg	<0.25 mg/kg	9.48E+2 mg/kg