

1-260

DEPARTMENT OF THE ARMY
NORTH ATLANTIC DIVISION, CORPS OF ENGINEERS
90 CHURCH STREET
NEW YORK, N.Y. 10007-2979



IN REPLY REFER TO

CENAD-PL-F (1105-2-10c)

DEC 19 1991

MEMORANDUM FOR

COMMANDER, HUNTSVILLE DIVISION, ATTN: CEHND-DE, POB 1600,
HUNTSVILLE, AL 35807-4301

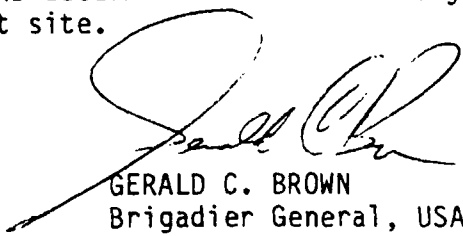
COMMANDER, DEPARTMENT OF THE ARMY HQ, U.S. ARMY CORPS OF ENGINEERS,
ATTN: CEMP-R, WASHINGTON, DC 20314-1000

COMMANDER, MISSOURI RIVER DIVISION, ATTN: CEMRD-MD-HA, 103 DOWNTOWN STATION,
OMAHA, NE 68101-0103

SUBJECT: DERP-FUDS Inventory Project Report for Site No. C03MD093000,
Assateague Island, Worcester County, Maryland

1. I am forwarding the subject INPR for appropriate action. The site is eligible for DERP-FUDS.
2. I recommend that CEHND determine if further study and remedial action are needed at the subject site.

Encls
as


GERALD C. BROWN
Brigadier General, USA
Commanding

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C03MD093001_01.08_0006





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NORTH ATLANTIC DIVISION, CORPS OF ENGINEERS
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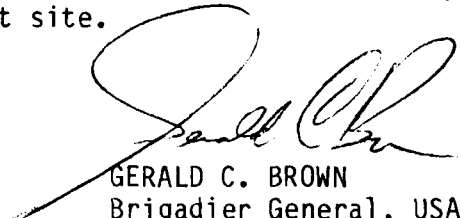
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GERALD C. BROWN
Brigadier General, USA
Commanding

✓ CF: CENAD-PP-PM



DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

CENAB-EN-HE (210)

SEP 20 1991

MEMORANDUM FOR Commander, North Atlantic Division, ATTN: CENAD-PL-F
(Mr. Arabatzis)

SUBJECT: Defense Environmental Restoration Program for Formerly
Used Defense Sites (DERP-FUDS), Inventory Project Report (INPR) for
Site No. C03MD093000, Assateague Island, Worcester County, Maryland

1. This INPR reports on the DERP-FUDS preliminary assessment of Assateague Island. A site visit was conducted on 24 July 1991. The Site Survey Summary Sheet and Attachments A, B, and C are at encl 1.
2. We determined that the site was formerly used by the Navy. A recommended Findings and Determination of Eligibility is at encl 2.
3. We also determined there is hazardous waste at the site eligible for cleanup under DERP-FUDS. The category of hazardous waste at the site is OEW. The Project Summary Sheet, Risk Assessment Code (RAC), and Attachment D are at encl 3 for the potential OEW project.
4. I recommend that you:
 - a. Sign the Findings and Determination of Eligibility; and
 - b. Forward a copy of this INPR to CEHND for the PA file, and for a determination of the need for further action regarding the potential OEW project.
5. Please feel free to call me or have your staff call my action officer, Mr. H. Leland Reeser, CENAB-EN-HE, (301) 962-2186.

3 Encls (12 cys)

FRANK R. FINCH, P.E.
Colonel, Corps of Engineers
Commanding

ENCL 1

SITE SURVEY SUMMARY SHEET
FOR
DERP-FUDS SITE NO. C03MD093000
12 SEPTEMBER 1991

SITE NAME: Assateague Island

LOCATION: Assateague Island, Worcester County, Maryland; see Location Map, Attachment A

SITE HISTORY: Assateague Island is a 37 mile long barrier island that parallels the Maryland and Virginia coastlines. The entire island encompasses approximately 17,552 acres of land; 8,018 acres in Maryland and 9,534 acres in Virginia. The U.S. Lighthouse Service owned portions of the island as early as 1806. A lighthouse was constructed at the southern portion of the island. The Coast Guard accepted a transfer of 49.88 acres from the U.S. Lighthouse Service in 1932. The Coast Guard established two lifesaving stations on the Virginia portion of the island. From approximately 1944 to 1946 or early 1947, the Navy reportedly established two rocket ranges on portions of the island along the Maryland coast (see Attachment B). The Navy ranges reportedly were used for target practice by land based aircraft and possibly by naval aircraft. No records related to the method of acquisition of these portions of the island by the Navy were found. Correspondence between National Park Service personnel and Mr. Adrien Smith, an enlisted man who served as a Navy spotter at the northern range from 1945 to 1946, substantiates the Department of Defense (DOD) usage. In addition, the Park Service historian at the site indicated that several people who lived on the island during this time remember bombing runs being conducted on the island. Physical evidence of DOD site usage in the form of World War II vintage ordnance washed ashore in July 1988. A case incident report was filed on 24 July 1988 by the National Park Service (see Attachment C). Investigations by the Department of the Navy, Mobile Unit 2, Explosive Ordnance Disposal (EOD) team based in Fort Story, Virginia revealed potential areas of concentrated ordnance buried just off shore near the North Ocean Beach protected swimming area. Burial of ordnance is consistent with the method of disposal practiced by DOD during the World War II era. No specific documents associated with DOD acquisition or disposal of property could be located.

Subsequent to DOD usage, much of the Maryland portion of the island was subdivided into individual lots. Many private dwellings and roads were constructed. National Park Service personnel relate that in 1963 a storm destroyed nearly all the structures that had been built on the island. At this time a decision was made to establish a National Park rather than to rebuild. Assateague Island National Seashore was formally authorized by an Act of Congress in 1965. The Park is administered by the U.S. National

Park Service. Between 1965 and the early 1970's, the Park Service acquired approximately 7,105 acres fee of which 6,900 acres fee are located in Maryland and 205 acres fee are located in Virginia. An additional 680 acres were acquired by the State of Maryland for use as Assateague State Park. The State of Maryland subsequently acquired an additional 16 acres for a total of 696 acres in Maryland. A total of approximately four acres of privately retained rights exist in the Maryland portion of Assateague Island. The remaining 418 acres of the Maryland portion of Assateague Island are currently owned by the U.S. Fish & Wildlife Service as part of the Chincoteague National Wildlife Refuge.

In 1943, the Chincoteague National Wildlife refuge was established. The refuge is owned by the U.S. Fish & Wildlife Service and consists of a total of 9,439 acres (9,021 acres in Virginia and 418 acres in Maryland). Less than one acre was retained by the U.S. Coast Guard for use as a lighthouse. The remaining 308 acres of the Virginia portion of Assateague Island are owned by the Commonwealth of Virginia.

SITE VISIT: Mr. Frank Graziano and Ms. June Ching of EA Engineering, Science, and Technology, Inc., under contract to the U.S. Army Corps of Engineers, Baltimore District, and Mr. Kirk Davis of Human Factors Applications, Inc., (subcontractor to EA Engineering), conducted a site visit of Assateague Island on 24 July 1991. During the site visit, Mr. Graziano, Ms. Ching, and Mr. Davis met with Mr. Brion Fitzgerald, the Chief Ranger of the Assateague Island National Seashore. Subsequent telephone conversations were held between Mr. Greg Johnson of EA and Mr. Gordon Olson of the National Park Service and Mr. John Schoerer of the U.S. Fish & Wildlife Service (USFWS).

CATEGORY OF HAZARD: OEW

PROJECT DESCRIPTION: There is one potential project at this site.

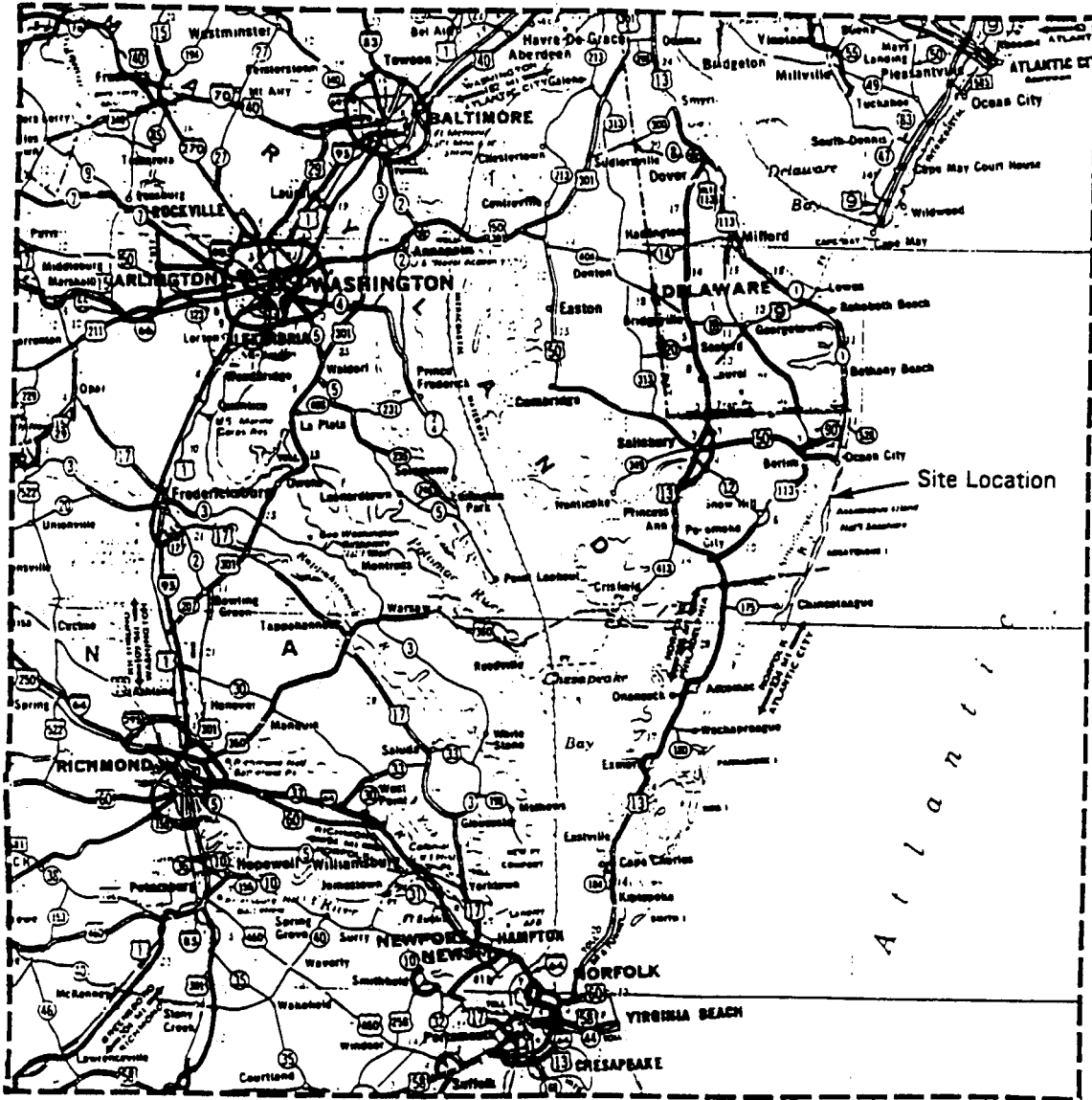
- a. BD/DR. No further action. Interviews with National Park Service and USFWS personnel indicate that all improvements made by DOD have been removed from the site.
- b. OEW. A project to verify the location of and remove/dispose buried World War II vintage ordnance from two locations is proposed. A case incident record was filed in July 1988 by the National Park Service. The record reported that buried World War II ordnance had washed ashore in the proximity of the North Ocean Beach swimming area at Assateague Island National Seashore. An underwater survey conducted by a Department of the Navy EOD team revealed one of two areas where buried ordnance were suspected to be located. The possible locations of the two buried ordnance disposal sites are shown on Attachment B. Only the Northern disposal site has actually been confirmed by U.S. Navy EOD underwater survey. The possible location(s) of the southern

burial disposal site is solely based on information obtained by National Park Service personnel. The confirmation of location and removal of ordnance from both the northern and southern disposal sites is proposed. The northern disposal site is currently suspected to be under water just off the North Ocean Beach swimming area. With this portion of the island receding, ordnance believed to have been buried at the high water mark in the 1940's would now be submerged. The southern dump site is believed to still be on dry land since the southern portion of the island has been fairly stable. Both sites should be reasonably easy to locate in the field using large scale search techniques since the potentially large volume of ordnance would present a large target.

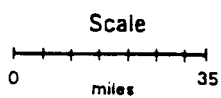
AVAILABLE STUDIES AND REPORTS: United States Department of the Interior, National Park Service, Case Incident Record (No. 880407), 14 July 1988, Attachment C.

PA POC: William C. Piccirilli, CENAB-EN-HE, (301) 962-3542

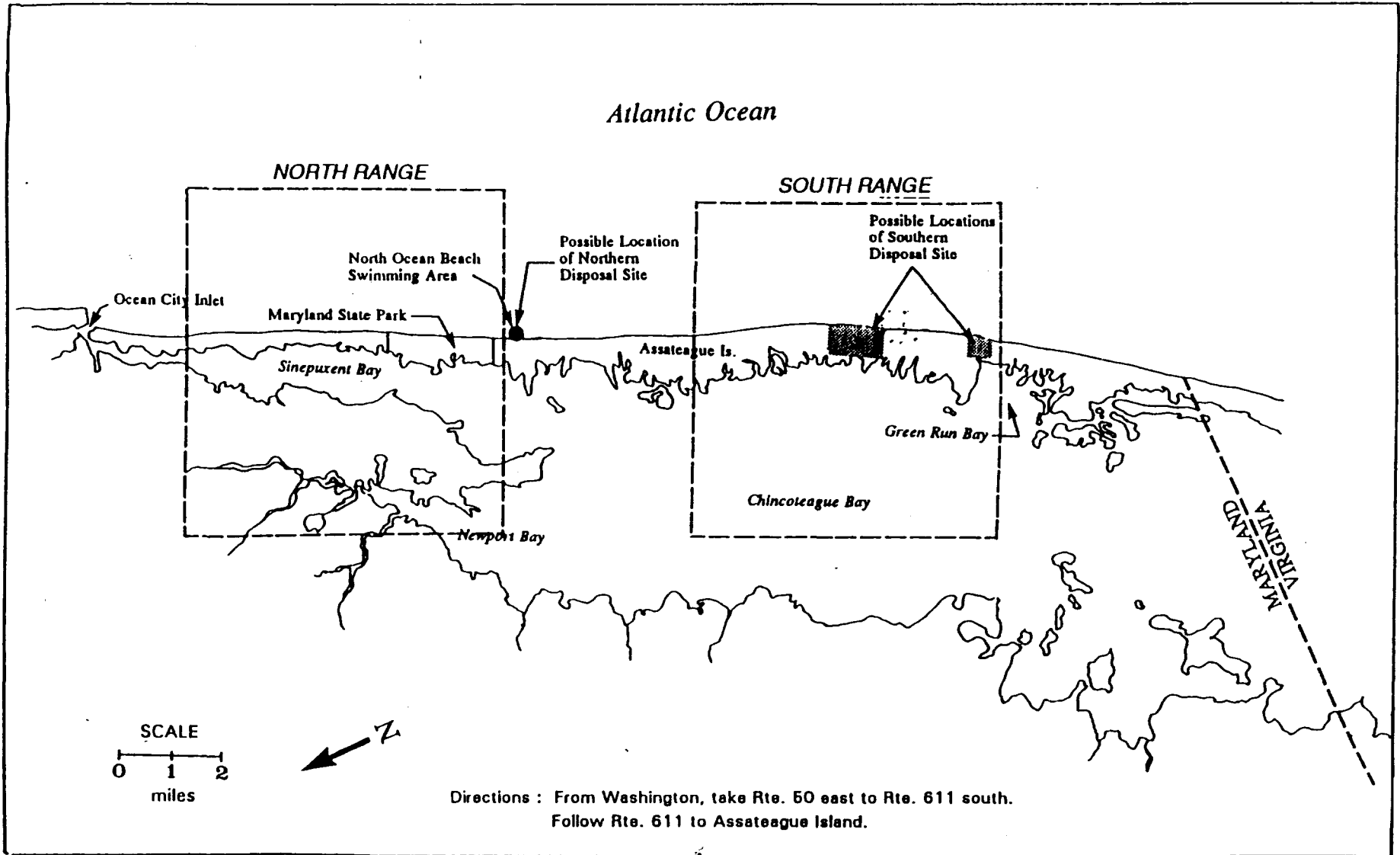
ATTACHMENT A
LOCATION MAP
ASSATEAGUE ISLAND
Site No. C03MD093000



NOTE : See Site Map, Attachment B.



ATTACHMENT B
SITE MAP
ASSATEAGUE ISLAND
Site No. C03MD093000



ATTACHMENT C

Case Incident Record
(No. 880407)

Prepared by:

U.S. Department of the Interior
National Park Service

SUPPLEMENTARY CASE/INCIDENT RECORD

ORGANIZATION (PARK) NAME Assateague Island National Seashore		CASE/INCIDENT NUMBER 8 8 0 4 0 7	
LOCATION OF INCIDENT Sinepuxent District approx. 1/2 mile N. of guarded beach.		DATE OF INCIDENT MO DA YR 0 7 1 4 8 8	
NATURE OF INCIDENT Discovery of explosive ordinance devices			
COMPLAINANT'S NAME		COMPLAINANT'S ADDRESS	

RESULTS OF INVESTIGATION

7/14/88, 2000 hrs: I received a call from ASIS Dispatch advising that the Ft. Meade EOD Team had arrived, secured the devices, and departed enroute Ft. Meade. Lt. Chambliss advised they would dispose of the devices on their firing range. Chambliss identified the items as 5" shells with at least one rocket motor. He further speculated the source of the shells may be a hole just offshore approx. 15 yards. At this time I made plans to contact U.S. Navy EOD Units to request assistance in checking out this possibility.

7/15/88, 0830 hrs: I contacted U.S. Navy EOD Unit at Ft. Story (Virginia Beach) and speak to a Lt. Long. Long advises we have a reasonable request but we will have to make the request through the Department of the Interior to DOD, Chief of Naval Operations Lt. Long did give me the name of a Lt. Commander Albrecht (EOD Group II) and a phone number (804-422-7191) that WASO can call for faster response.

0900 hrs: I contact Walt Dabney, Chief Ranger, WASO Ranger Activities Division, and advise him of the situation. Dabney advises he will contact Lt. Cmmdr. Albrecht for assistance. I then call VAFO to update Address.

1200 hrs: I contact Lt. Cmmdr. Albrecht who advises that Dabney has contacted him and we will have to go through CNO for priority clearance. I then contact Dabney and we discuss the possibility of NPS Dive teams exploring the hole offshore.

1230 hrs: I contact ASIS guard Mike Kiser to ask him to swin the area with mask and snorkel to determine the possibility of other shells in the hole. Kiser avises that another shell has just washed ashore in the same area. I contact Ranger Trimble to alert him and ask him to secure the area, closing it to swimming, fishing, surfing. I then call Ft. Meade EOD to request assistance again. I also call Dabney back and leave a message about the additional ordnance washing ashore.

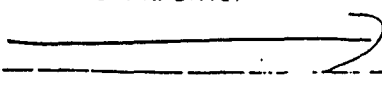
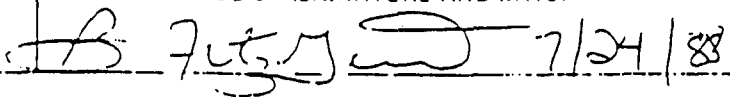
1430: Receive word from 144th EOD they will respond, ETA approx. 1700 hrs.

1545 hrs: Dabney returns my call to advise he had been to see Assistant Sec. of the Interior Alan Fitzsimmons about our request for Navy assistance. Fitzsimmons contacted a Captain Bill Coehen at (202) 692-3227 to make the request for CNO assistance.

1615 hrs: I meet with protection and guard personnel to update them on plan of action until Navy responds. We will close the area to water activity, check it every hour during daylight hours to check for further ordnance, guards and protection staff share responsibility for keeping visitors out of the area. I advised Trimble to contact me at home for further developments.

SUBMITTED BY (SIGNATURE AND DATE)

APPROVED BY (SIGNATURE AND DATE)

NATIONAL PARK SERVICE
SUPPLEMENTARY CASE/INCIDENT RECORD

ORGANIZATION (PARK) NAME Assateague Island National Seashore	CASE/INCIDENT NUMBER <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 12.5%;">8</td> <td style="width: 12.5%;">8</td> <td style="width: 12.5%;">0</td> <td style="width: 12.5%;">4</td> <td style="width: 12.5%;">0</td> <td style="width: 12.5%;">7</td> </tr> </table>	8	8	0	4	0	7						
8	8	0	4	0	7								
LOCATION OF INCIDENT Sinepuxent District beach, approx. 1/2 mile N. of guarded beach	DATE OF INCIDENT <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td colspan="2" style="font-size: small;">MO</td> <td colspan="2" style="font-size: small;">DA</td> <td colspan="2" style="font-size: small;">YR</td> </tr> <tr> <td style="width: 12.5%;">0</td> <td style="width: 12.5%;">7</td> <td style="width: 12.5%;">1</td> <td style="width: 12.5%;">4</td> <td style="width: 12.5%;">8</td> <td style="width: 12.5%;">8</td> </tr> </table>	MO		DA		YR		0	7	1	4	8	8
MO		DA		YR									
0	7	1	4	8	8								
NATURE OF INCIDENT Discovery of explosive ordinance devices													
COMPLAINANT'S NAME	COMPLAINANT'S ADDRESS												

RESULTS OF INVESTIGATION

1730 hours: I received a call from a Sergeant First Class Michael Dillaplain (team leader 144th EOD) who advises he has secured the ordinance found this date. Dillaplain request permission to go through DOD channels to contact Navy EOD Units to respond and check out the area just offshore. I advise Dillaplain that any assistance he could provide in getting the Navy to respond would be appreciated.

7/16/88, 0800 hrs: I received word that Lt. Cmmdr. Albrecht had called the previous evening at approx. 1800 to advise a Navy EOD team would be enroute on 7/16. Further received a message to contact a Lt. Thetford at (804) 422- 7955.

0830 hrs: I made contact with Lt. Thetford who advised that the U.S. Navy Mobile Unit II (EOD DET) would be enroute with six persons, ETA at ASIS approx. 1500 hrs. Thetford initially requested permission to leave ordinance found at ASIS until arrangement for its disposal could be secured. I denied this request due to lack of secure storage area. Thetford also requested I secure quarters for the EOD team. After contacting numerous hotels I finally contacted the Ocean City Chamber of Commerce who assisted in locating temporary quarters for the night.

0930 hrs: Sgt. Dillaplain arrived back on site with orders to secure the area and turn it over to Navy EOD upon their arrival.

1220 hrs: Received word from Sgt. Dillaplain that he had located another shell which had washed ashore.

1530 hrs: U.S. Navy EOD Mobile Unit II arrives with Lt. Jeff Danshaw in charge. We go out to the site to survey the situation. At approx. 1630 hrs. Sgt. Dillaplain turns the area over to Lt. Danshaw and the EOD Unit from Ft. Meade departs the area. Danshaw advises he will begin underwater survey of the area in the morning.

From 7/17 through 7/20 Lt. Danshaw's team conducted an underwater survey of the suspect area (see attached diagram compiled by Danshaw). At a debriefing on 7/21/88 attended by ASIS Supt. Rector, Asst. Supt. Pagan, District Ranger Hartley, Ranger Sampsell, Senior Chief Tom Herman, Lt. Danshaw, and myself; Danshaw explained the following re: his survey:

He believes the ordinance to be washing out of a trench dug in the vicinity of an old Air Corps target range used around WW II (this matches reports from several Park employees who lived near here during this time period). As the target area was cleared they probably dug a trench about 20-30' deep and buried the expelled shells, etc. The trench was originally located on Assateague, but due to island migration it has now

SUBMITTED BY (SIGNATURE AND DATE)

APPROVED BY (SIGNATURE AND DATE)

7/21/88

SUPPLEMENTARY CASE/INCIDENT RECORD

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NATURE OF INCIDENT Discovery of explosive ordinance devices			
COMPLAINANT'S NAME		COMPLAINANT'S ADDRESS	

RESULTS OF INVESTIGATION

become exposed to the actions of surf and currents.

Danshaw believes the ordinance is a type of Air Force (U.S. Army Air Corps) shell (see the attached diagrams) and rocket used for target practice. While Danshaw feels the chances of an explosive incident are relatively small, he asked us to keep the area closed to public access until he can have a Technical Center x-ray the shells for explosives.

During the survey three main areas of ordinance concentration were identified using underwater ordinance detectors. The number of hits with the detectors would make it virtually impossible for Danshaw's small team to do a complete excavation of the area. Determination for disposal/disposition of these sites will be made after the recovered shells are x-rayed.

Total items recovered during the incident"

1. Seven rocket motors, one of which appeared not have been fired/impacted.
2. Six five inch shells, two of which appeared not to have been fired/impacted.
3. Numerous lead/alloy ballistic tips used to weight and improve aerodynamics on practice rockets.

Key personnel involved:

SFC Michael Dillaplain, U.S. Army, 144 th EOD. (301) 677-5182

Lt. Jeff Danshaw, U.S. Navy, EOD Group II. (804) 422-7073 or 7992

Chief Petty Officer Slade, U.S. Coast Guard Station Ocean City. Chief Slade provided quarters to the Navy team several nights during the survey.

When Lt. Danshaw departed with his team on 7/21/88 he advised we contact COM NAV BASE Duty Officer at (804) 444-7097 if we locate any further items. They will pass info on to NAV BASE EOD Group II.

SUBMITTED BY (SIGNATURE AND DATE)

[Signature]

APPROVED BY (SIGNATURE AND DATE)

B. J. [Signature] 7/24/88

ENCL 2

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FOR FORMERLY USED DEFENSE SITES
FINDINGS AND DETERMINATION OF ELIGIBILITY
ASSATEAGUE ISLAND
ASSATEAGUE ISLAND, WORCESTER COUNTY, MARYLAND
SITE NO. C03MD093000

FINDINGS OF FACT

1. Assateague Island is a 37 mile long barrier island which parallels the Atlantic coast of Maryland and Virginia. The entire island contains approximately 17,552 acres: 8,018 acres in Maryland and 9,534 acres in Virginia. No documents were found through Baltimore District, Worcester County, or U.S. National Park Service real estate records indicating that the Department of Defense (DOD) ever established legal interest in the property.

2. Prior to 1943, the U.S. Lighthouse Service and U.S. Coast Guard constructed and operated one lighthouse and two lifesaving stations on the Virginia portion of the island. From approximately 1944 to 1946 or early 1947, it is alleged that portions of the beach were used by the Department of the Navy as bombing ranges, although no official documentation was located. Since records were unavailable, the dates of DOD use and type of improvements constructed cannot be established. Furthermore, since no records indicating DOD control of the site are available, it is believed that the site was not under DOD control during the period of DOD ownership or use. Subsequent to a July 1988 incident where World War II vintage ordnance washed ashore near the North Ocean Beach swimming area, an ordnance investigation of the northern buried ordnance disposal site was conducted by a U.S. Navy Explosive Ordnance Detachment (EOD), Mobile Unit 2 based at Fort Story, Virginia. Based on the U.S. Navy EOD ordnance investigation and interviews with National Park Service personnel, it is likely that there are two possible locations where World War II vintage ordnance is buried. The possible locations of the two buried ordnance disposal sites are shown in Attachment B. The northern disposal site is suspected to be under water just offshore from the North Ocean swimming area on the Maryland portion of Assateague Island which is currently under National Park Service control. The possible location(s) of the southern buried ordnance disposal site is believed to be on dry land on the Maryland portion of Assateague Island which is currently owned by the National Park Service. It is also alleged by previous island residents that Navy ships fired on the island from the ocean; that aircraft were launched from naval vessels at sea to also fire on the island; and that the island was used for militia training, based on discussion with Mr. Brion Fitzgerald - Chief Ranger at Assateague Island National Seashore.

3. Dates, acreage, and method of disposal by DOD cannot be established. Worcester County, Baltimore District, and National Park Service real estate records were reviewed. No documents related to DOD acquisition or disposal of Assateague Island lands were located. The current owners of the site include the State of Maryland (696 acres in Maryland). The State of Maryland property is used as Assateague Island State Park. The U.S. National Park Service owns approximately 6,900 acres in Maryland and 205 acres in Virginia and operates the site as Assateague Island National Seashore. The U.S. Fish & Wildlife Service (USFWS) owns approximately 418 acres in Maryland and 9,021 acres in Virginia. USFWS uses their property as the Chincoteague National Wildlife Refuge. The Commonwealth of Virginia owns 308 acres of salt-marshland in Virginia and the U.S. Coast Guard owns less than one acre at the southern portion of the Virginia portion of the site which it operates as a lighthouse. Approximately four acres of privately retained rights remain as inholdings in the Maryland portion of the site.

DETERMINATION

Based on the foregoing Findings of Fact, the site has been determined to be formerly used by DOD. It is therefore eligible for the Defense Environmental Restoration Program. Formerly Used Defense Sites established under 10 USC 2701 et seq.

Recommended for Signature:

9/20/91
Date

Frank R. Finch
FRANK R. FINCH, P.E.
Colonel, Corps of Engineers
Commanding

19 Dec 1991
Date

Gerald C. Brown
GERALD C. BROWN
Brigadier General, USA
Commanding

ENCL 3

PROJECT SUMMARY SHEET
FOR
DERP-FUDS OEW PROJECT NO. C03MD093001
ASSATEAGUE ISLAND
ASSATEAGUE ISLAND, WORCESTER COUNTY, MARYLAND
SITE NO. C03MD093000
12 SEPTEMBER 1991

PROJECT DESCRIPTION: From approximately 1944 until 1946 or early 1947, two rocket ranges were established by the Department of the Navy on Assateague Island. When the ranges were abandoned, ordnance was collected and buried at disposal sites located near each range. In July of 1988, ordnance washed ashore near the North Ocean Beach swimming area, which is in the reported area of the northern rocket range. The ordnance was removed and disposed by the U.S. Army 144th EOD unit based at Fort Meade, Maryland. Subsequent investigations by the Department of the Navy revealed concentrated pockets of suspected ordnance located just offshore. During the ordnance exposure incident, seven rocket motors, six 5-inch shells, and numerous lead/alloy ballistic tips were recovered. No removal of the majority of the suspected ordnance has been undertaken.

During the 24 July 1991 site visit conducted by EA Engineering and Human Factors Applications, Inc. personnel, attempts were made to locate the buried ordnance disposal site for the southern rocket range. Due to the large areal extent of the southern range, a comprehensive search was not conducted. The second buried ordnance disposal site was not located during the July 1991 site visit. However, it is very likely that a second buried ordnance disposal site does exist. During the July 1991 site visit, a piece of a 5-inch rocket motor was discovered in one of the reported areas of the southern range. Since both disposal sites pose a threat to public safety, it is recommended that a large scale search technique be used to identify the exact locations of the trenches and that the ordnance be excavated and removed. (See Human Factors Applications, Inc. Evaluation and Recommendations, Attachment D.)

PROJECT ELIGIBILITY: While no records of DOD acquisition of property on Assateague were found, correspondence with an enlisted man who worked as a Navy spotter on the northern range as well as personal recollections of former island residents substantiate the use of Assateague Island by the Navy. In addition, the 1988 discovery by the Navy of potentially large amounts of ordnance just offshore near the reported location of the northern rocket range confirms DOD usage of the site area. The project has been evaluated in accordance with Appendix A in memorandum CEMP-RT, dated 5 April 1990.

POLICY CONSIDERATIONS: The buried ordnance was a result of former Department of the Navy use of the property and poses an imminent threat to public safety, especially in the proximity of the North Ocean Beach swimming area. While the southern range is located in an area only accessible by four-wheel drive vehicles, the possibility of park visitors coming into contact with ordnance from the second dump site does exist. No deeds or records were found absolving the Navy of responsibility.

PROPOSED ACTIVITIES: The INPR should be referred to HND for determination of further action.

RAC: Attached

DISTRICT POC: William C. Piccirilli, CENAB-EN-HE, (301) 962-3542

APPENDIX A
RISK ASSESSMENT PROCEDURES FOR
EXPLOSIVE ORDNANCE (OEW)

Site Name Assateague Island Rater's Name K. Davis
 Site Location Assateague Island, MD Organization Human Factors Applications, Inc.
 DERP Project # C03MD093001 RAC 2

EXO RISK ASSESSMENT:

This risk assessment procedure was developed in accordance with MIL-STD 882B and AR 385-10.

The EXO risk assessment is based upon documented evidence consisting of records searches, reports of Explosive Ordnance Disposal (EOD) detachment actions, and field observations, interviews, and measurements. These data are used to assess the risk involved based upon the hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

Any field activities should be made with the assistance of qualified EOD personnel.

Part I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPE OF ORDNANCE

A. Conventional Ordnance and Ammunition

	<u>YES</u> VALUE	<u>NO</u> VALUE	VALUE
Small Arms (.22 cal - .50 cal)	2	0	<u>0</u>
Medium/Large Caliber (20 mm and larger)	10	0	<u>10</u>
Bombs, Explosive	10	0	<u>0</u>
Bombs, Practice (w/spotting charges)	6	0	<u>6</u>
Grenades, Hand and Rifle, Explosive	10	0	<u>0</u>
Grenades, Practice (w/spotting charges)	6	0	<u>0</u>

Assateague Island

DERP Project No. C03MD093001

	<u>YES</u> VALUE	<u>NO</u> VALUE	VALUE
Landmines, Explosive	10	0	<u>0</u>
Landmines, Practice (w/spotting charges)	6	0	<u>0</u>
Rockets, Guided Missiles, Explosive	10	0	<u>8</u>
Detonators, Blasting Caps	10	0	<u>0</u>
Demolition Charges	10	0	<u>0</u>
Conventional Ordnance and Ammunition Value (Maximum of 10).			<u>10</u>

B. Pyrotechnics

	<u>YES</u> VALUE	<u>NO</u> VALUE	VALUE
Any Munition Containing White Phosphorus or other Pyrophoric Material (i.e., Spontaneously Flammable)	10	0	<u>0</u>
Any Munition Containing a Flame or Incendiary Material (i.e., Napalm, Triethylaluminum Metal Incendiaries)	6	0	<u>0</u>
Military Flares	4	0	<u>0</u>
Pyrotechnics Value (Maximum of 10).			<u>0</u>

C. Bulk High Explosives (Bulk explosives not an integral part of conventional ordnance).

	<u>YES</u> VALUE	<u>NO</u> VALUE	VALUE
Primary or Initiating Explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, etc.)	10	0	<u>0</u>
Booster, Bursting or Fuse Explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	10	0	<u>0</u>

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	<u>YES</u> VALUE	<u>NO</u> VALUE	VALUE
Military Dynamite	10	0	<u>0</u>
Less Sensitive Explosives (Ammonium Nitrate, Favier Explosives, etc.)	3	0	<u>0</u>
High Explosives Value (Maximum value of 10).			<u>0</u>

D. Propellants

	<u>YES</u> VALUE	<u>NO</u> VALUE	VALUE
Solid or Liquid Propellants	6	0	<u>6</u> <u>6</u>

E. Chemical Agents/Radiological Materials/Munitions

	<u>YES</u> VALUE	<u>NO</u> VALUE	VALUE
Radiological	25	0	<u>0</u>
Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25	0	<u>0</u>
Incapacitating Agent (BZ)	10	0	<u>0</u>
Riot Control and Miscellaneous (Vomiting, Tear, Chlorine, Mustard Simulant)	5	0	<u>0</u>
Any Munition Containing Smoke, Illumination, Signal Charge	4	0	<u>4</u>

Chemical Agents/Radiological Materials/Munitions Value (Maximum 25).
4

Total Ordnance and Explosive Waste Characteristics Value (Total =
A + B + C + D + E with a Maximum value of 61). 20

TABLE 1

HAZARD SEVERITY

Description	Category	Value
CATASTROPHIC	I	≥ 21
CRITICAL	II	$\geq 13 < 21$
MARGINAL	III	$\geq 5 < 13$
NEGLIGIBLE	IV	< 5

* Apply Hazard Severity to Table 3.

Part II. Hazard Probability. The probability that a hazard has been or will be created due to the presence and other rated factors of explosive ordnance (EXO) on a formerly used DOD site.

AREA, EXTENT, ACCESSIBILITY OF CONTAMINATION

A. Locations of Contamination

	<u>YES</u> VALUE	<u>NO</u> VALUE	VALUE
Within Tanks, Pipes, Vessels or Other confined locations.	5	0	<u>0</u>
On the surface or within 3 feet.	5	0	<u>5</u>
Inside walls, ceilings, or other parts of Buildings or Structures.	4	0	<u>0</u>
Subsurface, greater than 3 feet in depth.	3	0	<u>3</u>
Value for location of EXO (Maximum Value of 5).			<u>5</u>

B. Distance to nearest inhabited locations or structures likely to be at risk from EXO site (roads, parks, playgrounds, and buildings).

<u>Distance to Nearest Target</u>	VALUE
Less than 1250 feet	5
1250 feet to 0.5 miles	4
0.5 miles to 1.0 mile	3
1.0 mile to 2.0 miles	2
2.0 miles to 5.0 miles	1
Over 5.0 miles	0
Distance to Persons Value (Maximum Value of 5).	
	<u>5</u>

C. Numbers and types of Buildings within a 2 mile radius measured from the hazardous area, not the installation boundary.

Number of Buildings	VALUE
0	0
1 to 10	1
11 to 50	2
51 to 100	3
101 to 250	4
251 or Over	5
Number of Buildings Value (Maximum Value of 5).	<u>1</u>

D. Types of Buildings	VALUE
Educational, Child Care, etc.	5
Residential, Hospitals, Hotels, etc.	5
Commercial, Shopping Centers, etc.	5
Industrial Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
Military	1
No Buildings	0
Types of Buildings Value (Maximum Value of 5).	<u>5</u>

E. Accessibility to site refers to the measures taken to limit access by humans or animals to ordnance and explosive wastes. Use the following guidance:

Barrier	Assigned Value
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility;	0

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or Barrier	Assigned Value
An artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility).	0
Security guard, but no barrier	1
A barrier, (any kind of fence) but no separate means to control entry	2
Barriers do not completely surround the facility	3
No barrier or security system	5
Accessibility Value (Maximum Value of 5).	<u>5</u>

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion by beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.

	VALUE
None Anticipated	0
Expected	5
(Maximum Value of 5)	<u>5</u>

Total value for hazard probability.
 Sum of Values A through F. 26
 (Not to exceed 30). Apply this value
 to Hazard Probability Table 2 to determine
 Hazard Level.

TABLE 2

HAZARD PROBABILITY

Description	Level	Value
FREQUENT	A	≥27
PROBABLE	(B)	≥21 <27
OCCASIONAL	C	≥15 <21
REMOTE	D	≥ 8 <15
IMPROBABLE	E	<8

* Apply Hazard Probability to Table 3.

Part III. Risk Assessment. The risk assessment value for this site is determined using the following Table 3. Enter with the results of the hazard probability and hazard severity values.

TABLES 1 AND 2

HAZARD SEVERITY - II
 (from Table 1)

HAZARD PROBABILITY - B
 (from Table 2)

TABLE 3

Probability Level		FREQUENT A	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
Severity Category:						
CATASTROPHIC	I	1	1	2	3	4
CRITICAL	II	1	2	3	4	5
MARGINAL	III	2	3	4	4	5
NEGLIGIBLE	IV	3	4	4	5	5

Note: The risk assessment code for EXD is not equivalent to the risk assessment code prescribed in AR 385-10.

RISK ASSESSMENT CODE (RAC)

- RAC 1 Imminent Hazard - Emergency action required to mitigate the hazard or protect personnel (i.e., Fencing, physical barrier, guards, etc.).
- RAC 2 Action required to mitigate hazard or protect personnel. Feasibility study is appropriate.
- RAC 3 Action required to evaluate potential threat to personnel. High priority Site Inspection is appropriate.
- RAC 4 Action required to evaluate potential threat to personnel. Site Inspection is appropriate.
- RAC 5 No action required.

Justification. In narrative form, summarize the documented evidence that supports this risk assessment.

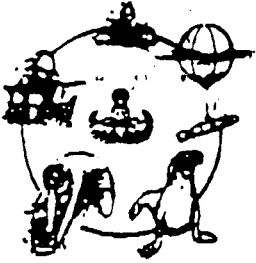
Access is unrestricted because it is a National Seashore with visitation, recreation and hunting over all suspected ordnance areas, all year. Ordnance contamination is varied; 20mm, practice bombs, inert rocket heads, but not widespread. Ordnance is mostly buried but subject to wave and storm actions.

ATTACHMENT D

HUMAN FACTORS APPLICATIONS, INC.
EXPLOSIVE ORDNANCE DISPOSAL DIVISION
EVALUATION AND RECOMMENDATIONS

ASSATEAGUE ISLAND

SITE NO: C03MD93000



HUMAN FACTORS APPLICATIONS, INC.

Explosive Ordnance Disposal Division

1018A North Strauss Avenue
Indian Head, Maryland 20640-1894
(301) 743-2377 Fax: (301) 743-7512

July 30, 1991
Serial:91-118

Mr. Gregory Johnson
EA Engineering, Science and Technology
Mid Atlantic Region
Hunt Valley
15 Loveton Circle
Sparks, Maryland 21151

Attn: Mr. Gregory Johnson

Subj: Assateague Island National Seashore Site Visit and Recommendations

Dear Mr. Johnson:

Enclosed is my report and recommendations for the former DoD bombing site at Assateague Island, Maryland.

In the course of our study, and site inspection, I confirmed the presence of unexploded ordnance on the site that poses the potential to be hazardous to the intended use of the land. The explosive hazards do not appear to be wide spread due to a surface range clearance and subsequent ordnance burial performed at the time the range was closed. However, since we were unable to locate these ordnance burial trenches, the volume of ordnance remaining can only be speculated to.

There were two main bombing sites on land and one possibly in Chincoteague bay. When the ranges were closed, apparently the surface ordnance was picked up and buried in trenches near the high water mark. The northern bombing site is located on part of the island that is receding and we believe that this burial site is now underwater. This would explain why ordnance has washed ashore near the northern public swimming areas. There is a very strong possibility that there is another burial trench near the southern range. This site is most likely on dry land, near the high water mark, and in the vicinity of where a piece of a five inch rocket motor was located during our site visit.

Conceivably, using ground penetrating magnetometry and or electric pulse induction search equipments, the ordnance trenches should present a large target and could be easily located.

Based on the information provided by the U. S. Park Service and eye witness accounts, apparently after the Assateague ranges were closed in late '46 or 47, both of the ranges were cleared of surface ordnance. The ordnance was reportedly collected and buried in trenches near each of the bombing sites. The northern burial site was reported to be about 100 feet from the high water mark on the oceanside. This again mirrors the range clearance performed at the Naval Air Station Manteo's range at Duck, North Carolina and was typical of the style of range clearance done during this time frame.

About 1935, a jetty was built on the north end of Assateague Island which resulted in sand and beach erosion almost immediately. This erosion continued to work its way down the island until it reached the approximate location of the northern bombing zone about 10 years ago. Also, about this time was when a history of ordnance being found on the North Beach swimming area began. From that evidence, we theorize that the disposal trench and buried ordnance from the northern range now is most probably located in the surf and beach zones. This represents a constant threat, due to the changing geography of the island there, which may lead to further ordnance washing out of its resting site and into the public domain on any given day.

The location and amount of ordnance on the southern range is still unknown. Although we found part of a five inch rocket motor near the southern range, it is not conclusive that the ordnance was buried there or it remains in heavy concentrations. However, there is strong evidence to assume that both ranges were cleared in a similar fashion and there is ordnance contamination in the southern range along the magnitude of the northern one. This presumed burial site is most likely still on dry land because the beach erosion has not reached that far south yet. If the ordnance was located in burial sites, the sites could be excavated and cleared with a minimal amount of disturbance to the beach environment.

RECOMMENDATION

A large scale sweep should be performed using all necessary "ground penetrating" and electric pulse induction search equipment. The trench locations should be of the magnitude that would be easily identifiable during a large scale search. This search should include a sweep of the beach zone near the north range.

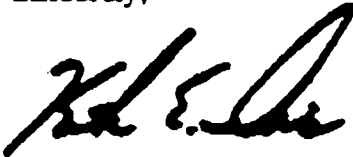
In the event ordnance trenches or large ordnance contaminations are located, these areas should be excavated and the ordnance removed. This is because of the very high probability, and our strong conviction, that there is live ordnance and live components that present a genuine threat to the public use of the Island.

Based on a very similar U. S. Army reclamation operation at an inert bombing range in Duck, North Carolina, where thousands of pounds of **live** ordnance was also recovered from the ordnance burial trenches, there exists the strong possibility that live ordnance is present on Assateague Island.

Clearly the remnants of the rocket motors and rocket igniters have always presented a safety hazard as these items were actual live ordnance.

Therefore, we strongly recommend that the bombing and possible trench locations be surveyed with a large scale search technique and the trenches be excavated and ordnance removed.

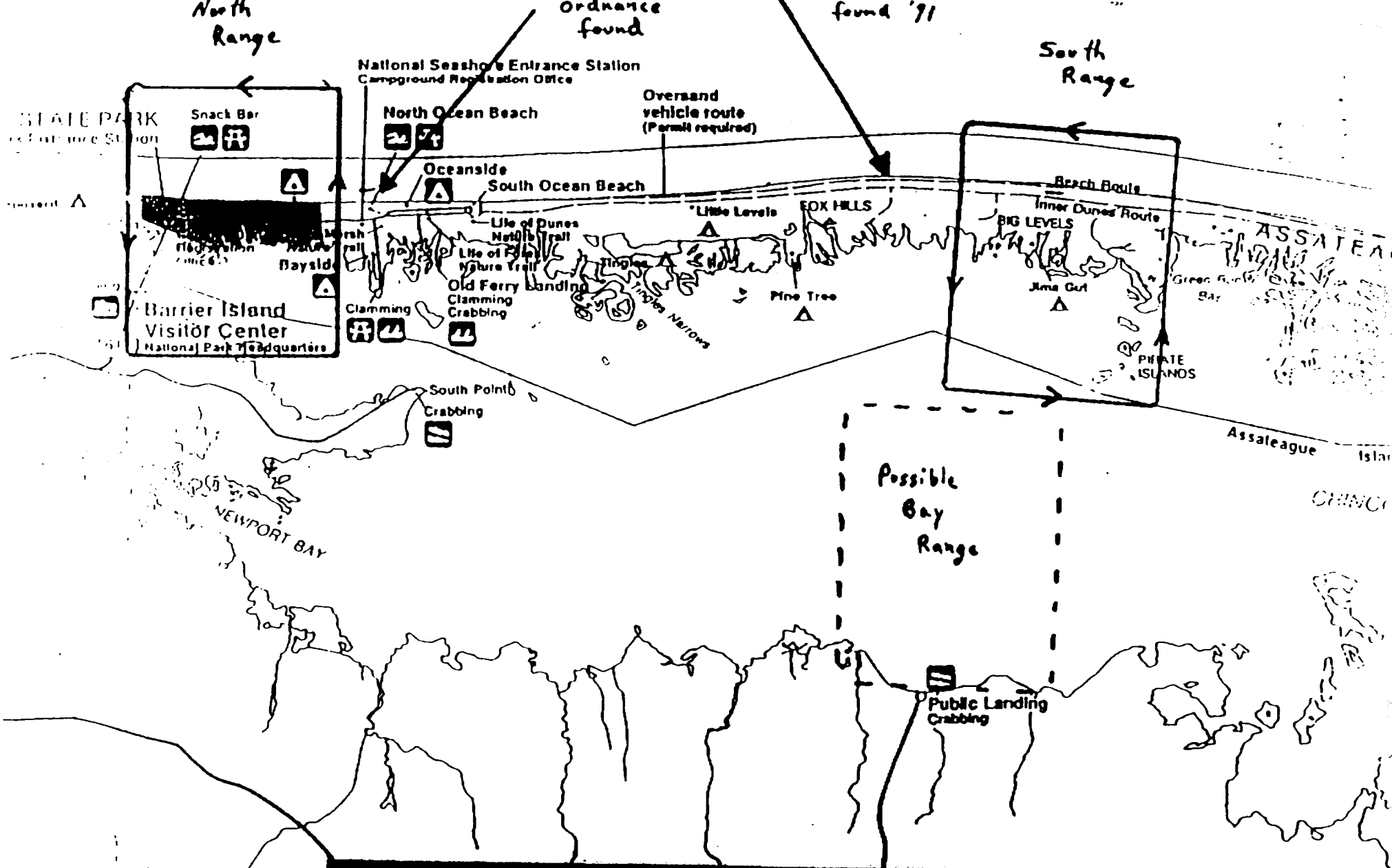
Sincerely,

A handwritten signature in black ink, appearing to read "Kirk E. Davis". The signature is stylized and cursive.

Kirk E. Davis
Senior Project Engineer

Copy to: HFA, PA

Encl: (1) Site Evaluation and Recommendations



Assateague Island

Assateague Island National Seashore
Maryland and Virginia

National Park Service
U.S. Department of the Interior

