

PROJECT FACT SHEET

16 March 1998

1. **SITE NAME:** Former Morgan Depot

SITE NUMBER: CA2NJ0007

LOCATION:

City: Sayerville
State: New Jersey

PROJECT NUMBER: CA2NJ000703

CATEGORY: OE

2. **POC'S:**

HQUSACE POC:

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CEHNC LEAD ENGINEER

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3. **Site Description and History**

In 1917 the U.S. Government secured land in the present vicinity of Ernston Road and the Garden State Parkway in Sayerville, Middlesex County, New Jersey. On this land, the government contracted with T.A. Gillespie Company to construct and operate a complex of shell loading facilities in 1918. The works were situated two miles south of Perth Amboy on approximately 1300 acres of land. Each shell loading facility was a complete plant in itself and consisted of a mail loading building, empty shell storage, service magazine for TNT, service magazine for ammonium nitrate, an office, change houses and lavatories, fan, supply and exhaust houses, fume exhaust house, electrical control switch house, and a shell hospital.

The average distance between plants was 425 to 500 feet. TNT was stored 700 feet minimum from any plant and 1200 feet from finished rounds. 8300 people were employed at the time of the explosion.

When the U.S. entered the war, Amatol was adopted for loading high explosive shells. Amatol consists of TNT and ammonium nitrate mixed in either 20 /80 or 50 /50 ratios. While the main supply of TNT was kept 1200 feet away, enough for the day's needs was kept in the plant. A 45 day supply of ammonium nitrate was also kept at each of production line. On the night of 4 October 1918, the Morgan plant was choked with tens of thousands of shells. A lack of storage space at many sites resulted from the urgent necessity of shipping shells to France as rapidly as possible. At the Morgan plant the lack of space resulted in shells being stored in magazines, rail cars, and on the ground. The war in Europe had placed a tremendous demand on the Morgan plant, the largest shell plant in the world.

On that night at 7:30 an explosion occurred in a mixing kettle where 1200 pounds of melted TNT were mixing with 1200 pounds of ammonium nitrate and 200 pounds of scrap Amatol. The fires and projectiles soon caused other production lines to blow. This was the beginning of detonations and fires which lasted 3 days. Of 30 million pounds of high explosives, 12 million either burned or were detonated. Of 1,013,458 shells 308,239 were detonated. 64 people were officially listed as killed, although all employment records were destroyed. One shell was found and a quarter mile away but most landed within a mile outside perimeter of the site. Of 700 buildings, 325 were destroyed. In the town of Perth Amboy, two miles away, windows and doors were pulled out of their frame by the vacuum created from the blasts. Every production line at the site was destroyed.

It is theorized that the cause of the incident was either the accidental or intentional introduction of foreign objects in the mixing kettle of one of the fill lines.

4. Corps Involvement and Present Status

In 1953, the Morgan Company conveyed the entire ordnance depot to the Morgan Development Corporation. Since 1954, the Morgan Development Corporation sold the site to three major real estate developers. The former ordnance depot has been developed into a number of commercial and residential sites. In January 1993, the site was referred to EPA region 2 for removal assessment by New York District Corps of Engineers. The site was declared a FUDS on 21 April 1994. Prior to that time, EPA contracted with an unexploded ordnance contractor to perform a preliminary assessment of an 8 acre site in July 1993. Over 30 live pieces of unfuzed ordnance were found. Since the site was not a FUDS site until April 1994, CEHNC worked directly with EPA at their request to start preparations for a time critical ordnance removal. CEHNC funded New York district to locate office space for work to begin in early January 1994. Mr. Gordon Orlow has located an office of about 800 SF a quarter mile from the site.

CEHNC funded CENCR to do an Archive search and conduct public interviews at this office during January 1994. With the completion of the Archive search, CEHNC was about to issue a delivery order for site activities to begin when the site was declared PRP/FUDS. This is the point where CENAN was assigned managers of the project by HQUSACE with CEHNC performing the technical work for CENAN. Up until July 1994, CENAN requested CEHNC perform all management and local coordination on site. CEHNC was directed to proceed with areas that could be determined as clearly FUDS. Mr. Belew submitted an action memorandum to and met with Mr. Coppola, Mr. Gibson and Mr. Wash at HQA briefing them on the project, recommending 300 acre Time Critical Removal be authorized. HQ approved the work in a 16 May 1994 memo for 50 acres around the school and other areas required to support the land developer, Mr. Kaplan. A delivery order was issued 17 June 1994 to UXB International to clear

75 acres to include 15 acres of school plus 60 acres across the road. A second delivery order was issued to Foster Wheeler to perform an EE/CA for all potential contaminated areas.

5. Strategy- Includes what has occurred to date and the Strategy for the Future

(1) Archive Records Search. An Archives Search was done to locate and evaluate existing information relative to operations or events at the site which help characterize the risk associated with contamination. Personal interviews with local inhabitants were conducted in January 1994 to locate sites where exposure to munitions is likely. The Archive Search completed in April was analyzed in order to develop a prudent strategy.

(2) Time Critical Removal Action. COE contractor UXB International did a 100% sweep of Eisenhower Elementary School grounds and 60 acres south of Ernston road to a depth of 2 feet. Recovered ordnance scrap and live ordnance was removed. Live ordnance was stored temporarily on site until it was transported to Ft. Dix for destruction. Live rounds were found on the grounds of the elementary school. Numerous live rounds were found in the heavily contaminated wooded area adjacent to Ernston Road in the 60 acre parcel. The contamination was so heavy, that a decision was made to stop the 2 foot clearance, finish a surface sweep and wait for the results of an Engineering Evaluation and Cost Analysis (EE/CA) on this area. We did not want to continue expending funds at the rate we were without further sound basis for what the future land use was to be.

(3) Engineering Evaluation and Cost Analysis (EE/CA)-- Enserch Environmental (renamed Foster Wheeler) was issued a task order to perform an EE/CA on a 3,000 acre area considered to be most likely contaminated by the ordnance that was thrown in all directions by the blasts. The AE will examine randomly selected grid sites within a 1 1/4 mile radius of the center of the blasts. This is because ordnance has been found at this distance. No reports of ordnance found at any greater distance has been reported. The first phase of the EE/CA was first done and completed on the 60 acres where the TCRA was partially completed.

(a) 60 Acre EE/CA- The AE completed the 60 Acre EE/CA with Action Memo in final form in May 1995. This accelerated portion of the EE/CA was done ahead of the overall EE/CA to support the land developer who was ready to start excavation for a housing development. Final recommendations were to go back to the 60 acre site and perform a 4 foot clearance in over the entire site to include revisiting the grids where anomalies were detected but not removed. These previous anomalies will be removed. In addition, construction support would be done on areas to be excavated to a depth 4 feet below the finish grade or below the building foundations. The Action Memo was completed in May 1995.

(b) 3000 Acre EE/CA- In the draft work plan for the 3000 acre EE/CA the AE proposed to geophysically map the selected grids prior to intrusive sampling. HFA contract was modified to seed a 100' by 140' test plot validation and calibration of equipment. This was accomplished in November 1996. The AE tested the Geonics EM61 and the Geometric G858. Both instruments showed that either would geophysically map the area depending on the

conditions and locations of grids. A final draft work plan was submitted February 1997 And review comments returned to the AE April 1997. A review conference was held at CENAN Area Office, East Brunswick, NJ, on 23 April 1997. The Final Work Plan was submitted 9 May 1997.

(c) 60 Acre RA- A scope of work was prepared in the Spring of 1996 to execute the recommendations of the 60 acre EE/CA Action Memo. The Work Plan and Safety Submission was prepared by the new UXO contractor, HFA (task order DACA87-95-D-0020 Task Order 16) and submitted to HQUSACE on 19 August 1996. HFA was mobilized to the site October 1996 and preparatory work (moving temporary bunkers, setting up office and utilities, etc.) was completed December 1996. Intrusive activities commenced in January 1997. Asbestos was encountered in several grids and the contractor was instructed to avoid those grids until the asbestos SOP in the Work Plan was amended to clearly state the procedures to be used in those grids. Draft SOP received, reviewed, and returned to HFA with comments. Only that asbestos incidental to excavating for an anomaly will be bag, sealed and disposed. Excavation will be accomplished using amended water (e.g. water and soap). The removal action was completed 25 October 1997. 2 men stayed an additional 9 weeks for construction support where the developer was digging below 4 feet. This work ended 31 December 1997 with 3 French 75mm's being found along with a 155mm round.

7. STATUS THIS MONTH:

(A) Engineering Evaluation and Cost Analysis (EE/CA)--

The geophysical mapping is complete. The AE's selection of sites was approved by Huntsville. Intrusive operations will start March or May 1998.

(B) 60 Acre RA-As of today, the removals are 100% complete. 2,093 live ordnance items and 4,442 unfilled or inert items were found. 23,580 pounds of ordnance related scrap iron has been recovered and disposed of via a scrap iron dealer. Construction support for 9 weeks commenced immediately following the removals since the developer planned to excavate deeper than 4 feet. 3 each live 75 mm OE rounds and one 155mm live OE round were found. All work is now finished.

7 shipments of ordnance have been sent to Letterkenny AD for destruction. Items are 1,969 adaptor boosters, MK 111B, 83 each 75mm High Explosive shells, MK1, 22 each 155mm High Explosive shell, MK1, 8 each 8" diameter MKI High Explosive shells, 2 each Fuze-Point Detonating MK III, and 11 cartridge case-75mm. 0.5 pounds of bulk explosive has been recovered. There are a total of 2,093 live items found to date on this task order.

8. ISSUES AND CONCERNS:

EECA project: There are no concerns now that the AE has commenced the mapping of the residences. There remains the potential problem of what to do if the results of the mapping analysis shows ordnance in someone's back yard. Rights of entry for digging have not been obtained, only for geophysical mapping. A meeting was held at CENAN on 8 January 1998 to brief CENAN management and Real Estate and Safety on the proposed intrusive work. The AE presented the results of mapping and the proposed 10 sites for intrusive investigation. Another

meeting was held on 28 January with the Police and school officials. They were concerned about evacuations. The main issue then was that there are many people who do not feel a 200 foot evacuation zone is needed to dig in residential yards since not one fuzed item has been found in over 5000 items recovered. Huntsville personnel met on site to discuss the 200 foot zone and whether this Huntsville requirement should continue 4 years into the project since no fuzed items have ever been found. Mr. Wayne Galloway, manager of the safety group reviewed all facts and signed a waiver so that these 10 sites could be dug without evacuations or a 200 foot exclusion zone. In the event that ordnance is found, evacuations will be done while the unfuzed ordnance is loaded into a truck for transport to the storage magazines located remotely on undeveloped land. If a fuzed item is found, all work will stop and the full frag radius restrictions will be imposed. Senerio has always been in place.

9. SCHEDULE SUMMARY:

10. FUNDING/BUDGET SUMMARY: For Official Use Only