



**U.S. Army Corps of
Engineers
Baltimore District**

File for
"LOOW"
W.D. 2
"CMSA PAD"

AMMENDMENT 1 to the

**Explosives Safety Submission for a
Conventional Munitions & Explosives of
Concern (MEC) Response Action at**

Lake Ontario Ordnance Works (LOOW)

3 March 2004

AMMENDMENT 1

to the Explosives Safety Submission
for removal of
TNT at the Lake Ontario Ordnance Works (LOOW) Site 2002

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- FIGURE 1: GENERAL LOCATION OF LOOW SITE
- FIGURE 2: SITE MAP
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PAD

1. Introduction

This first amendment to the Explosives Safety Submission (ESS) of 21 November 2002, outlines the safety aspects for a Removal Action (RA) to blend with sand, and remove TNT contamination from the Contaminated Material Storage Area (CMSA) pad at the Former Lake Ontario Ordnance Works (LOOW) located in the towns of Lewiston and Porter in Niagara County, New York. All activities involving work in areas potentially contaminated with TNT will be conducted in full compliance with U.S. Army Corps of Engineers (USACE), Department of the Army (DA), and Department of Defense (DoD) Requirements regarding personnel, equipment, and procedures.

2. Reason for Munitions and Explosives of Concern (MEC):

2.1 The former Lake Ontario Ordnance Works site is located in the towns of Lewiston and Porter in Niagara County, New York. The site originally encompassed approximately 7,500 acres with actual U.S. Department of Defense site activities having occurred on 2,500 acres. During the early 1940s, the LOOW site was used as a manufacturing plant producing TNT for use during WWII.

2.2 The manufacturing portion of the plant was situated in the central southwestern section of the LOOW site, south of Balmer Road. Wastewater from the TNT manufacturing operation, as well as storm water and sanitary sewage, was transferred through an underground sewer network to a wastewater treatment plant located in the western portion of the TNT plant. The TNT pipelines ran as one pair of east-west trending lines across the TNT production area before being routed south to the water treatment plant at the west end of the production line.

2.3 An overestimation of the need for TNT during WWII resulted in the closure of the TNT plant in July 1943, after only 9 months of operation. Following the decontamination of the TNT plant, the majority of the LOOW facility was sold to private citizens, with the government retaining the former active 2,500-acre portion of the site.

2.4 The Phase 1 Component 1 of the Interim Removal Action (IRA) required flushing and removal of the TNT pipeline. Test site excavations to date have indicated that the pipelines comprising the LOOW TNT pipeline waste sewer system are concrete encased with approximate outside dimensions of 2-ft wide by 3-ft high (including the concrete encasement). The pipelines encased within the concrete are vitreous clay pipe and range in diameter from 10 to 18 inches.

2.5 Radian International from April 1999 until December 1999 performed initial remediation of the TNT pipeline. Work stopped and the contract was terminated due to funding constraints. During this time, Radian removed approximately 1600 feet of pipe, and power washed and grouted the ends of approximately 1900 lineal feet of pipe.

2.6 A new contract was awarded to Severson Environmental Services, Inc. in the spring of 2000 to complete the remediation of the TNT pipeline, power

washing, video and grouting of the entire line rather than remove and dispose of the pipeline.

2.7 To that date 8,600 feet of pipe had been power washed, videotaped, grouted or removed. Since all but one of our preliminary testing of the overburden soils, subsurface soils and test pit samples of the pipe came back with levels of TNT well below the 10% limit, an Explosive Safety Submission (ESS) was not required for this work.

2.8 One sample inside the pipe at TP #11 indicated 16.5% TNT. An ESS was submitted and approved for work associated with TP #11.

2.9 During this period it was discovered that the Phase I operations had inadvertently dumped pipe contents on the CMSA pad and in a location adjacent to the 1999 remediation. A thorough investigation and search of the area involved in the Phase 1 operations was undertaken. This search revealed an additional two areas where the contents of the pipe had been dumped leaving the surface and some piles of debris contaminated with TNT. Using emergency removal authority the observable surface TNT contamination was gathered and with proper local authority approval it was destroyed by burning. The four areas (which include the CMSA pad) were marked and fencing installed to limit access to the area pending disposition of the remaining contamination. Regarding the CMSA pad, and the purpose of this amendment, through historical project research, site walks, discussions with the on-site COR, and the most recent site visit by CENAB and CEHNC-OE-CX OE Safety Specialists on 21 April 2004, Records indicate that sludge piles and pipe debris were limited to a location that represents a line on the pad western border, 155' south and approximately 75' wide inside the pad from the NW pad corner and, a line on the pad Northern border, 155' east and approximately 75' wide inside the pad from the NW corner.

2.9.0 This ESS Amendment is being submitted for approval of a Removal Action (RA) to blend with sand, and remove TNT contamination that may exist in the following location:

2.9.1 **CMSA Area**

2.10 A Remedial Investigation (RI) is being conducted on the entire LOOW site. Then a Risk Assessment (RA), Feasibility Study (FS), Proposed Plan (PP) and a Record of Decision (ROD) will be prepared. The site listed above will be addressed in those documents and a final course of action will be selected. This will be coordinated with the regulators and stakeholders. An explosive safety submission amendment detailing plans for any other explosives hazards will also be prepared if required, after these decisions are made.

2.10.1 The CMSA area identified above in paragraph 2.9.1 is the subject of this first amendment to the original Explosives Safety Submission dated 21 November 2002 .

3. Maps:

3.1 Regional Map – LOOW is located in Western New York in Niagara County. The installation lies approximately 10 miles north of Niagara Falls, New York. Refer to Figure 1.(Not attached yet)

3.2 Site Map - A map showing details of the project site is illustrated in Figure 2.(Not attached yet) The site map reflects the areas of concern that will be involved in the removal/blending action. The area is located on Chemical Waste Management property.

3.3 QD Map Contaminated Material Storage Area is illustrated in Figure 3. (Not attached/determined yet)

3.3.1 CONTAMINATED MATERIAL STORAGE AREA (CMSA) PAD: This area contains TNT residue deposited inadvertently on the surface of the pad during pipeline removal and decontamination of equipment operations. The area is approximately 175' by 175' in size. The base of the pad consists of a 2" initial layer of standard No.2 crush and run (limestone), a geotextile layer, a geomembrane poly material, and a final layer of geotextile, and approximately 1.5' to 2' of Standard No.2 crush and run limestone on top of the membrane materials. The depth of the pad varies in thickness from zero in one corner to 1.5' to 2' ft. elsewhere. An asphalt pad is constructed on top of the existing CMSA pad. The CMSA pad had already been in use for decontamination and stockpile activities prior to the asphalt pad installation.

The following description indicates the approximate dimensions of the asphalt pad: Asphalt 4"-6" inches thick, 20' ft wide, by 40' ft. long, with a surrounding raised curb. The CMSA pad is located at the junction of Cedar and M Streets, south of the former TNT Waste pipelines.

3.3.2 Removal Depth: This action will be limited to the inspection, sampling, analysis, blending, removal, and disposal of contaminated soils and material at the CMSA pad.

3.3.3 Location of Magazines: Magazines will not be employed for this removal action.

3.3.4 OB Area: Will this area be used for the temporary storage of the blended CMSA pad material? If not, what area will be designated?

3.3.5 Current and Planned Land Use: Chemical Waste Management is the site owner and uses the site for a RCRA TSD facility. The area of concern is currently not used except as part of the internal road system. Future land use is not going to change in the near future.

3.4 Q-D Maps:

3.4.1 CMSA: The MSD for this area is 346 feet. This distance is based on a conservative approach of using the Q-D distances in Table C2.T1, DOD 6055.9-STD. If sampling and analysis indicate a concentration that requires expansion of

the MSD, an appropriate distance is to be established before contaminated soils are blended.

3.4.2 OB Area/Area C: The MSD is 474 feet. This distance is based on a conservative approach of using the Q-D distances in Table C2.T1, DOD 6055.9-STD.

4. Amount and Type of MEC. This removal is for the sole purpose of Blending TNT contaminated soils and material at the CMSA pad that are at, or exceed the 10% explosives in soil threshold.

5. Start Date: The removal action is scheduled to start on 1 August 2004.

6. Frost Line: The frost line for this area is 59 inches. Frost action is not expected to be a significant factor for migration of contaminated soils at this site.

7. Clearance Techniques:

7.1 Walkover, Sampling & Analysis, and Blending of Soils in the Areas of Concern:

7.1.1 The contractor utilizing at a minimum, a two-person UXO team consisting of a UXO Technician III and UXO Technician II will accomplish the walkover in the area of concern. The 175' X 175' CMSA pad area will be divided into 36 grids, (34 grids 87.5' X 10' and two grids 87.5' X 5') with 3 samples taken in each grid (108 total samples). Each sample will be a bias composite sample from surface to bottom depth of pad. A measurement from the pad surface to the surface of the geotextile membrane shall be conducted at each sample location to determine pad quantities. The contractor UXO Technicians shall visually inspect each portion of the sample before compositing the sample. Portions used for the composite sample will be biased towards visually contaminated material. Exact locations (X and Y coordinates measured from the surface) for each sample shall be established and documented by GPS. After each biased composite sample is collected, the UXO Technicians shall verify the presence of TNT using a TNT Field Spray Test Kit. The percentage of TNT in the samples will be determined by the contractor using an appropriate TNT Field Test Kit. These grids will also be drawn on graph paper or an appropriate substitute, and utilize an identification system which will show specific areas of contamination in each grid and will indicate the specific TNT contamination characteristics, within each grid, of the entire CMSA pad.

7.1.2 Once the grid layout is in place the walkover and inspection will begin. Each UXO Technician will walk the individual lanes and look for exposed TNT. Once suspected TNT is located, it will be treated with EXSPRAY Explosive Test Spray, or an appropriate test to confirm the presence of TNT. If the test is positive the TNT will be suitably marked with a red pin flag adjacent to the TNT. The location will also be annotated on the grid map for that area. The TNT will be collected and blended with sand to below the 10% level as indicated below.

7.2 Blending Operation :

7.2.1 Clean sand will be utilized in the blending operation. Mixing of the contaminated pad material and sand will be accomplished using mixing equipment suitable for the operation. The CMSA pad liners will be shredded and blended and the asphalt pad broken up and blended as well if at or above the 10% explosives in soil level. It is assumed that the asphalt pad and underlying soil is contaminated until proven otherwise by sampling.

7.2.2 Upon completion of all mixing operations an EnSys TNT Soil Test System Kit or an appropriate substitute, will be utilized to insure that the explosive content of the mixture is less than 10% concentration of explosives. A 5% or less concentration was initially mentioned in the original ESS dated 21 November 2002 as a percentage well below the 10% explosive soil threshold. The term less than 10% will replace the terms "5% or below" as stated in the original ESS.

A sample of the blended material below the 10% concentration will also be sent to an independent laboratory for analysis.

7.3 QC/QA:

7.3.1 QC for this effort will be a surface visual inspection of 10% of the total number of grids by the QC Specialist designated for the project. This inspection will be in areas designated as clean to see if any TNT can be found. No TNT present: Pass. TNT present: Fail. In case of grid failure, the contractor will re-inspect all grids and remove any visible TNT present.

7.3.2 QA for this effort will be a surface visual inspection of a minimum of 10% of the grids by the government OE Safety Specialist in the areas designated as clean by the contractor to see if any TNT can be found. QA will include validation of sample collection, compositing, and testing. The designated OE Safety Specialist and project Chemist shall accomplish this. No TNT present: Pass. TNT present: Fail. In case of grid failure, the contractor will re-inspect the failed grids, remove any visible TNT present, and then present the CMSA pad for government QA re-inspection.

8. **Off-site disposal:** After all blending has taken place, the soil will be sampled to ensure the concentration is below the 10% explosives in soil threshold. Pad material will be disposed of at an approved facility.

9. **Quantity Distance:** The Q-D for the area during all operations is discussed in paragraph 3.3 above.

10. **Technical Support:** Technical support from CENAB-EN, HNC-OE-CX, and USACE Buffalo is anticipated for this effort. The following are considered essential personnel for purposes of observing and conducting work inside the exclusion zone: USACE Project Delivery Team personnel including the Project Manager, Project Engineer, Chemist, COR, and OE Safety Specialist.

11. **Land use restrictions:** No land use restrictions are anticipated at the end of this effort.

12. **Public Involvement:** the Buffalo District through the RAB and public meetings carries out Public involvement.

13. **After Action Report (AAR):** An AAR will be prepared and submitted by the contractor through the approval chain at the close of this effort.

14. **Amendments and corrections:** Should explosive hazards not addressed in this ESS amendment be encountered, an amendment to this first amendment submission will be prepared and submitted for approval.