



# Lake Ontario Ordnance Works

## Former Wastewater Treatment Plant Feasibility Study Fact Sheet

Lewiston, New York

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

**Building Strong®**

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### Site Description

The Defense Environmental Restoration Program for Formerly Used Defense Site (DERP-FUDS) Lake Ontario Ordnance Works (LOOW) is a 7,500-acre site formerly used as a World War II trinitrotoluene (TNT) manufacturing facility that is located in the towns of Lewiston and Porter, New York (see Figure 1 on the next page). The former LOOW wastewater treatment plant (WWTP) was comprised of several above- and below-ground treatment structures that received sanitary, TNT processing, and acidic wastes during operation of LOOW; subsequent Department of Defense (DoD) facilities also contributed waste streams to the plant (see Figure 2, page 3).

The former WWTP encompasses 4 of 14-acres of unused Town of Lewiston property. Although vacant, the town has taken the precautionary steps of physically securing the site.

### Previous Investigations

Soil, sludge/sediment, and wastewater samples collected from WWTP structures and underground pipes were analyzed for chemical constituents as part of environmental investigations at LOOW under DERP-FUDS beginning in 1998. Previous Corps' investigations of this property include a Phase I and II remedial investigation (RI), a phase III RI of the underground utility lines, and a phase IV RI; an examination of historic aerial photos by the U. S. Army Topographic Engineering Center; and a supplemental investigation into small-bermed clearings (SBCs).

In 1999, USACE performed an interim removal action on the former LOOW TNT pipeline and chemical waste sewer lines to remove contaminated sediment and water from the lines and close the lines in place. Remediation of radiological contamination at the former LOOW Site WWTP was performed by the U.S. Department of Energy (DOE) under the Formerly Utilized Sites Remedial Action Program (FUSRAP). Contaminated soils were removed and the property was closed in the 1980s. In March 2010, the DOE reviewed the previous remedial actions at the site and concluded that all FUSRAP materials were remediated to meet DOE guidelines for unrestricted use.

A project to mitigate public safety hazards at the former WWTP was completed in 2012 using funds provided by the U.S. Office of Economic Adjustment (OEA). This work, which was not conducted under DERP-FUDS, involved the demolition of various unsecure pits and vaults and erecting a competent security fence surrounding the property.

As a result of these investigations, polychlorinated biphenyls (PCBs) were identified in the sludge/sediment at concentrations that may cause unacceptable risk to future construction workers at the site. This FS further evaluates and updates the exposure assumptions used based on latest available U.S. Environmental Protection Agency (USEPA) risk assessment guidance. As a result, Aroclor 1254, a PCB, is identified as the constituent of concern (COC) in sludge/sediment. The estimated volume of contaminated sludge/sediment at the site is 214 cubic yards, which is located in a former acid neutralization building and dilution sump/weir.

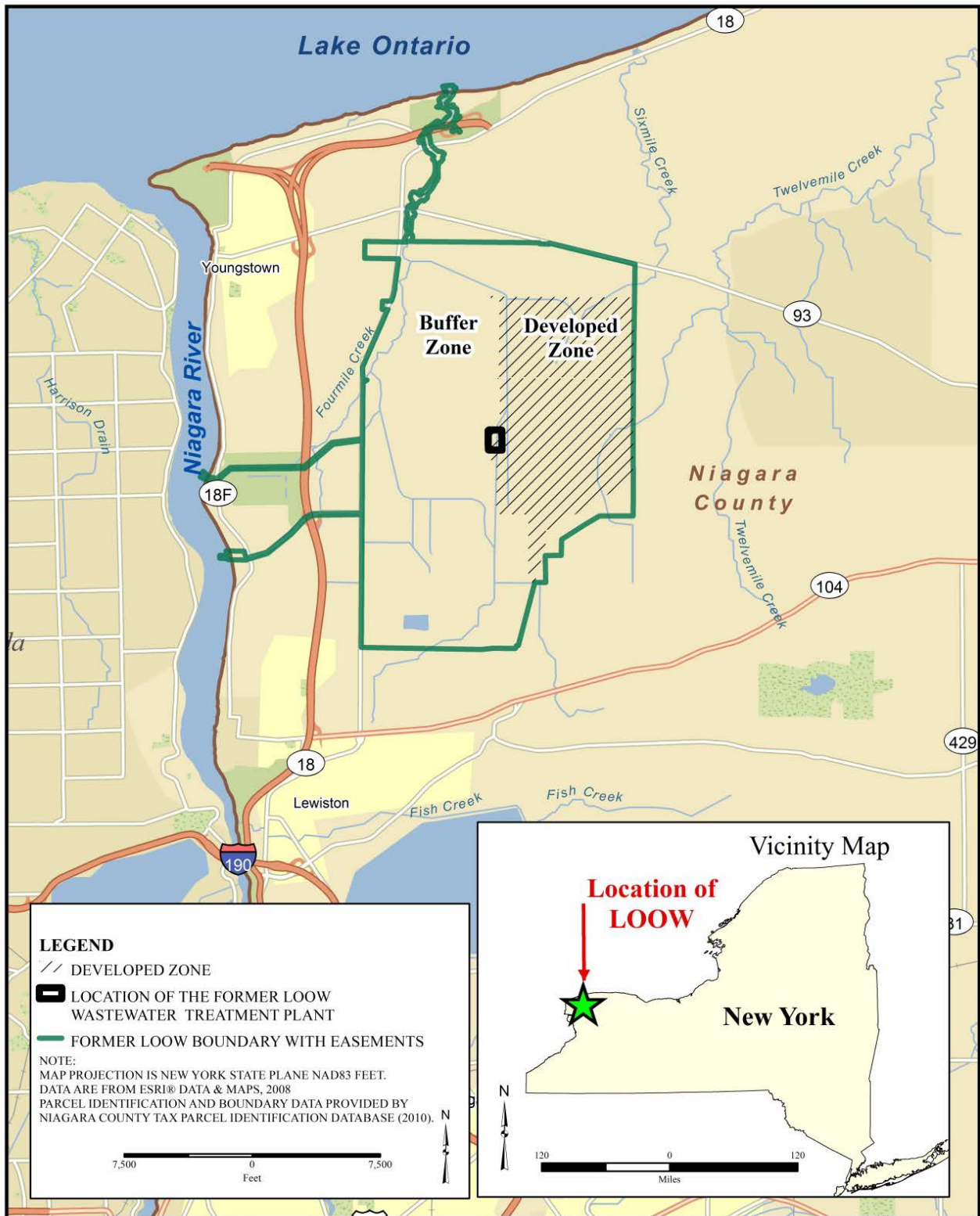


Figure 1: Former LOOW Site

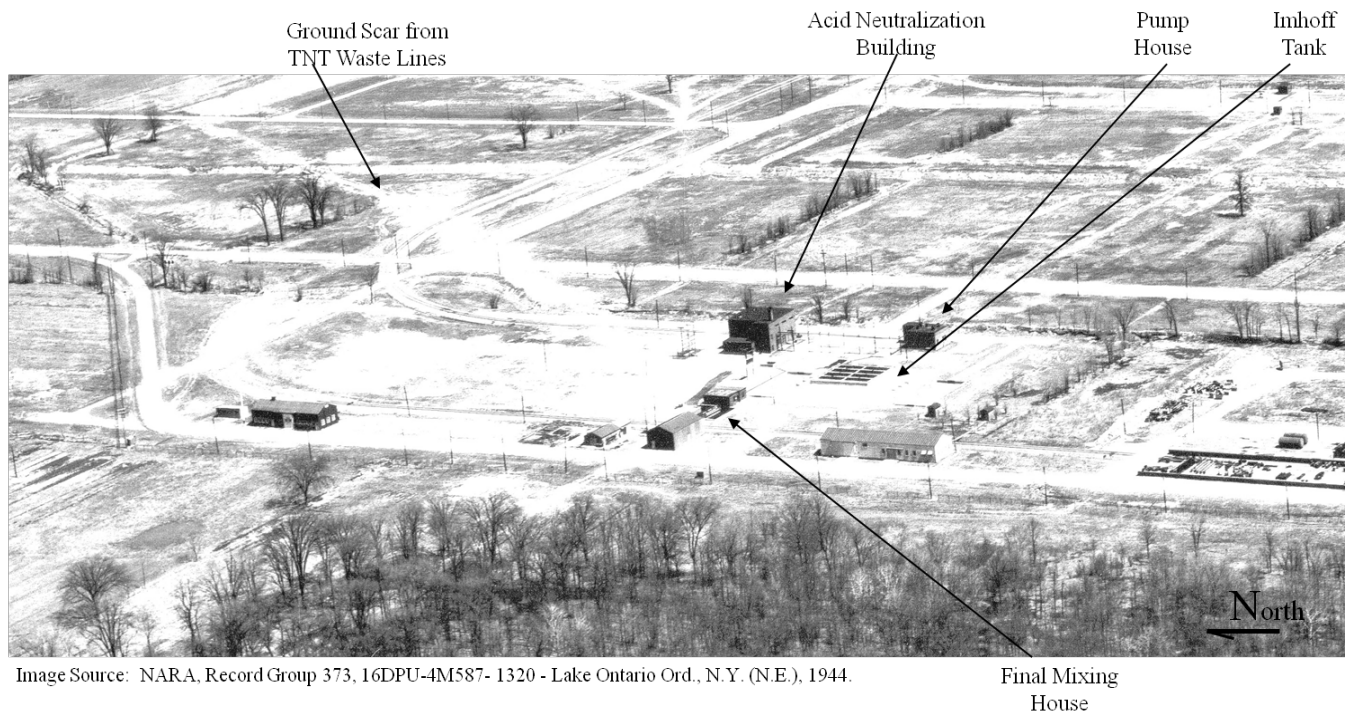


Figure 2: Former LOOW WWTP - 1944

## Feasibility Study

### Scope

A feasibility study (FS) was prepared to evaluate remedial alternatives to address identified contaminants that pose potential unacceptable risk to human receptors at the WWTP on the former LOOW. It is part of ongoing investigation and remediation activities at the former LOOW that are being conducted under DERP-FUDS. The FS evaluated remedial technologies for Aroclor 1254 and total PCBs identified in sludge/sediment to ensure that the potential remedial alternatives would protect human health and the environment. The document also presented additional data that were collected subsequent to the phase IV RI.

### Remedial Action Objective

The remedial action objective (RAO) for the WWTP FS is to prevent direct contact with Aroclor 1254 in the sludge/sediment that may cause an unacceptable risk to a potentially exposed construction worker. A preliminary remediation goal (PRG) was established for PCBs in the sludge/sediment that contributed to unacceptable risk. A PRG for total PCBs was identified based on applicable or relevant and appropriate requirements (ARARs) and is presented in the table on the next page.

<b>Human Health Preliminary Remediation Goals for Potentially Exposed Construction Workers</b>			
<b>COC</b>	<b>Maximum Detected Concentration (mg/kg)</b>	<b>Target Organ</b>	
Aroclor 1254	60	Skin, Eyes	
<b>COC</b>	<b>Maximum Detected Concentration (mg/kg)</b>	<b>Target Organ</b>	<b>ARAR-based PRG (mg/kg)</b>
Total PCBs	65	Skin, eyes	25 <sup>a</sup>
<p><i>Legend:</i>  ARAR – applicable or relevant and appropriate requirement  mg/kg – milligrams per kilograms  PRG - preliminary remediation goal  The target organ identification applies to non-cancer health effects  The ARAR-based PRG is the cleanup level for bulk PCB remediation waste in low occupancy areas (40 CFR Part 761.61(a)(4)(i)(B))</p>			

**Remedial Alternatives**

Seven alternatives were evaluated in the initial screening process and the four remedial alternatives below were selected for detailed analysis using criteria specified in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300):

- *Alternative 1: No Action* - This alternative is required under the NCP as a baseline for the FS process. This alternative would not implement any active remedial actions, controls, or monitoring of potential risk. No public awareness or education/training would be initiated regarding potential risks associated with the contaminated sludge/sediment. Existing land-use controls (LUCs) are not considered and existing access restrictions would not be maintained.
- *Alternative 2: Capping* - This alternative would consolidate the contaminated sludge/sediment in one of the WWTP structures followed by placement of a concrete cap over the structure. LUCs/institutional controls (ICs), long-term monitoring, five-year reviews, and site close-out activities would be required.
- *Alternative 4: Removal of Sludge/Sediment with Off-Site Disposal* - This alternative would remove contaminated sludge/sediment from the WWTP structures, which would be placed in an off-site permitted treatment, storage, and disposal facility. Water within the structures would be pumped, treated if necessary, and discharged. By doing so, the site would be restored to a condition that allows for unlimited use and unrestricted exposure.
- *Alternative 6: In Situ Solidification* - This alternative would solidify contaminated sludge/sediment in one of the WWTP structures using a cementitious reagent. Water within the structure would be pumped, treated if necessary, and discharged. Flowable fill would be placed over the solidified sludge/sediment. LUC/ICs, long-term monitoring, five-year reviews, and site close-out activities would be required.

The table on the next page compares the alternatives based on seven of the nine criteria outlined in CERCLA. The first two criteria are threshold criteria and must be met: overall protection of human health and the environment, and compliance with federal and state environmental regulations. The next five criteria are considered balancing criteria and must be addressed: long-term effectiveness and permanence; short-term effectiveness and environmental impacts; reduction in toxicity, mobility or volume through treatment; implementability; and cost.

Comparative Analysis of Alternatives										
Alternative	Protection of HH&E	Compliance with ARARs	Short-Term Effectiveness	Long-Term Effectiveness	Reduction of Toxicity, Mobility, or Volume Through Treatment	Implementability	Costs (\$-2013)			
							Total	Capital	Operation, Maintenance, and Monitoring	
Alternative 1: No Action	○	○	●	○	○	○	\$0	\$0	\$0	
Alternative 2: Capping	●	●	●	●	○	●	\$6,032,178	\$5,106,085	\$926,093	
Alternative 4: Removal of Sludge/Sediment and Water with Off-site Disposal	●	●	●	●	●	●	\$5,922,792	\$5,922,792	\$0	
Alternative 6: In Situ Solidification	●	●	●	●	●	●	\$6,011,314	\$5,085,220	\$926,094	
<i>Legend:</i> ARARs – applicable or relevant and appropriate requirements    HH&E – human health and the environment										
Ratings										
Factors	●		●			○				
Protection of HH&E	Protective		Moderate rating or not all factors addressed			Not protective				
Compliance with ARARs	Compliant		Moderate rating or not all factors addressed			Non-compliant				
Short-Term Effectiveness	Protective of the community and workers during the remedial action, low environmental impacts, low period of time to achieve RAOs		Moderate rating or not all factors addressed			Not protective of the community and workers during the remedial action, high environmental impacts, long period of time to achieve RAOs				
Long-Term Effectiveness	Low residual risk, adequate and reliable controls		Moderate rating or not all factors addressed			High residual risk, inadequate and unreliable controls				
Reduction of Toxicity, Mobility, or Volume	Will reduce toxicity, mobility, and volume through treatment		Moderate rating or not all factors addressed			Will not reduce toxicity, mobility, and volume through treatment				
Implementability	Easy to implement, available services and materials, administratively feasible		Moderate rating or not all factors addressed			Difficult to implement, limited availability of services and materials, and low administrative feasibility				

## Administrative Record File

The administrative record file for the former LOOW contains the FS report and other CERCLA-related documentation used to support the former LOOW FS. Reports and documents in the administrative record may be viewed at the following locations:

### Electronic and Paper Versions

US Army Corps of Engineers  
1776 Niagara Street  
Buffalo, New York 14207  
(by appointment)

### Electronic Version

Town of Lewiston Public Library  
305 South 8th Street  
Lewiston, NY 14092  
Phone: (716) 754-4720

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