



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, DC 20314-1000

JUN 20 2017

1 JUN 20 2017

CEMP-CE

MEMORANDUM FOR U.S. Army Engineer Division, North Atlantic,
ATTN: [REDACTED] Fort Hamilton Military Community,
302 General Lee Ave, Brooklyn, New York 11252

SUBJECT: Approval of the Decision Document for) for the Occidental Chemical Corporation Property at the Former Lake Ontario Ordnance Works Formerly Used Defense Site (FUDS) C02NY0025, Niagara County, NY

1. Reference memo, CENAD, dated 4 May 2017, subject: same as above, copy enclosed.
2. The subject Decision Document dated, May 2017 has been reviewed by CECC-E and CEPA-MP.
3. This document presents a selected remedy with a total present worth cost estimate of \$846,045 consisting of excavation and off site disposal of contaminated soil and comingled solid debris of a 3.2 acre portion of the property.
4. This Decision Document is approved and forwarded to you, pursuant to USACE Interim Guidance Document on FUDS Decision Documents dated 9 February 2017, and to Engineer Regulation 200-3-1, FUDS Program Policy, dated 10 May 2004.
5. Please ensure that this document is filed in accordance with Records Management procedures, in both the Administrative Record and the Permanent Project File. Also, please ensure that the FUDS Management Information System is updated with this approval in the Property Information, Record of Decision/Decision Document screen.
6. Point of contact for this action is [REDACTED]

Encls
Decision Document Packet

[REDACTED]
Chief Environmental Division
Directorate of Military Programs



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
BROOKLYN NY 11252-6700

CENAD-PD-I

04 MAY 2017

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, (CEMPCED/
[REDACTED]), 441 G Street NW, Washington, DC 20314-1000

SUBJECT: Final Decision Document (DD) for the Occidental Chemical Corporation Property at the Former Lake Ontario Ordnance Works Formerly Used Defense Site (FUDS) CO2NY0025, Niagara County, NY

1. Reference Memorandum, CENAE-PP-M dated 27 April 2017, subject as above.
2. Lake Ontario Ordnance Works (LOOW) was constructed in 1942 as a TNT production facility by the War Department on a 7,500 acre parcel of land in northwest Niagara County. Of the total 7,500 acre parcel, 2,500 acres were used for production operations, production support, and storage. The remaining 5,000 acres were left undeveloped as a buffer zone and to allow for possible expansion. The 304-acre Occidental Chemical Corporation Property is located within the buffer zone. The remedy selected in this DD applies to area of concern (AOC) 1, which is approximately 425 ft. by 325 ft. (approximately 3.2 acres). The selected remedial alternative includes excavating and disposing off site all impacted soil that contains TNT and Lead above the remedial goals.
3. The subject Decision Document package has been reviewed, and is endorsed by this office.
4. This is being forwarded pursuant to Interim Guidance Document (IGD) for the Formerly Used Defense Sites (FUDS) Decision Document Staffing and Approval, dated 9 February 2017, and to Engineer Regulation 200-3-1, FUDS Program Policy, dated 10 May 2004. Request the enclosed Decision Document package be approved by signature.
6. The point of contact for this action is [REDACTED], FUDS Program Manager,
[REDACTED]

Encl

[REDACTED]
Chief, IIS and Environmental Division



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

CENAE-PP-M

27 April 2017

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, North Atlantic Division, (CENAD-PD-IIS-[REDACTED]), Fort Hamilton Military Community, 302 General Lee Ave, Brooklyn, New York 11252

SUBJECT: Request to Forward the Final Decision Document (DD) for the Occidental Chemical Corporation Property at the Former Lake Ontario Ordnance Works Formerly Used Defense Site (FUDS) C02NY0025, Niagara County, NY to HQUSACE

1. Enclosed with this memorandum is the Final DD for the Occidental Chemical Corporation Property at the Former Lake Ontario Ordnance Works (LOOW) FUDS.
2. LOOW was constructed in 1942 as a TNT production facility by the War Department on a 7,500 acre parcel of land in northwest Niagara County. Of the total 7,500 acre parcel, 2,500 acres were used for production operations, production support, and storage. The remaining 5,000 acres were left undeveloped as a buffer zone and to allow for possible expansion. The 304-acre Occidental Chemical Corporation Property is located within the buffer zone.

The Remedial Investigation concluded that there is unacceptable risk to current and potential future receptors at a 3.2 acre portion of the Occidental Chemical Corporation Property, caused by elevated concentrations of lead and TNT in soil.
3. The selected remedial alternative includes excavating and disposing off site all impacted soil that contains TNT and lead above the remedial goals. The excavated area would be inspected and soil samples would be collected for laboratory analysis to test for remaining contamination. Excavation and sampling/analysis would continue until it was determined that all contaminated material with concentrations greater than the remedial goals had been removed. O&M and five-year reviews would not be required.
4. The Final Remedial Investigation, Feasibility Study, Proposed Plan, and DD for the Occidental Chemical Corporation Property have all been fully coordinated with the lead regulator for the site, New York State Department of Environmental Conservation (NYSDEC) and Office of Counsel. NYSDEC has accepted the final decision for the Occidental Chemical Corporation Property per correspondence dated 18 January 2017. Also, during the public comment period and public meeting, no disapproval of the selected alternative presented in the Proposed Plan was expressed by the community or other stakeholders.

CENAE-PP-M

SUBJECT: Request to Forward the Final Decision Document (DD) for the Occidental Chemical Corporation Property at the Former Lake Ontario Ordnance Works (LOOW) Formerly Used Defense Site (FUDS) C02NY0025, Niagara County, NY to HQUSACE

5. I recommend that NAD forward the Final DD for the Occidental Chemical Corporation Property to HQUSACE for approval.

6. Please contact me directly, if I can be of further assistance. Detailed information desired by your staff can be obtained by contacting [REDACTED].

[REDACTED]

Commanding

Enclosure



**US Army Corps
of Engineers®**
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FINAL DECISION DOCUMENT

**OCCIDENTAL CHEMICAL CORPORATION PROPERTY AT THE FORMER
LAKE ONTARIO ORDNANCE WORKS, NIAGARA COUNTY, NEW YORK**

**AUTHORIZED PROJECT UNDER THE
DEFENSE ENVIRONMENTAL RESTORATION PROGRAM FOR
FORMERLY USED DEFENSE SITES**

FUDS Project No. C02NY0025-11

Property No. 148955

May 2017

Prepared by:

U.S. Army Corps of Engineers

Buffalo District

1776 Niagara Street

Buffalo, New York 14207-3199

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Acronym List

AOC	Area of Concern
ARARs	applicable or relevant and appropriate requirements
BCY	bank cubic yards
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	constituent of concern
CYs	cubic yards
DD	Decision Document
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
EPA	Environmental Protection Agency (United States)
EU	Exposure Unit
fpm	feet per minute
FS	Feasibility Study
ft	feet
ft ²	square feet
FUDS	Formerly Used Defense Sites
HHRA	Human Health Risk Assessment
H.P.	horsepower
ICs	institutional controls
IEUBK	Integrated Exposure Uptake Biokinetic
LF	linear feet
LOOW	Lake Ontario Ordnance Works
LTM	long-term monitoring
LUCs	land use controls
mg/kg	milligrams per kilogram
mil	one thousandth of an inch
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
OCCP	Occidental Chemical Corporation Property
O&M	operation and maintenance
PP	Proposed Plan
RCRA	Resource Conservation and Recovery Act
RAO	Remedial Action Objective
RI	Remedial Investigation
RG	remediation goal
SARA	Superfund Amendments and Reauthorization Act
SLERA	screening level ecological risk assessment
TAL	Target Analyte List
TNT	2,4,6-trinitrotoluene
TSDF	treatment, storage, and disposal facility
USACE	United States Army Corps of Engineers
UU/UE	unlimited use and unrestricted exposure

1.0 DECLARATION

1.1 Site Name and Location

The Occidental Chemical Corporation Property (OCCP) portion of the Former Lake Ontario Ordnance Works (LOOW) is located in the Town of Porter, Niagara County, New York (Figure 1).

1.2 Statement of Basis and Purpose

This decision document (DD) presents the selected remedy for contaminated soil at Area of Concern (AOC) 1 (also known as Exposure Unit [EU] 8), which is located in the southwest portion of the OCCP. The United States Army Corps of Engineers (USACE) prepared this document as the administrative agent for the Defense Environmental Restoration Program [for] Formerly Used Defense Sites (DERP-FUDS). The remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The site is not on the National Priorities List.

The New York State Department of Environmental Conservation (NYSDEC) concurs with the selected remedy.

1.3 Assessment of Site

The response action selected in this DD is necessary to protect the public health and/or welfare or the environment from actual or threatened releases of hazardous substances into the environment at the site.

1.4 Description of Selected Remedy

Based on previous investigations, 2,4,6-trinitrotoluene (TNT) and lead concentrations in soil at the site present risks to human health and the environment. The selected remedy includes:

- Excavation of contaminated soil above remediation goals (RGs).
- Off-site disposal of excavated soil.

The remedy will remove contaminated soils until the residual levels of constituents of concern (COCs) are equal to or less than the RGs. Soil sampling will confirm that contaminated soil above the RGs has been removed to a condition that allows for unlimited use and unrestricted exposure (UU/UE) prior to the site being restored. Excavated soil and commingled debris will be disposed of at a permitted treatment, storage, and disposal facility (TSDF).

The remedy was chosen because it protects human health and the environment and complies with applicable or relevant and appropriate requirements (ARARs). The selected remedy is implementable, cost-effective, and permanently eliminates the toxicity, mobility, and volume of contaminants at the site. The estimated total cost of the selected remedy is \$846,045.

1.5 Statutory Determinations

The selected remedy is protective of human health and the environment and complies with federal and state requirements that are applicable or relevant and appropriate to the remedial

action. The remedy is cost-effective and utilizes a permanent solution to the maximum extent practicable. The following criteria were also used in selection of the remedy: short-term effectiveness, long-term effectiveness and permanence, implementability, and community acceptance.

Five-year reviews will not be required for this remedial action because the selected remedy will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for UU/UE.

1.6 Data Certification Checklist

The following information is included in the Decision Summary of this DD. Additional information can be found in the Administrative Record file for the OCCP at LOOW.

- Current and reasonably anticipated future land use assumptions used in baseline risk assessment and DD (Section 2.6)
- Baseline risk represented by the COCs (Section 2.7.1)
- COCs and their respective concentrations (Section 2.7.1.1)
- Cleanup levels established for the COCs and the basis for these levels (Section 2.7.1.1)
- Remedial action objectives that provide the basis for the development of remedial alternatives (Section 2.8)
- Relative performance of each remedial alternative against the nine CERCLA threshold, balancing, and modifying criteria for remedy selection (Section 2.11)
- How source materials constituting principal threats are addressed (Section 2.12)
- Description of the selected remedy (Section 2.13.2)
- Estimated capital cost, annual operation and maintenance (O&M), and total present worth costs, and the number of years over which the remedy cost estimates are projected (Section 2.13.3)
- Potential land use that will be allowable at the site as a result of the selected remedy (Section 2.13.4)
- Key factors that led to selecting the remedy (i.e. how the selected remedy provides the best balance of tradeoffs with respect to balancing and modifying criteria used to evaluate remedial alternatives) (Section 2.14)

1.7 Authorizing Signature

This DD presents the selected remedy of excavation and off-site disposal of contaminated soil at the OCCP at the former LOOW, Town of Porter, Niagara County, New York. The USACE is the lead agency under the DERP for response actions for DoD's hazardous substances at FUDS and has developed this DD consistent with CERCLA, as amended, and the NCP. This DD will be incorporated into the administrative record for the OCCP, which is available for public view. The selected remedy is protective of human health and the environment. This decision is approved by the undersigned, pursuant to Memorandum, DAIM-ZA, September 9, 2003, subject: Policies for Staffing and Approving Decision Document, and to the FUDs Program Policy, U.S. Army Corps of Engineers Regulation 200-3-1 (2004).



Chief, Environmental Division
Directorate of Military Programs

20 June 17
Date

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2.0 DECISION SUMMARY

2.1 Site Name, Location, and Brief Description

This DD describes the selected remedy for AOC 1 on the OCCP at the former LOOW located in the Town of Porter, Niagara County, New York (Figure 1). The site is not on the National Priorities List. The United States Army is the Department of Defense (DoD) administrative agent for DERP-FUDS. The USACE executes DERP-FUDS in accordance with CERCLA as amended by SARA and the NCP.

The OCCP is located on the buffer zone for the former LOOW, a DoD World War II TNT production facility. The Occidental Chemical Corporation currently owns the vacant property. No structures remain on-site, but the area contains evidence of waste and construction debris relating to past DoD activities.

2.2 Site History

2.2.1 Lake Ontario Ordnance Works

Prior to construction of the LOOW, the area was mixed agricultural land consisting of forest, orchard, and farms with some ponds. In 1942, the War Department constructed the LOOW as a TNT production facility by the War Department on a 7,500-acre parcel of land in northwest Niagara County, New York (Figure 1). Of the total 7,500-acre parcel, 2,500 acres were used for production operations, production support, and storage. The remaining 5,000 acres were left undeveloped as a buffer zone and to allow for possible expansion.

2.2.2 Occidental Chemical Corporation Property

In 1945, the United States Congress transferred the 5,000-acre buffer zone to the General Services Administration for sale to private owners. Hooker Chemical and Plastics Corporation purchased the 304-acre parcel now known as the OCCP in 1975 from a private owner. The parcel was later sold to the current owners, the Occidental Chemical Corporation. Use and ownership of the property between 1945 and 1975 is unknown, although aerial photographs suggest the area was not used (U.S. Army Topographic Engineering Center 2002). The remedy selected in this DD applies to AOC 1, which is approximately 425 feet (ft) by 325 ft (approximately 3.2 acres). Numerous aerial anomalies are seen in photographs taken between 1944 to 1951. The anomaly at AOC 1 was present in 1944 while the TNT plant was operational. The size and shape of this anomaly are similar in the 1944 and 1951 aerial photographs, which suggests that fill in this area is related to DoD activities.

The OCCP was first investigated during a LOOW site-wide Phase II remedial investigation (RI) by the USACE (USACE 2002). Further site investigations of portions of the OCCP occurred in 2004 and 2008 (USACE 2004, 2008a). A risk assessment of ten potential DoD-impacted areas across the former LOOW was conducted in 2008. It provided an initial risk evaluation of AOC 1 (EU 8) (USACE 2008b, c).

In 2013, a more comprehensive investigation of the entire OCCP was completed and 39 areas of interest were prioritized and assessed. Of the 39 areas, AOCs 1 through 6 were selected for further investigation. The results of the investigation and an updated risk assessment for EU 8 are documented in the *Final Remedial Investigation Report for the Occidental Chemical Corporation Property at Formerly Used Defense Site Former Lake Ordnance Works, Niagara*

County, New York (USACE 2013). The RI recommended no further action for AOCs 2 through 6 because there was negligible risk to any receptors from exposure to constituents in soil, sediment, and surface water. The RI concluded that there is potential risk to current and potential future receptors at AOC 1 caused by elevated concentrations of lead and TNT in soil. The maximum detected concentrations were 2,760 milligrams per kilogram (mg/kg) for lead and 19,000 mg/kg for TNT. The contamination is located in an area of fill that contains deteriorated steel 55-gallon drums. The contaminated area is 55 ft by 100 ft (approximately 0.13 acres) and extends 3 ft below ground surface (bgs). Area of Concern 1 contains evidence of waste (e.g. beverage containers, asphalt shingles, and tires) and construction debris (e.g. terra cotta pipes, transite siding, ceramic electrical junctions, and deteriorated steel drums) that appear to have been placed during DoD ownership and relate to past DoD activities. This is evidenced by historical aerial photographs from 1944 and 1951, which show the fill area in AOC 1 appearing during DoD ownership with no visual change to the area afterwards.

Regulation No. 200-3-1, Environmental Quality FUDS Program Policy states hazardous, toxic, and radioactive waste projects include environmental response actions at an area of an eligible FUDS property as the result of DoD activities related to hazardous substances, pollutants, and contaminants as defined in CERCLA; petroleum, oil and lubricants; DOD-unique materials; hazardous wastes or hazardous waste constituents; low-level radioactive materials or low-level radioactive wastes; and explosive compounds released to soil, surface water, sediments, or groundwater as a result of ammunition or explosives production or manufacturing at ammunition plants. The fill area of AOC 1 can be classified as composed of “DOD-unique materials” as evidence by the aerial photographs.

Further environmental action and management at AOC 1 (Figure 2) was recommended based on the unacceptable risk posed by the contaminants detected in soil. The potential impacts to groundwater from the soil contaminants and remedial alternatives for soil were evaluated in the *Final Feasibility Study Exposure Unit 8 – Occidental Chemical Corporation Property at the Former Lake Ontario Ordnance Works Site, Niagara County, New York* (USACE 2015). The feasibility study (FS) concluded that the concentrations of contaminants in subsurface soil do not have the potential to impact groundwater, therefore, soil is the only medium of concern at AOC 1. The FS also estimated that the total volume of soil with concentrations greater than the RGs was 611 cubic yards (CYs) (Figure 3).

2.3 Community Participation

The final proposed plan (PP) for the OCCP (USACE 2016) was issued to the public on January 7, 2017. It is available at the following information repositories:

Lewiston Public Library
305 South 8th Street
Lewiston, New York 14092

Youngstown Free Library
240 Lockport Street
Youngstown, New York 14174

A newspaper notification was published to inform the public and comply with public notification requirements of the NCP (40 CFR 300.430(f)(3)) of the start of the PP comment period, to solicit comments from the public, and to announce the public meeting. The notice was published in the

Lewiston-Porter Sentinel on December 3, 2016; the Buffalo News Niagara Edition, the Niagara Gazette, and the Lockport Union-Sun & Journal on December 4, 2016; and in the Niagara-Wheatfield Tribune on December 8, 2016. A copy of the notice is provided in Attachment 2.

A public meeting was held on January 11, 2017, to inform the public of the proposed remedy and to seek public comments. Written public comments were accepted during a comment period from December 5, 2016, to February 7, 2017. Public comments and responses are presented in the responsiveness summary (Appendix A).

2.4 Scope and Role of Response Action

This DD describes the final selected remedy for the site.

Based on investigations performed at the OCCP including the final RI (USACE 2013), unacceptable risk due to contaminants in soil at the site were identified. These risks must be eliminated or controlled to protect human health and the environment.

This DD summarizes the remedy alternatives considered and selects Alternative 4: Excavation and Off-Site Disposal as the final remedy for the site. The selected remedy includes excavation and off-site disposal of soil that contains DoD-unique materials and COCs above the RGs. Contaminated soil and debris will be excavated and disposed of at a permitted TSDF. Soil sampling and follow-up excavation, if necessary, will ensure that all contamination above the RGs is removed. The site will be restored to a condition that allows for UU/UE.

2.5 Site Characteristics

The OCCP is a 304-acre parcel in the undeveloped buffer zone of the former LOOW. Area of Concern 1 is approximately 425 ft by 325 ft. Figure 2 shows the location of the LOOW, the OCCP, and AOC 1.

2.5.1 Geographical and Topographical Information

The OCCP site lies within the Ontario Lake Plain physiographic province. The regional topography reflects a northerly to northwesterly sloping lake plain that consists of sediments deposited during the end of the Wisconsin Era glaciation. The lake-plain topography and clay-rich soils promote the ponding of precipitation, which is common in many areas of the former LOOW. To address drainage issues during LOOW construction and operation, a system of drainage ditches was constructed and maintained to drain surface water runoff to a Central Drainage Ditch. The ditches were temporary in nature. They included preexisting agricultural ditches that had been used to irrigate farmland and drainage ditches constructed during DoD development. The Southwest Drainage Ditch is a receiving surface water body that hydraulically separates the OCCP from the Lewiston-Porter School District property to the west.

Area of Concern 1 is located within a freshwater forested/shrub wetland designated LE-18 according to aerial imagery available at New York State Orthos Online for Niagara County (New York Statewide Digital Orthoimagery Program 2014). The former LOOW property is underlain by approximately 30 to 60 ft of unconsolidated glacial deposits that overlie shale bedrock of the Queenston Formation. Subsurface stratigraphy is generally characterized by a silty clay glacial till that contains disconnected silt, sand, and gravel lenses. A glaciolacustrine clay layer is present between 12 and 20 ft bgs; this unit averages 16 ft in thickness and overlies coarser

grained sediments that average 12 ft in thickness. The underlying Queenston Shale exhibits a 10- to 15-ft thick weathered zone that diminishes at greater depth (USACE 2002, USACE 2007).

Groundwater within the surficial till and coarse-grained lenses constitutes the upper water-bearing zone. The glaciolacustrine clay is an aquitard (hydraulic separator) that confines a lower water-bearing zone, which consists of a coarse-grained outwash layer, a discontinuous lodgement till, and the weathered shale zone. Regional groundwater flow in both water-bearing zones generally follows topographic slopes to the north and northwest towards Lake Ontario and the Niagara River. Flow in the upper water-bearing zone can be interrupted by agricultural and municipal drainage features and incised streams.

2.5.2 Nature and Extent of Contamination

The LOOW Phase II RI (USACE 2002) included the collection and analysis of surface soil, subsurface soil, surface water, and sediment samples from AOC 1. The RI found potential sources of contamination at AOC 1 to include trash and debris. These included clay pipes, transite siding, ceramic electrical junctions, and approximately six to eight deteriorated 55-gallon drums. A solid brownish-black material was observed and identified as possibly being the former contents of the 55-gallon drums. Surface soil and subsurface soil sampling was conducted and found contaminants at concentrations greater than health-based or project screening levels. The highest concentrations were detected in fill near the drums and in the possible drum contents.

The OCCP RI (USACE 2013) further investigated AOCs 1 through 6 and identified AOC 1 as a former dump area identified as a “presumed storage area” (1944 aerial photograph) and as “disturbed ground” (1951 aerial photograph). Investigation activities were performed between 2001 and 2011, which included laboratory analysis of 51 surface soil, 26 subsurface soil, 3 surface water, and 3 sediment samples. Detected constituents were evaluated in site-specific risk assessments for human health and ecological receptors. It was determined that negligible risk to any receptors from exposure to constituents in soil, sediment, and surface water were present at AOCs 2 through 6.

Elevated levels of lead and TNT were detected in soil and fill at AOC 1 that could pose risk to potential future users of the site. Lead and TNT were identified as the COCs. Lead was detected at a maximum concentration of 2,760 mg/kg and TNT was detected at a maximum concentration of 19,000 mg/kg. Department of Defense policy considers 10 percent or more of secondary explosives to be a potential explosive hazard. Because TNT has been detected at a maximum of 1.9 percent secondary explosive, it does not pose an explosive hazard. The contaminated soil, containing concentrations of lead and TNT above RGs, is confined to an area in the central portion of AOC 1 that is 55 ft by 100 ft. The contamination extends to a depth of approximately 3 ft bgs. Figure 3 shows the extent of soil contamination at AOC 1 based on the surface and subsurface soil sampling and the area of proposed remedial action. The concentrations of lead and TNT in subsurface soil do not indicate an impact to groundwater.

2.6 Current and Potential Future Site Use

The OCCP is currently vacant and undeveloped. No former DoD structures are present. The site does not contain areas of archaeological or historical importance. The portion of the OCCP that contains AOC 1 is currently zoned low-density residential. The area to the south of the OCCP is used by the Niagara River Angler’s Association as a wilderness preserve. There is currently an

easement to the east for electrical power transmission lines, and undeveloped property owned by the Lewiston-Porter Central School District is located to the west. Balmer Road is located immediately north of the OCCP. Property owned by Waste Management, LLC, and a former waste water treatment plant owned by the Town of Lewiston are located immediately east of the utility easement.

The anticipated future use of the site has been identified as industrial and residential. It is not anticipated that groundwater at the site will be used as a potable water source.

2.7 Summary of Site Risks

The USACE conducted a baseline human health risk assessment (HHRA) and a screening level ecological risk assessment (SLERA) as part of the OCCP RI (USACE 2013). The baseline risk assessment estimated site risks if no action was taken. It provided the basis for taking action and identified contaminants and exposure pathways that need to be addressed by the remedial action.

2.7.1 Human Health Risks

The following sections describe the procedure and results of the HHRA. Greater detail on the analysis is provided in Appendix I of the *Final Remedial Investigation Report for the OCCP* (USACE 2013) and also in Appendices B and D of the *Final Feasibility Study Exposure Unit 8 – Occidental Chemical Corporation Property at the Former Lake Ontario Ordnance Works Site, Niagara County, New York* (USACE 2015).

2.7.1.1 Exposure Assessment

Receptors of concern and potential exposure pathways were identified in the exposure assessment. The human health conceptual site model (Figure 4) was formulated based on site history, field investigations, and exposure setting. It was used to identify potential sources of contamination, routes of migration, potential receptors. Complete exposure pathways begin at potential source areas and progress through the environment via various fate and transport processes to potential human receptors.

Current receptors identified at the site include adolescent and adult trespassers. Potential future receptors include an adult maintenance worker, commercial worker, construction worker, and a resident adult and child. The residential receptor was determined to be a reasonable future use of the site based on the current zoning of the site as low-density residential. The medium of concern is soil (surface and total). Exposure pathways evaluated in the HHRA included ingestion and dermal contact with contaminated soil, inhalation of contaminated air particulates from the soil, ingestion of produce grown at the site, and ingestion of game meat from the site.

During the exposure assessment, intake was estimated based on concentrations of constituents of potential concern in soil, rates of contact, and absorption rates. The magnitude, frequency, and duration of these exposures were evaluated to obtain estimates of daily doses over specified periods of time.

2.7.1.2 Toxicity Assessment

The toxicity assessment considered the types of potential adverse health effect associated with the constituents of potential concern, the relationship between the magnitude of exposure and potential adverse effects, and related uncertainties, such as the weight of evidence of a particular

constituent's carcinogenicity in humans. Toxicity values were identified and used to evaluate potential carcinogenic and noncarcinogenic effects.

Lead can be harmful to humans, particularly children under the age of six, when ingested or inhaled. Lead poisoning can cause a number of adverse human health effects and is particularly detrimental to the neurological development of children.

TNT can have significant health effects including liver necrosis and aplastic anemia. The United States Environment Protection Agency (EPA) considers TNT to be a possible human carcinogen.

2.7.1.3 Risk Characterization

The risk characterization combined toxicity values from the toxicity assessment with calculated chemical intakes from the exposure assessment to quantitatively estimate carcinogenic and noncarcinogenic risks for each potential receptor. Carcinogenic risks and noncarcinogenic hazards were evaluated for each receptor on a cumulative basis across all pathways and media. Carcinogenic risk results were compared to the U.S. EPA carcinogenic "acceptable risk range of 10^{-4} to 10^{-6} ". A hazard index threshold value of 1 was used for noncarcinogens. Unacceptable risk was identified when carcinogenic risks were greater than the upper bound of the acceptable range ($>10^{-4}$) or when the noncarcinogenic hazard index exceeded 1.

Table 2.7-1 summarizes the carcinogenic risks and noncarcinogenic hazards for each potential receptor. Noncancer hazard index results exceed the threshold limit for all current and potential future receptors. Cumulative cancer risks for the future on-site adult and child resident exceed the U.S. EPA target range. The remedial action selected in this DD is necessary to protect human health from carcinogenic and noncarcinogenic risks posed by contamination of soil at the site.

A detailed explanation of the uncertainties of the HHRA can be found in Section 4.0 of the HHRA (Appendix I of the RI).

Table 2.7-1. Summary of HHRA for OCCP AOC 1 (EU 8)			
Receptor	HHRA Results		COCs Contributing Significantly to the Results
Adult Trespasser	Cancer Risk	1×10^{-5}	N/A
	Noncancer Hazard Index	2	2,4,6-TNT
Adolescent Trespasser	Cancer Risk	2×10^{-5}	N/A
	Noncancer Hazard Index	7	2,4,6-TNT
Adult Maintenance Worker	Cancer Risk	5×10^{-5}	N/A
	Noncancer Hazard Index	9	2,4,6-TNT
Adult Commercial Worker	Cancer Risk	4×10^{-5}	N/A
	Noncancer Hazard Index	7	2,4,6-TNT
Adult Construction Worker	Cancer Risk	1×10^{-5}	N/A
	Noncancer Hazard Index	45	2,4,6-TNT
Child Resident ¹	Cancer Risk	2×10^{-4}	2,4,6-TNT
	Noncancer Hazard Index	141	2,4,6-TNT
	Lead Exposure	---	Lead
Adult Resident ¹	Cancer Risk	1×10^{-4}	2,4,6-TNT

	Noncancer Hazard Index	14	2,4,6-TNT
¹ Cancer risk for the resident adult and child are presented as a total lifetime cancer risk			
Legend: 2,4,6-TNT – 2,4,6-trinitrotoluene COCs – Constituents of Concern HHRA – Human Health Risk Assessment N/A – Not applicable			

2.7.1.4 Identification of Constituents of Concern

Based on of the HHRA, USACE identified two constituents that pose an unacceptable risk to human health at the site as COCs through incidental ingestion, inhalation, and dermal contact with contaminated soil: lead and TNT.

Lead was detected in samples that were collected from surface soil near the deteriorated drums. Lead occurs naturally in soil in local areas at levels up to 55 parts per million.

TNT was also detected in elevated concentrations in total soil. The LOOW was used as a TNT production facility for nine months between 1942 and 1943 and unused TNT may have been disposed of at the site.

Table 2.7-2 summarizes information about the COCs including the range of concentrations detected, the frequencies of detection, exposure point concentrations (EPCs), and the statistical measure used to determine the EPC.

Table 2.7-2. Summary of Sampling Data for COCs in Total Soil at OCCP – AOC 1					
COC	Min (mg/kg)	Max (mg/kg)	Detection Frequency	EPC (mg/kg)	Statistical Measure
Explosives					
2,4,6-TNT	0.007	19,000	17/37	4,109	95%UCL
Metals					
Lead	0.990	2,760	37/37	496	95%UCL
Legend: 2,4,6-TNT – 2,4,6-trinitrotoluene 95%UCL – 95 th percentile upper confidence limit on the mean COC – constituent of concern Detection Frequency – number of detections over total number of samples collected EPC – exposure point concentration mg/kg – milligrams per kilogram Max – maximum detected concentration Min – minimum concentration detected					

Remediation goals were selected based on the conceptual site model and potential future land use. The site is currently owned by the Occidental Chemical Corporation, is undeveloped, and zoned low-density residential. Future land use is industrial. A potential future resident (adult and child) was considered as the primary receptor of concern for the site.

2.7.2 Ecological Risks

A SLERA for AOC 1 (EU 8) and other AOCs was conducted during the RI (USACE 2013).

An ecological conceptual site model developed for the SLERA is presented as Figure 5. It identifies the potential sources of chemicals at EU 8, fate and transport mechanisms that may lead to their release, and the significant complete exposure pathways.

Area of Concern 1 was found to have high concentrations of metals and explosives, albeit in a limited and distinct area of the site. These high concentrations pose a potential risk to lower trophic level receptors (e.g. plants and invertebrates) and higher trophic level receptors (e.g. shrew, rabbit, robin, and hawk) from exposure.

Potential risk at EU 8 to both human health and ecological receptors was identified in the HHRA and SLERA. Therefore, the SLERA recommended that remedial action objectives (RAOs) be based on the protection of human health. Reduction of COC concentrations to RGs based on protection of human health will concurrently decrease risks to ecological receptors.

2.8 Remedial Action Objective

Remedial action objectives (RAOs) are developed to specify contaminants, media of concern, potential exposure pathways, and remediation goals. They provide a basis for selecting appropriate remedial technologies and developing remedial alternatives. Remediation goals establish acceptable levels of exposure that are protective of human health and the environment.

The RAO for AOC 1 is to prevent direct contact (ingestion and/or dermal contact) with the COCs in total soil that cause an unacceptable risk to an exposed potential future resident.

2.9 Remediation Goals

Table 2.7-3 summarizes the RGs for the site. Further detail on the selection of the RGs can be found in the FS (USACE 2015) and the RI HHRA (USACE 2013).

Table 2.7-3. Human Health Remediation Goals for Total Soil at OCCP – AOC 1		
COC	RG (mg/kg)	Basis
<i>Resident Adult and Child</i>		
Explosives		
2,4,6-TNT	18	Risk-based (carcinogenic, $>10^{-6}$)
Metals		
Lead	400	Risk-based
Legend: 2,4,6-TNT – 2,4,6-trinitrotoluene COC – constituent of concern mg/kg – milligrams per kilogram RG – remediation goal		

2.10 Description of Alternatives

Five remedial alternatives were developed and evaluated in the FS (USACE 2015). They included:

- Alternative 1: No Action

- Alternative 2: Land Use Controls
- Alternative 3: Landfill Cap
- Alternative 4: Excavation and Off-Site Disposal
- Alternative 5: *In Situ* Chemical Reduction/Oxidation and Stabilization

Except for Alternative 1, which is required by the NCP, all alternatives were developed to address the contaminants in soil at AOC 1 and meet the RAO. The proposed area of remedial action is displayed on Figure 3.

Section 121 (d)(2)(A) of CERCLA requires that remedial actions meet standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate. The ARARs may either be federal or state statutes or promulgated regulations. 6 NYCRR Part 375 was proposed as a potential chemical specific ARAR which includes a soil cleanup objective for lead. Because the soil cleanup objective for lead identified in 6 NYCRR Part 375 is not more stringent than the USEPA risk-based cleanup goal for lead, it is not considered an ARAR and the remediation goals are risk-based as shown in Table 2.13-3 of this DD. Alternatives 3 and 5 have certain federal requirements identified in the Resource Conservation and Recovery Act (RCRA) 40 CFR Parts 264.301, 264.95 and 268.48 that are ARARs for those alternatives. No ARARs are identified for Alternatives 1, 2, or 4. Since the remedial decision is Alternative 4, there are no ARARs that pertain to this remediation. Further discussion of the selection of ARARs can be found in section 3 of the FS (USACE 2015).

2.10.1 Alternative 1: No Action

Estimated Capital Cost: \$0

Estimated O&M Cost: \$0

Estimated Total Present Cost: \$0

The No Action alternative is required under *40 CFR 300: National Oil and Hazardous Substances Pollution Contingency Plan* (U.S. EPA 1994b) for the FS as a baseline against which all other alternatives are compared. Under this alternative, there would be no remedial response actions implemented to address TNT and lead in total soil at the site. Engineering and land use controls (LUCs) would not be implemented. There would be no public awareness or education training about potential risks associated with the contaminated soil.

2.10.2 Alternative 2: Land Use Controls

Estimated Capital Cost: \$364,861

Estimated O&M Cost: \$2,684,465

Estimated Total Present Cost: \$3,049,326

Alternative 2 includes implementing LUCs/institutional controls (ICs) and engineering controls/access restrictions to prevent potential exposure to contaminated soil. The contaminated soil would not be treated or removed. This alternative would prohibit recreational use and access to the site. It limits land or resource use by providing information that helps modify, limit, or eliminate human contact on site. The LUCs/ICs include proprietary controls (easements), governmental controls (deed restrictions, prohibitions, and building or excavation permit requirements), and informational devices (signs, state registries and deed notices) to restrict access to the site and restrict future development of the site. Access restrictions would include installing approximately 350 ft of 5-ft high chain linked fence with warning signs around the

contaminated area and informational devices such as fact sheets, public information meetings, and articles/advertisements. The alternative includes long-term monitoring (LTM) and maintenance. Five-Year Reviews required by CERCLA and the NCP would be required by this alternative to ensure the remedy remains protective. The alternative would achieve the RAO by preventing human access to the contaminated soil.

2.10.3 Alternative 3: Landfill Cap

Estimated Capital Cost: \$574,836

Estimated O&M Cost: \$4,935,528

Estimated Total Present Cost: \$5,510,364

Alternative 3 includes placement of a low permeability landfill cap over the contaminated soil to prevent human and ecological exposure to the contaminants. A RCRA Subtitle C-equivalent cap that complies with 40 CFR 264 would be placed over the contaminated fill area. The general components of the cap would include an upper layer (i.e., vegetative cover and topsoil), a drainage layer, a low permeability layer (i.e., synthetic liner over compacted clay), and a grading layer. A vertical barrier would be installed that consists of compacted clay, a grout curtain, or a slurry wall that would be keyed into the underlying clay. The contaminants would remain in soil beneath the cap at levels that would not allow for UU/UE. Land use controls and LTM would be required. The RAO would be achieved by implementing the remedial action, which is estimated to take three months. The following is a summary of estimated quantities associated with the remedy:

- Capped area: 5,618 square feet (ft²)
- Subsurface barrier: 6,328 linear feet (LF)
- Grading layer: 383 CY
- Compacted clay layer: 416 CY
- Synthetic liner: 6,328 ft²
- Geotextile filter: 6,328 ft²
- Drainage netting: 6,328 ft²
- Topsoil: 133 CY
- Perimeter fence: 350 LF

Institutional controls would be implemented, including proprietary controls (easements), deed restrictions, and informational devices (signs, state registries, and deed notices). A fence with warning signs would be installed around the capped area. Maintenance of the remedy, including the ICs, would be required and updates would be necessary if site conditions change in the future.

Long-term monitoring would consist of a network of groundwater monitoring wells to assess the potential for contaminant migration. Upgradient and downgradient wells would be sampled and analyzed for TNT and lead annually for 30 years.

2.10.4 Alternative 4: Excavation and Off-Site Disposal

Estimated Capital Cost: \$846,045

Estimated O&M Cost: \$0

Estimated Total Present Cost: \$846,045

Alternative 4 includes excavating and disposing off-site all impacted soil that contains TNT and lead above the RGs, as well as the DoD-unique materials and commingled debris. Excavated soil and debris would be segregated and disposed of at a permitted TSDF. Noncontaminated debris would be disposed of at a subtitle D landfill. Some pretreatment/stabilization of contaminated soil may be necessary to meet land disposal restrictions if analytical data determines that the contaminated soil is RCRA hazardous waste in accordance with 40 CFR Part 261. The excavated area would be inspected and soil samples would be collected for laboratory analysis to test for remaining contamination. Excavation and sampling/analysis would continue until it was determined that all contaminated material with concentrations greater than the RGs had been removed. The RAO would be achieved during the remedial action, which is estimated to require three months. Estimated quantities of material at concentrations above the RGs are listed below. The volume of contaminated soil and solid debris below is estimated and based solely on the sample locations.

- Contaminated soil: 611 CY
- Debris: 204 CY

The site would be restored to a condition that allows for UU/UE under this remedy alternative. Operation and maintenance and five-year reviews would not be required.

2.10.5 Alternative 5: *In Situ* Chemical Reduction/Oxidation and Stabilization

Estimated Capital Cost: \$1,435,354

Estimated O&M Cost: \$4,935,528

Estimated Total Present Cost: \$6,370,882

Alternative 5 includes on-site treatment of contaminated soil using chemical reduction/oxidation to reduce the TNT concentrations and stabilize lead in soil to ensure compliance with treatment standards in 40 CFR 268. Debris commingled with the contaminated soil would be removed prior to soil treatment to allow for adequate blending of the compound with the contaminated soil. The debris would be disposed of at a permitted TSDF. Contaminated soil would be treated on-site and would remain in on-site. Soil sampling would be performed to confirm that contaminated soil above the RGs has been treated. The RAO may be achieved through treatment, which is estimated to require three months. Estimated quantities associated with this remedial alternative are listed below. The volume of contaminated soil and solid debris below is estimated and based solely on the sample locations.

- Contaminated soil: 611 CY
- Debris: 204 CY

Institutional controls would be implemented including proprietary controls (easements), governmental controls (deed restrictions), and informational devices (signs, state registries, and deed notices). Periodic reviews of established ICs would be required and updated if site conditions change.

This alternative includes LUCs, LTM, and maintenance of the remedy. Remedy updates would be necessary if site conditions change in the future.

2.11 Comparative Analysis of Alternatives

Nine CERCLA criteria were used to evaluate the alternatives and select a remedy. This section summarizes the relative performance of each alternative against each of the nine criteria and how each compares to the other alternatives under consideration. A more detailed analysis of alternatives is provided in the FS (USACE 2015). Table 2.11-1 shows a comparative analysis for the alternatives for COCs in total soil at the site.

The nine criteria consist of two threshold criteria, five balancing criteria, and two modifying criteria.

The remedial alternative must meet two threshold criteria for it to be considered a viable remedy. The threshold criteria are:

- Overall protectiveness of human health and the environment—determines whether an alternative eliminates, reduces, or controls threats to human health and the environment through ICs, engineering controls, or treatment.
- Compliance with ARARs—evaluates whether the alternative meets cleanup criteria, standards of control, or requirements of environmental laws and regulations that pertain to the contamination, or whether a waiver is justified.

The five balancing criteria are the primary criteria upon which the detailed analysis was based and include:

- Long-term effectiveness and permanence—considers the ability of an alternative to remain protective of human health and the environment over time.
- Reduction of toxicity, mobility, or volume of contaminants through treatment—evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
- Short-term effectiveness—considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
- Implementability—considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
- Cost—includes estimated capital, annual O&M, and present-worth costs. Present-worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate with a range of +50 to -30 percent.

The two modifying criteria were addressed during the public comment period for the PP (USACE 2016) and are:

- State/support agency acceptance—considers whether the state agrees with the USACE's analyses and recommendations, as described in the RI/FS and PP.
- Community acceptance—considers whether the local community agrees with the USACE's analyses and preferred alternative. Comments received on the PP are an important indicator of community acceptance.

2.11.1 Overall Protection of Human Health and the Environment

Alternatives 3, 4, and 5 would meet the criteria of being protective of human health and the environment and would achieve the RAO. Alternative 1 (No Action) would not protect human

health or the environment because it does not actively address the potential risks associated with site contaminants. Alternative 2 (LUCs) would be protective of human health by reducing the potential for exposure by restricting access to the site and prohibiting future development of the site. It may not be protective of the environment. Because Alternatives 1 and 2 do not meet this threshold criteria, they cannot be selected as the remedy.

2.11.2 Compliance with ARARs

There were no ARARs identified for Alternatives 1, 2, and 4. Alternatives 3 and 5 would comply with ARARs.

2.11.3 Short-Term Effectiveness

All alternatives were rated high for short-term effectiveness; this means they had low residual risk, and adequate and reliable controls. Potential risks to the community, site personnel, and the environment during implementation of Alternatives 2, 3, 4, and 5 could be mitigated by using established procedures for worker safety and health; air monitoring; water management; erosion and sedimentation controls; and waste management, transportation, and disposal. There would be no additional short-term exposure risks to remediation workers or the community under Alternative 1 since no remedial action would take place.

2.11.4 Long-Term Effectiveness and Permanence

Alternative 4 was rated high for long-term effectiveness and permanence. It provides the greatest long-term effectiveness because it would permanently remove all contaminated soils with COCs above risk-based RGs. Alternatives 3 and 5 received a moderate rating and Alternatives 1 and 2 were rated low. Alternatives 3 and 5 require LUCs and LTM after their implementation to ensure long-term effectiveness. Alternatives 1 and 2 are not effective in the long term.

2.11.5 Reduction of Toxicology, Mobility, and/or Volume through Treatment

Alternatives 1, 2, and 4 do not actively treat the contaminants and therefore reduction of toxicity, mobility, and/or volume of the contaminants would only occur by natural attenuation processes. Site data suggest that COCs have persisted for over 70 years and will persist for the foreseeable future without treatment or removal. Alternative 3 is rated as moderate because the remedy would not reduce the toxicity or volume of contaminants but would reduce their mobility in soil. Alternative 5 rated the highest for reduction of toxicology, mobility, and/or volume.

2.11.6 Implementability

Alternative 4 was rated high for implementability, while all other alternatives received a moderate rating. Alternative 4 is rated the highest because the equipment, material, and labor are readily available and the remedy is technically and administratively feasible. Alternatives 2, 3, and 5 are technically feasible because equipment, material, and labor are readily available to implement the remedies. The administrative feasibility is rated low for these alternatives because the property is not owned by the federal government, and implementing LUCs may be difficult.

2.11.7 Cost

Alternative 4 has the lowest total present worth cost (besides the No Action alternative) because no operation, maintenance, and monitoring costs are associated with the alternative. Alternatives 2, 3, and 5 have total costs that are approximately 3.5 to 7.5 times greater than Alternative 4.

2.11.8 State/Support Agency Acceptance

The NYSDEC concurs with the USACE's selection of preferred alternative (Alternative 4) for AOC 1 at the OCCP. This is documented in a letter that is included in the Responsiveness Summary (Appendix A).

2.11.9 Community Acceptance

Community acceptance of the preferred alternative was gauged during a public meeting on January 11, 2017, and a public comment period from December 5, 2016, to February 7, 2017. At the public meeting, three individuals provided comments on the selected remedy. Seven written comments were received during the comment period. They represent comments from elected officials, the NYSDEC, the Tuscarora Nation, and members of the public. The USACE did not receive any comments that rejected the USACE's selection of preferred alternative (Alternative 4). Community acceptance, including public comments and the USACE's responses, is addressed in detail in the responsiveness summary (Appendix A).

Table 2.11-1. Comparative Analysis of COCs in Total Soil at OCCP AOC 1 (EU 8)									
Alternative	Protection of HH&E	Compliance with ARARs	Short-Term Effectiveness	Long Term Effectiveness	Reduction of toxicity, Mobility, or Volume	Implementability	Cost (\$-2015)		
							Total	Capital	Operation, Maintenance and Monitoring
Alternative 1: No Action	○	●	●	○	○	●	\$0	\$0	\$0
Alternative 2: Land Use Controls	○	●	●	○	○	●	\$3,049,326	\$364,861	\$2,684,465
Alternative 3: Landfill Cap	●	●	●	●	●	●	\$5,510,363	\$574,836	\$4,935,528
Alternative 4: Evacuation and Off-Site Disposal	●	●	●	●	○	●	\$846,045	\$846,045	\$0
Alternative 5: <i>In Situ</i> Chemical Reduction/Oxidation and Stabilization	●	●	●	●	●	●	\$6,370,882	\$1,435,354	\$4,935,528
<i>Legend:</i> ARARs – applicable or relevant and appropriate requirements COC – constituent of concern HH&E – human health and the environment									

Explanation of Ratings			
Factors	●	●	○
Protection of Human Health and the Environment	Protective	Moderate rating or not all factors addressed	Not protective
Compliance with ARARs	Compliant or No ARARs were identified	Moderate rating or not all factors addressed	Noncompliant
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 and Permanence	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 Through Treatment	Will reduce toxicity, mobility, and volume through treatment	Moderate rating or not all factors addressed	Won't 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, low administrative feasibility

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2.12 Principal Threat Waste

The NCP establishes an expectation that treatment will be used to address the principal threats posed by a site wherever practicable (NCP 300,430(a)(iii)(A)). Identifying principal threat wastes combines concepts of both hazard and risk. In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur. Site-related COCs are not considered principal threat wastes since they are not highly toxic or mobile. The potential risk from the COCs still requires a response action to protect human health and the environment.

2.13 Selected Remedy

The remedy selected by the USACE to address contaminated soils at the site is Alternative 4, Excavation and Off-Site Disposal. The selected remedy was developed in accordance with CERCLA as amended, is consistent with the NCP, and was selected based on the results of the comparative analysis.

2.13.1 Summary of the Rationale for the Selected Remedy

The selected remedy achieves the RAO, fulfills both threshold criteria, and was rated high for all five of the balancing criteria. The selected remedy will satisfy the statutory requirements for CERCLA § 121(b): be protective of human health and the environment, be cost-effective, and utilize permanent solutions that will preclude any future environmental impact.

2.13.2 Description of the Selected Remedy

The selected remedy includes excavation and off-site disposal of contaminated soil and commingled solid debris. It is estimated that 611 CY of contaminated soil and 204 CY of commingled debris have concentrations of contaminants above the RGs. Major activities required for this remedy are summarized below.

- Project planning documents will include a site operations plan, accident prevention/site safety and health plan, contractor quality control plan, and waste management, transportation, and disposal plan.
- Equipment and personnel will be mobilized to the site. Vegetation will be cleared to facilitate the construction activities. Lay-down areas, staging areas, work zones, storm-water controls, and erosion/sedimentation controls will be established.
- COC-contaminated soil, DoD-unique materials, and commingled solid debris will be excavated, segregated, and placed in containers (e.g. roll-off boxes, intermodals, etc.).
- Excavated soil will be sampled and analyzed for explosives; the toxicity characteristic leaching procedure for extractin lead will be used; and any other requirements of the TSDF will take place.
- Pretreatment/stabilization of contaminated soil may be necessary to meet land disposal restrictions if analytical data determines that contaminated soil is RCRA hazardous waste in accordance with 40 CFR Part 268.
- The excavated contaminated soil will be disposed off-site at a permitted TSDF; noncontaminated debris will be disposed at a subtitle D landfill.
- The excavated area will be inspected and soil samples would be collected for laboratory analysis (i.e., TNT and lead).

- Excavation and sampling/analysis will continue until it was determined that all contaminated material has been removed to below the RGs.
- The site will be restored to match the conditions of the surrounding wetland.

2.13.3 Summary of Estimated Remedy Costs

The selected remedy had the lowest total estimated cost of all the remedy alternatives evaluated. The estimated cost associated with the remedy is \$846,045, with the capital cost being \$846,045, and the annual operations, maintenance, and monitoring cost being \$0.

Costs were estimated in the FS (USACE 2015), in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (U.S. EPA 1998). They are based on a variety of cost estimating data, including cost curves, generic unit costs, vendor information, conventional cost estimating guides, and prior similar estimates that were modified by site-specific information. The cost estimate is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within +50 to –30 percent of the actual project cost.

Table 2.13-1 shows the site costs with markups for each phase of the remedy. Table 2.13-2 presents detailed breakdown direct costs associated with each phase of the remedy. More details on how the estimated costs were calculated can be found in Appendix E: Summary of Alternative Cost Estimates of the FS (USACE 2015).

Table 2.13-1. Site Costs over Time with Markups				
Phase Type	Phase Name	2017	2018	Total
Design	Remedial Design	\$132,473	\$0	\$132,473
Project Plans	USACE Project Plans	\$224,775	\$0	\$224,775
Remedial Action	Remedial Action	\$0	\$423,120	\$423,120
Site Closeout	Site Closeout	\$0	\$65,677	\$65,677
Total Cost		\$357,248	\$488,797	\$846,045

Table 2.13-2. OCCP AOC 1 (EU 8) Selected Remedy – Excavation and Off-Site Disposal Summary of Estimated Direct Costs

Technology Name	Assembly Description	Quantity	Unit	Unit Cost	Cost
Clear and Grub	Selective clearing, brush, medium clearing with dozer and brush rake, excludes removal off-site	0.8	Acres	\$228.68	\$182.94
	Clear trees, wet conditions, medium growth, 200 H.P. dozer, excluding grubbing	0.2	Acres	\$2467.66	\$493.53
	Site clearing trees, with 335 H.P. dozer to 6 inch diameter	60	Each	\$6.25	\$374.83
	Site clearing trees, with 335 H.P. dozer to 12 inch diameter	20	Each	\$11.66	\$233.23
	Site clearing trees, with 335 H.P. dozer to 24 inch diameter	20	Each	\$17.49	\$349.84
	Remove stumps, wet conditions, with dozer, to 6 inch diameter	12	Each	\$81.12	\$973.49
	Remove stumps, wet conditions, with dozer, 6 to 12 inch diameter	4	Each	\$101.41	\$405.62
	Remove stumps, wet conditions, with dozer, 12 to 24 inch diameter	4	Each	\$135.21	\$540.83
	Grub stumps, with 335 H.P. bulldozer, to 6 inch diameter	48	Each	\$4.37	\$209.91
	Grub stumps, with 335 H.P. bulldozer, to 12 inch diameter	16	Each	\$8.35	\$133.52
	Grub stumps, with 335 H.P. bulldozer, to 24 inch diameter	16	Each	\$83.45	\$1,335.16
	Dump charges	4200	Each	\$15.00	\$63,000.00
	966, 4.0 CY, wheel loader	22	Hours	\$151.14	\$3,324.97
	26 CY, semi dump	151	Hours	\$135.32	\$20,433.62
	Total				\$91,991.48
Excavation	12 CY dump truck haul/hour	40	Hour	\$118.08	\$4,723.45
	Excavate and load, bank measure, medium material, 2 CY bucket, hydraulic excavator	630	BCY	\$1.85	\$1,163.10
	Unclassified fill, 6 inch lifts, off-site, includes delivery, spreading, and compaction	818	yd ³	\$31.29	\$25,598.36
	Seeding, vegetative cover	0.16	Acres	\$4,250.68	\$680.11
	Disposable materials per sample	11	Each	\$10.95	\$120.50
	Testing, TAL metals (6010/7000s)	5	Each	\$130.39	\$651.94
	Testing, soil & sediment analysis, metals (6010)	5	Each	\$12.24	\$61.22
	Testing, soil & sediment analysis, 14 nitroaromatic/nitramine compounds by U.S. EPA Method 8330	5	Each	\$306.08	\$1,530.38
	Project Manager	5	Hour	\$92.47	\$462.35
	Project Scientist	5	Hour	\$85.43	\$427.16
	QA/QC Officer	1	Hour	\$85.43	\$85.43
	Field Technician	1	Hour	\$42.60	\$42.60
	Word Processing/Clerical	1	Hour	\$46.11	\$46.11
	Draftsman/CADD	1	Hour	\$49.45	\$49.45
	Total				\$35,642.16
Off-Site Transportation and Waste Disposal	Bulk solid waste loading into disposal vehicle or bulk disposal container	204	BCY	\$2.79	\$570.46
	Transport bulk solid hazardous waste, maximum 20 CY (per mile)	110	Miles	\$2.89	\$318.32
	Waste stream evaluation fee, (Not including 50% rebate on 1 st shipment)	1	Each	\$69.56	\$69.56
	32 ft dump truck with disposable 6 Mil liner	11	Each	\$25.80	\$283.79
	Landfill nonhazardous solid bulk waste by CY	204	yd ³	\$25.19	\$5,138.19
	Bulk solid waste loading into disposal vehicle or bulk disposal container	611	BCY	\$2.79	\$1,708.57
	Transport bulk solid hazardous waste, maximum 20 CY (per mile)	930	Miles	\$2.89	\$2,691.23
	Waste stream evaluation fee (Not including 50% rebate on 1 st shipment)	1	Each	\$69.56	\$69.56
	32 ft dump truck with disposable 6 Mil Liner	31	Each	\$25.80	\$799.78
	Landfill hazardous solid bulk waste requiring stabilization	611	yd ³	\$202.93	\$123,992.24
	Total				\$135,641.71
Cleanup and Landscaping	Cleaning up site (debris removal)	0.13	Acres	\$639.29	\$83.11
	Total				\$83.11

Technology Name	Assembly Description	Quantity	Unit	Unit Cost	Cost
Separation	Crawler-mounted, 4.0 CY hydraulic excavator	30	Hours	\$220.96	\$6,628.80
	12 CY dump truck	30	Hours	\$114.38	\$3,431.32
	0.75 CY wheel loader	90	Hours	\$137.89	\$12,409.98
	Cleaning up site (debris removal)	0.13	Acres	\$889.52	\$68.45
	Trommel screener	1	Month	\$6,047.85	\$6,047.85
	Grizzly shaker unit	1	Month	\$4,437.59	\$4,437.59
	Conveyers, material handling, horizontal belt, center drive & take up, 60 fpm, 24 inch belt, 61.5 ft length	1	Each	\$10,112.24	\$10,112.24
	Other direct costs	1	LS	\$1,821.95	\$1,821.95
	Total				\$44,958.18
Site Close-Out Documentation	Automobile rental	9	Day	\$54.06	\$486.53
	Per diem (per person)	18	Day	\$154.00	\$2,772.00
	Airfare	1	LS	\$3,000.00	\$3,000.00
	Senior Project Manager	1	Hours	\$93.55	\$93.55
	Senior Project Manager	3	Hours	\$93.55	\$280.66
	Project Manager	33	Hours	\$70.74	\$2,334.29
	Project Manager	48	Hours	\$70.74	\$3,395.33
	Senior Staff Engineer	8	Hours	\$93.62	\$748.96
	Staff Engineer	93	Hours	\$83.45	\$7,760.60
	Staff Engineer	42	Hours	\$83.45	\$3,504.79
	Word Processing/Clerical	38	Hours	\$36.48	\$1,386.39
	Word Processing/Clerical	16	Hours	\$36.48	\$583.74
	Draftsman/CADD	4	Hours	\$40.04	\$160.17
	Draftsman/CADD	27	Hours	\$40.04	\$1,081.13
	Total				\$27,588.14
Remedial Design (Percent)	Remedial design professional labor	1	Each	\$132,473.00	\$132,473.00
	Total				\$132,473.00
USACE Project Plans	Remedial design professional labor	1	Each	\$150,000.00	\$150,000.00
	Total				\$150,000.00
	Grand Total				\$618,377.78
Legend: <i>BCY – bank cubic yards</i> <i>CY – cubic yards</i> <i>fpm – feet per minute</i> <i>H.P. -- Horsepower</i> <i>LS – lump sum</i> <i>mil – one thousandth of an inch</i> <i>TAL – Target Analyte List</i>					

2.13.4 Expected Outcomes of Selected Remedy

Contaminated soil and DoD-unique materials will be excavated and disposed of off-site until residual levels of COCs are equal to or less than RGs. (Table 2.13-3). The remedial action is expected to be implemented, and RAO attained in three months. Excavation with off-site disposal restores the site to a UU/UE condition. It is expected that compliance with human health standards will reduce lead concentrations in surface soil and decrease risk to ecological receptors. The site will be restored to match the conditions of the surrounding wetland. Future potable use of groundwater or surface water is not expected due to site hydrology. Land use controls, LTM, and periodic (every five years) reviews will not be required because contamination above RGs will not be left on the site.

Table 2.13-3. Remedial Goals for Constituents of Concern in Total Soil at OOCF AOC 1 (EU 8)			
Chemical of Concern	Remedial Goal	Basis for Cleanup Level	Risk at Cleanup Level
2,4,6-TNT	18 (mg/kg)	Risk-based (carcinogenic)	Cancer risk = 10^{-6}
Lead	400 (mg/kg)	Risk-based	5% risk of 10 µg/dL lead in blood ¹
¹ The risk-based remediation goal of 400 mg/kg in total soil is based upon the <i>Revised Interim, Soil Lead Guidance for CERCLA sites RCRA Corrective Action Facilities</i> (U.S. EPA 1994a). This concentration is supported by USEPA's Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children (USEPA 2001). The IEUBK model predicts that 400 mg/kg of lead in soil could cause a six year old resident child (average across the preceding 84 months) to have a probability of no greater than 5% of having a blood level of 10 µg/dL of blood, which is associated with adverse health effects.			
Legend: 2,4,6-TNT – 2,4,6-trinitrotoluene mg/kg – milligrams per kilogram µg/dL – micrograms of lead per deciliter			

2.14 Statutory Determinations

In accordance with CERCLA §121 and the NCP, the remedy selected must be protective of human health and the environment, comply with ARARs, be cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The selected remedy will not require five-year reviews. The CERCLA also includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes. The following sections discuss how the selected remedy meets these statutory requirements.

2.14.1 Protection of Human Health and the Environment

The selected remedy, Alternative 4, will protect human health and the environment through excavation and off-site disposal of soil contaminated with TNT and lead. The remedy is protective because it meets the RAO of preventing direct contact (ingestion and/or dermal contact) with the COCs in total soil that cause an unacceptable risk to an exposed potential future resident.

Contamination in soil will be reduced to concentrations that do not pose unacceptable risk to an exposed potential future resident. The selected remedy will reduce cancer risk from TNT to below 1×10^{-6} , which is at the lower end of the U.S. EPA's target risk range of 10^{-4} to 10^{-6} . Lead will be reduced to a level where a six year old resident child has a probability of no greater than 5 percent of having a blood level of 10 µg/dL, which is associated with adverse health effects.

There are no short-term threats associated with the selected remedy that cannot be readily controlled.

2.14.2 Compliance with Applicable or Relevant and Appropriate Requirements

As discussed in Section 2.9, no ARARs were identified which apply to the selected remedy.

2.14.3 Cost-Effectiveness

The selected remedy is cost-effective because the cost is relatively low, and the overall effectiveness is high. The estimated cost for the selected remedy is between 3.5 to 7.5 times less than the costs of the other alternatives evaluated. The overall effectiveness of the remedy is rated high for long-term effectiveness and permanence and short-term effectiveness.

2.14.4 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the site. Of the alternatives that met the two threshold criteria, the selected remedy provides the best balance of trade-offs in terms of the five balancing criteria, the statutory preference for treatment as a principal element and bias against off-site treatment and disposal and considering state and community acceptance.

The selected remedy removes contaminated soil above RGs, permanently reducing toxicity, volume, and mobility of COCs in soil at the site. This satisfies the criteria for long-term effectiveness. The selected remedy does not present any short-term threats that cannot be readily controlled. The selected remedy is rated the highest for implementability because it does not require LUCs or ICs that may be difficult to implement.

2.14.5 Preference for Treatment as a Principal Element

The selected remedy does not satisfy the preference for treatment as a principal element since the remedy consists of a removal and disposal action. If necessary, waste treatment at the TSDF would reduce the toxicity and/or volume of the contaminants. The facility's engineering controls would reduce contaminant mobility at the TSDF.

Alternative 4 was selected because it was rated highest based on all nine CERCLA criteria used for evaluating the remedial alternatives.

2.14.6 Five-Year Review Requirements

The selected remedy will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for UU/UE, and five-year reviews are not required by statute or policy.

2.15 Documentation of Significant Changes

The PP was issued for public comment on January 7, 2017. It identified Alternative 4, Excavation and Off-Site Disposal, as the preferred alternative for soil remediation. The U.S. Army Corps of Engineers reviewed all written and verbal comments submitted during the public comment period. It was determined that no significant changes to the remedy were necessary or appropriate.

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3.0 REFERENCES

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APPENDIX A

Responsiveness Summary

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LAKE ONTARIO ORDINANCE WORKS OCCIDENTAL CHEMICAL CORPORATION PROPERTY RESPONSIVENESS SUMMARY

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List of Attachments

Attachment 1: Public Meeting Transcript

Attachment 2: Tuscarora Nation Letter

Attachment 3: New York State Department of Environmental Conservation Letter

Attachment 4: Niagara County Legislature Resolution

Attachment 5: Town of Lewiston Resolution

Attachment 6: Town of Lewiston Environmental Commission Resolution

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1. INTRODUCTION

On December 5, 2016, the USACE issued a proposed plan (PP) for the Occidental Chemical Corporation property located within the former Lake Ontario Ordnance Works (LOOW) Site in the Town of Lewiston, New York. A public meeting was held January 11, 2017, during which the Corps of Engineers presented background information and its recommendation for remediation of Area of Concern (AOC) 1 on the Occidental Chemical Corporation property. During the meeting, the public was invited to provide comments through February 7, 2017. This responsiveness summary addresses comments received during the public meeting and the subsequent comment period.

As described in the PP, the Corps of Engineers prefers Alternative 4, Excavation and Off-Site Disposal, to address contaminated soils at AOC 1. All soils exceeding the remediation goals (RGs) will be excavated and transported off-site to a permitted treatment, storage, and disposal facility. This will attain the remedial action objective (RAO). Alternative 4 is considered protective in the long term because all contaminated soils exceeding the risk-based RGs will be removed from the site. Alternative 4 also provides the best balance of long-term effectiveness, short-term effectiveness, and cost. It has the highest implementability rating of the evaluated alternatives.

The preferred alternative will satisfy the following statutory requirements for CERCLA § 121(b): (1) be protective of human health and the environment; (2) be cost-effective; and (3) utilize permanent solutions that will preclude any future environmental impact.

2. OVERVIEW OF PUBLIC INVOLVEMENT

On December 5, 2016, a letter announcing the release of the PP for the Occidental Chemical Corporation Property was sent to 292 individuals on the site mailing list and 226 individuals on the site email list, including elected officials. The letter documented the preferred alternative for remediation of the site and the public meeting date. Legal advertisements announcing availability of the PP for public review and comment and the January 11, 2017, public meeting date were also placed in the following local newspapers: the Buffalo News Niagara Edition, the Niagara Gazette, the Lewiston Porter-Sentinel, and the Lockport Union-Sun & Journal.

The public meeting was held January 11, 2017, from 6:30 to 8:30 p.m. in the Town of Lewiston Senior Center, 4361 Lower River Road, Youngstown, New York. Corps of Engineers representatives were present to discuss any comments or concerns from the public. At the meeting, the Corps of Engineers explained the history of the site, studies and investigations completed, the contaminated area, CERCLA evaluation criteria, the remedial alternatives, the preferred alternative, and the remediation schedule. The public meeting was attended by members of the public including: elected officials, representatives of elected officials, regulatory agency representatives, members of the media, union representatives, and area residents. A stenographer was present at the meeting to record the proceedings and comments. Three individuals requested the opportunity to speak at the meeting. Comments received at the public

meeting and written comments received during the subsequent public comment period are responded to in this responsiveness summary. The meeting transcript is included as Attachment 1.

3. RESPONSES TO COMMENTS

At the public meeting, three individuals provided comments on the PP. Responses to these comments are provided in Section 3.1. The public meeting transcript is provided at the end of this appendix as Attachment 1. Any materials provided by a commenter during the meeting are also included in Attachment 1 at the end of the transcript.

Seven written comments were received during the comment period, they are included as attachments to this appendix. They represent comments from elected officials, the New York State Department of Environmental Conservation, the Tuscarora Nation, and members of the public. Corps of Engineers responses to these comments are addressed in Section 3.1 and Section 3.3.

3.1 General Responses to Comments

The Corps of Engineers wishes to thank all members of the community who took the time to participate in the public process by providing comments. The Corps of Engineers has carefully and thoughtfully considered all the comments received.

Individual comments are addressed in Section 3.2 and Section 3.3.

3.2 Responses to Public Meeting Comments (Attachment 1)

3.2.1 [REDACTED], Vice Chairman, Niagara County Legislature (meeting transcript, page 24)

Comment: [REDACTED] read a resolution which was to go on the floor of the Legislature on January 17, 2017, reaffirming its “unanimous desire to have the material removed.” The resolution states that “the Niagara County Government and Populous [sic] are unanimous in agreement with the Corps of Engineers’ best recommendation to pursue Alternative 4, Excavation and Off-Site Removal, to address the areas of concern of the Occidental Chemical Corporation Property.” A copy of the resolution is included in Attachment 2.

Response: The Corps of Engineers thanks you for your comment.

3.2.2 [REDACTED] (meeting transcript, page 29)

Comment: “I don’t have anything to make a comment on except I thought the presentation was excellent, and I am just in agreement with everything you said. Thank you very much.”

Response: The Corps of Engineers thanks you for your comment.

3.2.3 [REDACTED], Niagara River Anglers Association Vice President (meeting transcript, page 29)

Comment: [REDACTED] states that the property adjoins a gravel road that is an entranceway to the Niagara River Anglers Association's wilderness preserve, which is open from April 1st through November 1st. [REDACTED] expressed concern about the road and whether its condition will be "cleaned up or made better" once the remedial action is complete.

Response: The contractor selected to perform the remedial action for the Corps of Engineers will be required to document the condition of the gravel road prior to the start of work. Any damage to the road caused by the contractor's activities will be repaired at the conclusion of the remedial action.

The area surrounding AOC 1 is a New York State forested wetland. The remedial action will not be conducted when standing water surrounds AOC 1 to prevent the potential for spreading contamination. This may require conducting the remedial action during the summer season when conditions are drier. Access to the wilderness preserve will be maintained during performance of the work.

3.3 Responses to Written Comments

3.3.1 Tuscarora Nation

Comment: In a letter dated January 28, 2017, the Tuscarora Nation stated their support for removal of contaminated soil as described in the proposed remedy. The Tuscarora Nation stated that it "will not allow any of the material from this project to cross Tuscarora Nation Territory during this project, from start to finish. The Tuscarora Nation wishes to be informed of every step of this project." The letter included maps showing the borders of the Tuscarora Nation Territory. A copy of the letter is included as Attachment 2.

Response: The Corps of Engineers thanks the Tuscarora Nation for its comment. Roads in the Tuscarora Nation Territory will not be used for transportation of contaminated soil. Stakeholders will be kept informed of the project's progress.

3.3.2 New York State Department of Environmental Conservation

Comment: In a letter dated January 18, 2017, it was stated that "the Department concurs with the Corps of Engineer's selection of the preferred alternative for AOC 1 at the Occidental Chemical Corporation Property." A copy of this letter is included at Attachment 3.

Response: The Corps of Engineers thanks the New York State Department of Environment Conservation for its comment.

3.3.3 Niagara County Legislature

Comment: The Niagara County Legislature approved the resolution read by [REDACTED] at the public meeting. The resolution is in agreement with the Corps of Engineers' recommendation of Alternative 4. A copy of the resolution is included in Attachment 4.

Response: The Corps of Engineers thanks the Niagara County Legislature for its comment.

3.3.4 Town of Lewiston

Comment: The Town of Lewiston approved a resolution agreeing with the Corps of Engineers' recommendation to pursue Alternative 4. A copy of the resolution is included in Attachment 5.

Response: The Corps of Engineers thanks the Town of Lewiston for its comment.

3.3.5 Town of Lewiston Environmental Commission

Comment: The Town of Lewiston Environmental Commission unanimously approved a resolution on January 31, 2017, agreeing with the Corps of Engineers' recommendation to pursue Alternative 4. A copy of the resolution is provided in Attachment 6.

Response: The Corps of Engineers thanks the Town of Lewiston Environmental Commission for its comment.

3.3.6 [REDACTED]

Comment: [REDACTED] submitted a comment to the Corps of Engineers on January 15, 2017, stating a Lewiston-Porter School Board historical land use of the LOOW property had been previously recorded as "other" utilization.

Response: The information provided in [REDACTED] email will be added to the Administrative Record file for the site.

3.3.7 [REDACTED], CEO & CTO MuniRem Environmental

Comment: "I read about the dig and haul remediation of TNT contaminated soil at the former Lake Ontario Ordnance Works (LOOW). Although the ROD may already be in place, I would like to inform you that my company – MuniRem Environmental offers in-situ chemical remediation of explosives contaminated soils and groundwater. [REDACTED] (Office of the Assistant for Munition and Chemical Matters at Army HQ) and [REDACTED] at the Huntsville Engineering Support Center are references. Our cleanup cost and time are cheaper and faster than dig and haul."

Response: The Corps of Engineers thanks you for your comment. The feasibility study cost estimate for Alternative 6, *Ex Situ* Chemical Reduction/Oxidation and Stabilization, includes activities ancillary to the chemical treatment that would be necessary to meet the RAO. These activities would include bench and pilot scale testing, sorting and removal of solid debris from the fill material, off-site disposal of the solid debris, installation of fencing around the remediation area, confirmation sampling, reapplication of the chemical substrate (if necessary), site close out activities, land use controls, and long-term monitoring. In addition, this alternative ranks low for administrative feasibility (an implementability criterion) because the surrounding area is a New York State forested wetlands, and the site is located on private property.

ATTACHMENT 1
Public Meeting Transcript

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1 U.S. ARMY CORPS OF ENGINEERS
2 LAKE ONTARIO ORDNANCE WORKS SITE
3 OCCIDENTAL CHEMICAL CORPORATION PROPERTY
4 PROPOSED PLAN PUBLIC MEETING

5
6 Wednesday, January 11th, 2017

7 7:00 PM

8
9 Town of Lewiston Senior Center

10 4361 Lower River Road

11 Youngstown, New York 14171
12

13
14 APPEARANCES:

15 [REDACTED] Outreach Specialist
16 [REDACTED]

17 [REDACTED] Lake Ontario Ordnance Works
18 r

19 [REDACTED], Lake Ontario Ordnance
20 Engineer

21
22 MEETING REPORTER: [REDACTED]
23

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716-853-5544

1	P U B L I C C O M M E N T S	
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1 [REDACTED]: Good evening, ladies and
2 gentlemen. If you could please take your
3 seats so we could get started. Thank you.

4 My name is [REDACTED]. I am the
5 outreach specialist for the Buffalo District's
6 Hazardous, Toxic, and Radioactive Waste Sites,
7 and I would like to introduce to you this
8 evening [REDACTED]. He
9 is the Buffalo district commander.

10 [REDACTED]: Thanks, [REDACTED].
11 Impeccable pronunciation too. That was great.
12 Most people don't get it on the first try like
13 that.

14 Good evening. I just want to thank
15 everyone for coming out tonight to our public
16 meeting. Obviously the weather cooperated so
17 that's a good thing. The gale force winds are
18 behind us and who can complain about 45
19 degrees and relative calm on January 11th. So
20 thank you for coming out tonight.

21 We're going to be talking tonight about
22 the proposed plan for the Lake Ontario
23 Ordnance Works Occidental Chemical Corporation

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1 Property.

2 I would like to extend a special welcome
3 before we get started to a few folks in
4 attendance tonight. First of all, [REDACTED]
5 [REDACTED] from the Tuscarora Nation and also [REDACTED]
6 [REDACTED], Tuscarora Nation
7 Environmental Program. [REDACTED]
8 representing New York State Senator [REDACTED]. We
9 have Town of Lewiston Supervisor [REDACTED]
10 [REDACTED] and also from Lewiston Town Council
11 [REDACTED]. Did I mispronounce that?
12 [REDACTED]: Close enough.
13 [REDACTED]: And then also [REDACTED]
14 [REDACTED] Chair of the Town of Lewiston
15 Environmental Commission. And lastly,
16 [REDACTED], Superintendent of
17 Lewiston-Porter Central School District.

18 Also I want to take a moment to thank our
19 hosts here at Town of Lewiston Senior Center
20 for allowing us to once again use their
21 facility for this event.

22 The most important part of tonight's
23 meeting is receiving your input on the Corps'

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1 preferred alternative of "Excavation and
2 Off-Site Disposal" to address soil
3 contamination at Area of Concern 1 of the
4 Occidental Chemical Corporation Property.
5 Your comments will be factored into the final
6 decision for remedial action at Area of
7 Concern 1.

8 We ask that you save your comments tonight
9 until the end of the presentation so they can
10 be accurately recorded. If you have a comment
11 you would like recorded tonight, please make
12 sure you check that box on the card that
13 Arleen gave you as you came in tonight. So if
14 you want to make a comment, make sure that box
15 is checked so we know who to tee up at the end
16 of the presentation. You could also submit
17 your comments in writing at any point prior to
18 February 7th.

19 Before we move on from the slide, I would
20 like to introduce some members of the project
21 team who will be presenting tonight. To my
22 left, your right, we have [REDACTED]
23 who is our project manager and then also

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1 [REDACTED] who is the project
2 engineer. We have a robust presence from the
3 Buffalo District.

4 UNIDENTIFIED SPEAKER: From the Polish
5 contingent.

6 [REDACTED]: Yes, a healthy
7 representation from the Polish contingent too.

8 But also in addition to our project
9 manager and project engineer we have a lot of
10 technical expertise so I want to ask our team
11 from the Buffalo District just to kind of go
12 around the room and just stand up and state
13 your name and your position and what you do
14 with the district or with this project in
15 particular.

16 [REDACTED]
17 [REDACTED]: I am [REDACTED]
18 [REDACTED] I am chief of the environmental
19 branch down at the Buffalo District.

20 [REDACTED] I am [REDACTED]. I am
21 the environmental toxicologist in the
22 environmental branch.

23 [REDACTED] [REDACTED],

Hydrogeologist with the Corps.

██████████ ██████████ Chief of the
Environmental Engineering Section.

██████████ ██████████ previous project
manager.

██████████ ██████████ ,
Environmental Engineer in our environmental
engineering section.

██████████ ██████████ . I am
the program manager for FUSRAP and the
environmental programs in the Buffalo
District.

██████████ Did we get everybody?

Okay. If you have additional questions
after the formal comment portion is complete
tonight, the team will be back where the
posters are. I know a lot of people were
checking out the posters prior to the start
here at 7 o'clock. Our team will be back
there again at the completion of the
presentation as well. So if you have
additional questions, they will be accessible
at the end of this presentation. Next slide,

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1 please.

2 This has been a team effort. You know,
3 like anything we do in the Corps, it's a team
4 effort and a critical part of our team is all
5 of you, the community. I know it sounds
6 cliché, but that's true. You're a critical
7 part of our team, you know, on this project
8 but really any project. That's why you're at
9 the top of this slide. We value your input
10 and your participation tonight and really
11 throughout the life of this project.

12 The Lake Ontario Ordnance Works Site is
13 being addressed under the Defense
14 Environmental Restoration Program for Formerly
15 Used Defense Sites. The Army delegates
16 authority for this program to the U.S. Army
17 Corps of Engineers.

18 We have representatives with us tonight
19 from two other agencies that are critical
20 members of our teams as well. We have
21 [REDACTED] from the U.S. Environmental
22 Protection Agency and also [REDACTED]
23 from the New York State Department of

1 Environmental Conservation. Thank you, both,
2 for being here tonight. I really appreciate,
3 again, your cooperation throughout the life of
4 this project but also taking time to be here
5 tonight.

6 I would now like to turn the meeting over
7 to [REDACTED] who is our project
8 manager.

9 [REDACTED] Thank you, sir.

10 Good evening, everyone. Let me start out
11 by showing you some of the acronyms we will be
12 using tonight. We will try not to use these
13 too much. But just in case, there is a copy
14 of these in your handouts.

15 Before getting into specifics, I would
16 like to explain the federal program that is
17 being used to address this site. It's called
18 the Defense Environmental Restoration Program
19 for Formerly Used Defense Sites or DERP-FUDS.
20 The mission of this program is to identify,
21 investigate, and clean up or control
22 contamination from Department of Defense
23 related hazardous substances.

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1 As always, our number one priority while
2 performing activities at these sites is the
3 safety of the community, site workers, and the
4 environment.

5 I am going to give you a little history
6 and orient you to the location of where we are
7 discussing tonight. To show you where the
8 site is, here is Balmer Road up here in the
9 northern border of the site and here is where
10 we are tonight, the Senior Center.

11 The green outline is the perimeter of the
12 7,500 acre Lake Ontario Ordnance Works which
13 was owned by the Department of Defense in the
14 1940s. The shaded area here within the LOOW
15 outline is the 2,500-acre developed zone where
16 a TNT manufacturing facility was operated.
17 The 304-acre Occidental Chemical Corporation
18 Property or OCCP is the black outlined area.
19 It's a black outline located in the 5,000-acre
20 buffer zone which was an undeveloped portion
21 of LOOW.

22 When implementing DERP-FUDS, the Corps of
23 Engineers follows the Comprehensive

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1 Environmental Response, Compensation, and
2 Liability Act or CERCLA, as amended, and the
3 National Oil and Hazardous Substances
4 Pollution Contingency Plan, hence the use of
5 our acronyms. Here is the process laid out.

6 Tonight we are here at the proposed plan.
7 The proposed plan identifies the Corps of
8 Engineers' preferred alternative, but this is
9 not the final decision on the DERP-FUDS
10 action. The final decision will not be made
11 until all public comment on the proposed plan
12 have been considered, and then the final
13 selected remedy will be documented in the
14 decision document.

15 Here is a list of LOOW reports that
16 include the Occidental Chemical Corporation
17 Property. As you can see, these line up with
18 the steps and CERCLA process that we had in
19 the previous slide. The next slide will focus
20 on the Occidental Chemical Corporation
21 Property.

22 Here is the close up of the OCCP which is
23 currently owned by the Occidental Chemical

1 Corporation. These six areas of concern or
2 AOCs were identified based on historical
3 aerial photo analysis and visual inspections.
4 Sampling and analysis was performed and no
5 further action was determined as necessary on
6 five, the green ones here, of the AOCs. The
7 blue outlined right here is AOC 1 which we
8 will be focussing on for the remainder of the
9 evening.

10 The Occidental Chemical Corporation
11 Property is a 304-acre parcel. AOC 1 outlined
12 in blue is 425 feet by 325 feet which is just
13 a little over three acres. AOC 1 is a vacant,
14 densely wooded area that is currently zoned
15 for low-density residential use and is located
16 in a New York forested wetland.

17 This is a close up of AOC 1. The black
18 dotted line represents the fill area which is
19 less than an acre in size. It includes
20 various debris and deteriorated drums. The
21 Corps of Engineers collected soil samples at
22 the circled locations within AOC 1. The
23 locations that exceeded the remediation goals

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1 for TNT and/or lead are shown in purple. The
2 clean-up goals that have to be reached to be
3 protective of residents are 18 milligrams per
4 kilogram or parts per million of TNT and 400
5 milligrams per kilogram of lead.

6 [REDACTED], the LOOW project engineer,
7 will now present the feasibility alternatives
8 and the Corps of Engineers' preferred
9 alternative.

10 [REDACTED] Thank you, [REDACTED]

11 And good evening, ladies and gentlemen.

12 This slide illustrates nine CERCLA
13 criteria that are used to screen remedial
14 alternatives in a feasibility study. Results
15 of the screening are used to select a remedy
16 in a proposed plan which is why we're here
17 today. They're evaluated as shown moving from
18 left to right.

19 First, the remedial alternative must meet
20 both threshold criteria to be considered a
21 viable remedy. They consist of protection of
22 human health and the environment and
23 compliance with applicable or relevant and

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1 appropriate requirements.

2 Afterwards, five balancing criteria are
3 used to weigh major trade offs among the
4 alternatives. They include long-term
5 effectiveness and permanence; reduction of
6 toxicity, mobility, or volume through
7 treatment; short-term effectiveness;
8 implementability; and cost. I will discuss
9 these in a lot more detail in slides that
10 follow.

11 And finally, there are two modifying
12 criteria. They're evaluated following a
13 public meeting period, comment period, after
14 the proposed plan, and it's why we're here
15 tonight. These modifying criteria include
16 community acceptance and state acceptance.

17 Now, we're here tonight to solicit your
18 comments on the proposed plan. Your comments
19 will be addressed in a responsiveness summary
20 which will be incorporated eventually in a
21 decision document. The decision document
22 selects a remedy for the site. Next slide.

23 Applicable or relevant and appropriate

1 requirements or ARARs are federal or more
2 stringent state standards, requirements,
3 criteria, or limitations that a remedy must
4 meet. They include chemical-specific
5 requirements, location-specific requirements,
6 and action specific requirements.

7 Now, for this site, there are no
8 chemical-specific or location-specific
9 requirements that pertain to the remedies we
10 have evaluated.

11 Action-specific requirements indicate how
12 a remedial alternative should be implemented.
13 Two potential federal action-specific
14 requirements were identified. They're from
15 the Resource Conservation and Recovery Act
16 commonly known as RCRA.

17 They include Subpart N of RCRA which
18 pertains to design and operating requirements
19 for land disposal facilities. Now, this
20 requirement would apply to remedial
21 alternatives that consist of disposing of the
22 waste onsite. For example, an alternative
23 that would include capping of the waste

1 on-site.

2 The second potential action-specific ARAR
3 that may apply is Subpart D of RCRA. This
4 includes land disposal restrictions which are
5 treatment standards designed to reduce the
6 toxicity and mobility of hazardous
7 constituents. It would apply to a remedy that
8 involves removal of the waste, treatment, and
9 then placement of the treated waste back
10 on-site. They do pertain to some of the
11 alternatives that I will discuss in a little
12 bit more detail in the following slides. Next
13 slide, please.

14 This slide shows the remedial alternatives
15 that we evaluated in the feasibility study.
16 The first alternative, no action. We're
17 required to evaluate no action by the National
18 Contingency Plan. However, for this site, it
19 doesn't meet those threshold criteria that I
20 mentioned, in particular protection of human
21 health and the environment, so it's been
22 screened out.

23 Alternatives 2 through 5 do meet the

1 threshold criteria and they were carried
2 further in the feasibility study. Succeeding
3 slides will discuss these alternatives in
4 greater deal. The Alternative 4 highlighted
5 in green, Excavation and Off-Site Disposal, is
6 the Corps of Engineers' preferred alternative.

7 Alternative 2 includes land-use
8 controls/institutional controls to prevent
9 access to the contaminants on the site.
10 Land-use controls would include installation
11 and maintenance of a perimeter fence shown
12 here in yellow around the waste area, deed
13 restrictions, and then periodic reviews to
14 ensure remedy protectiveness.

15 Overall performance ratings for the CERCLA
16 balancing criteria are also shown on this
17 slide on the right. Short-term effectiveness
18 considered impact on human health and the
19 environment during implementation of the
20 remedy. For this alternative, this
21 alternative rates high for this criteria.

22 And actually these ratings that we show,
23 high, low, and moderate, high is most

1 desirable and low being least desirable.

2 Long-term effectiveness and permanence
3 considers impact on human health and the
4 environment after the remedial action has been
5 completed. It rates low because contamination
6 would be left on-site. The third criteria,
7 reduction of toxicity, mobility, and volume
8 through treatment, well this alternative
9 doesn't reduce the toxicity, mobility, or
10 volume and it rates low.

11 Now, implementability considers technical
12 feasibility and administrative feasibility.
13 This alternative is technically feasible but
14 administratively it rates low and there are
15 two reasons for that. First off, it's private
16 property and the government putting deed
17 restrictions on private property would be
18 difficult at best. And secondly, as Brent had
19 mentioned, this site is in a forested New York
20 State wetland. Leaving the waste in a
21 wetland, too, would also cause administrative
22 difficulties for us. So it rates low for
23 administrative feasibility. Combined a high

1 rating for technical feasibility, low rating
2 for administrative feasibility, this criterion
3 gets a moderate rating.

4 A total estimated present worth cost for
5 this alternative is \$3 million. Now, that
6 includes initial capital costs and long-term
7 maintenance and monitoring cost.

8 Alternative 3 includes placing an
9 engineered cap over the contaminated soil. It
10 would be keyed into an underlying natural clay
11 layer. The cap would consist of the following
12 layers in general: Top soil, a drainage
13 layer, a low permeability compacted clay
14 layer, and a grading layer.

15 The cap would reduce mobility of
16 contaminated soil and would protect human
17 health and the environment from exposure to
18 the TNT and lead. It would require land-use
19 controls/institutional controls, long-term
20 monitoring and maintenance, and periodic
21 reviews to assess remedy performance.

22 The figure on this slide illustrates the
23 approximate area that the cap would be placed

1 in light gray. Ratings for the CERCLA
2 balancing criteria are shown on the right.
3 The remedy is protective in the short term.
4 It's moderately effective in the long term
5 because residual contamination would be left
6 in place even though the cap would limit
7 exposure to the contamination.

8 It reduces mobility of the contaminants
9 but does not reduce their toxicity or volume.
10 Therefore, this criteria receives a moderate
11 rating. The alternative is moderately
12 implementable due to high technical
13 feasibility and low administrative
14 feasibility, similar to Alternative 2.

15 Total estimated present worth costs are 5
16 and a half million. They include initial
17 capital costs and long-term monitoring and
18 maintenance costs.

19 Alternative 4 is Excavation and Off-Site
20 Disposal. Contaminated soil that contains TNT
21 and lead above the remediation goals would be
22 excavated and disposed off-site including
23 debris that's commingled with the contaminated

1 soil. It would be taken to a permitted
2 treatment storage and disposal facility. The
3 site would be restored to a condition that
4 matches the surrounding forested wetlands.

5 The remedy is effective both in the short
6 and long terms. It removes all contamination
7 from the site and, therefore, reduces the
8 toxicity, mobility, and volume of the
9 contaminants. And both technically and
10 administratively it's feasible so it receives
11 a high implementability rating.

12 The total present worth cost of this
13 alternative is approximately \$850,000. It
14 includes only initial capital costs. There
15 are no long-term maintenance and monitoring
16 requirements for this alternative.

17 Alternative 5 involves on-site treatment
18 of contaminated soil using a chemical
19 reduction/oxidation to reduce the TNT
20 concentrations and to stabilize lead in soil.
21 Debris commingled with the soil would be
22 removed prior to treatment shown here. That
23 debris would be taken off-site to a permitted

1 disposal facility. Soil would be treated
2 on-site and placed back in the excavation.
3 This alternative would require land-use
4 controls and institutional controls, long-term
5 monitoring and maintenance, and also periodic
6 reviews to assess effectiveness of the
7 remedial action.

8 It is effective in the short term. It's
9 considered moderately effective in the long
10 term because residual lead, although immobile,
11 would remain on the site.

12 It reduces the toxicity, mobility, and
13 volume of the contaminants through treatment
14 and receives a high rating for that criteria
15 and it also receives a moderate rating for
16 implementability because it's technically
17 feasible but administratively receives a low
18 rating.

19 The total estimated present worth cost for
20 this alternative is approximately \$6.4
21 million. That includes initial capital costs
22 and long-term monitoring and maintenance
23 costs.

1 Now, this chart compares all four of the
2 alternatives that I discussed with respect to
3 the CERCLA balancing criteria. Alternative 4,
4 Excavation and Off-Site Disposal, is the Corps
5 of Engineers' preferred alternative. As you
6 can see, this alternative rates high for all
7 four of the balancing criteria that are
8 evaluated. In addition, it has the lowest
9 total present worth cost of approximately
10 \$850,000. It's also the only remedy that
11 would not require a long-term management of
12 the property by the federal government.

13 This slide again illustrates the
14 Alternative 4, Excavation and Off-Site
15 Disposal. To implement this remedy, the Corps
16 of Engineers would do the following: We would
17 prepare work plans, technical work plans,
18 mobilize equipment and personnel to the site,
19 excavate, segregate, and place contaminated
20 soil and commingled debris into containers.
21 We would sample and analyze the excavated
22 soil. It would then be disposed off-site in a
23 permitted treatment storage disposal facility.

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1 Significant confirmation sampling would be
2 done to ensure that all remediation goals have
3 been met. That is, the TNT and lead clean-up
4 goals that Brent had mentioned, we would test
5 to ensure it's been removed to those
6 standards. And then finally, the site would
7 be restored to match the surrounding forested
8 wetlands.

9 As mentioned previously, we're here
10 tonight to receive your comments on the Corps
11 of Engineers' proposed plan for the preferred
12 alternative which is Excavation and Off-Site
13 Disposal. Your comments will be evaluated and
14 compiled in a responsiveness summary which
15 will be made part of a decision document. The
16 decision document specifies the preferred
17 action for the site.

18 We'll then proceed to remedial design and
19 remedial action which we anticipate may occur
20 as soon as next year. Once complete, a
21 construction completion report will be issued.
22 That report will document how the work was
23 done, and it will provide all results of

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1 confirmation sampling to provide evidence that
2 it was cleaned up to the standards we had
3 mentioned.

4 Ladies and gentlemen, thank you for your
5 time. I am now going to turn this meeting
6 back over to [REDACTED].

7 [REDACTED]: Thanks, [REDACTED]

8 The administrative record contains major
9 reports and the supporting documentation used
10 for our decision making for the site. It is
11 available electronically in both the Lewiston
12 and Youngstown libraries. Responses to your
13 comments will be provided in the
14 responsiveness summary that is part of our
15 decision document.

16 So I would like to now open the meeting
17 for formal comments to be entered into the
18 public record. When you came in, you received
19 a sign-in card from Arleen with that box on it
20 that you should have checked if you wanted to
21 offer any formal comments tonight.

22 We're going to begin with elected
23 officials first and then call up those people

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1 who indicated on that sign-in card that they
2 wanted to speak tonight. Time permitting,
3 which we do have time, we will then open the
4 floor to anyone else who wants to make
5 comments.

6 I just want to reiterate some basic
7 operating principles before we start with the
8 comments. First off all, only one person
9 speaking at a time. Second, please use the
10 microphone when you're offering your comments.
11 Again, we're trying to -- we're establishing a
12 record so we want to make sure we accurately
13 establish that record so please use the
14 microphone.

15 State your name and affiliation before
16 providing your comments and then, just to give
17 everyone the opportunity to comment tonight,
18 we're trying to limit each person to about
19 three minutes when you get to the microphone
20 to offer your comments. Then, lastly, please
21 limit the subject matter to the proposed plan
22 for the Lake Ontario Ordnance Works Occidental
23 Chemical Corporation Property.

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1 [REDACTED] is going to be watching the clock
2 so she will be keeping us honest. Back there
3 she is keenly keyed on the clock, and she will
4 let us know if it's time to wrap up the
5 comments.

6 So at this time, I would like to ask
7 [REDACTED] the vice chairman for the
8 Niagara County Legislature, to kick us off.
9 Sir?

10 [REDACTED] Okay, thank you very
11 much.

12 This has been a long awaited meeting.
13 It's a pleasure to come here when it sounds
14 like we finally have some action that we can
15 count on. And to make this as simple and as
16 short as I can, I will read this resolution
17 which will go on the floor of the Legislature
18 next Tuesday night reaffirming our unanimous
19 desire to have this material removed. I will
20 just read the three whereases and the result.

21 "Whereas, this Legislature along with the
22 citizens of Niagara County have on many
23 occasions enacted resolutions requesting

1 complete removal of these radioactive and
2 dangerous materials away from the area to
3 remove the threat of serious health conditions
4 which could present themselves in the event of
5 leakage or exposure.

6 And whereas, the mere existence of this
7 burial ground is detrimental to the health,
8 economic vitality, and desirability for
9 business and residential improvements as well
10 as reducing property values in this beautiful,
11 rural environment adjoining a great water
12 resource to the Niagara River and Lake
13 Ontario.

14 And whereas, the issue of disposition is
15 long overdue and the Niagara County government
16 and populous are unanimous in agreement with
17 the Corps of Engineers' best recommendation to
18 pursue Alternative 4, Excavation and Off-Site
19 Removal, to address the areas of concern of
20 the Occidental Chemical Corporation Property.

21 Now, therefore, be it resolved on behalf
22 of the citizens of Niagara County, this
23 Legislature sincerely requests that the

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1 actions described in the above whereas be
2 carried out at the earliest and safest time
3 available."

4 That pretty much explains it. It doesn't
5 need much to be said here. We're at a point
6 when now it's just a question of when. Thank
7 you.

8 [REDACTED]: Thank you, sir.

9 Next I'd like to ask [REDACTED] to
10 come to the microphone.

11 [REDACTED] I will pass on that for
12 now. Thank you, sir.

13 [REDACTED] [REDACTED]
14 [REDACTED]: That would be me.

15 [REDACTED]: Yes, ma'am.

16 [REDACTED] I don't have anything to
17 make a comment on except I thought the
18 presentation was excellent, and I am just in
19 agreement with everything you said. Thank you
20 very much.

21 [REDACTED] Thank you, ma'am.

22 [REDACTED] ?

23 [REDACTED] Like he said, [REDACTED],

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1 Niagara River Anglers Vice President.

2 That property adjoins our entranceway into
3 our ponds. I don't know if you're not
4 familiar with we have, but we have a 37-acre
5 fishing pond that thousands of people visit
6 every year. We're open from April 1st through
7 November 1st so I don't know if this can be a
8 winter project or not, but that would be the
9 good downtime.

10 We're concerned about what's going to
11 happen, you know, with that road. You will
12 probably need to use that road to get into it
13 that we use as our entrance, and we're
14 concerned about whether it would be, you know,
15 cleaned up, made better. We would always like
16 that because it's a big cost to us to try to
17 maintain it. We do it on a shoestring budget
18 and, you know, this kind of stuff with the
19 equipment in their proper, you know, could
20 maybe bring that up to snuff.

21 That's all I am considering or asking and,
22 you know, I see no reason not to get this
23 stuff out of there if it has to go. Thank

1 you.

2 [REDACTED]: Thank you, sir.

3 Is there anyone else who would like to
4 offer any comments at this time?

5 Okay. Thank you everyone who offered
6 comments. I do appreciate that. Next slide,
7 please.

8 This does actually conclude the formal
9 comment portion of the public meeting, but I
10 just want to reiterate that there are other
11 ways that you can provide your comments to us.
12 You see those ways listed up here on the
13 screen.

14 You can write down your comments and leave
15 them with us tonight, or you can mail your
16 comments to us at the address you see on the
17 slide. Lastly, you can email your comments to
18 us and you can see the email address also on
19 the slide in front of you. I just want to
20 reiterate though that we do need to receive
21 any comments by February 7th. February 7th is
22 the cut off for any comments to be added to
23 the administrative record.

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1 Your comments and all the responses to
2 those comments will become part of that
3 official administrative record which can be
4 viewed then at our offices at the U.S. Army
5 Corps of Engineers in Buffalo.

6 I want to thank you again for coming
7 tonight. As mentioned before, we do very much
8 value the input of the community. I know the
9 Corps has a longstanding relationship with the
10 community here so we do appreciate your
11 participation and your input tonight. Next
12 slide, please.

13 Just a little more admin information. If
14 you would like any other additional
15 information that you did not receive tonight,
16 please use one of these methods to contact us
17 to request that information or, again, we have
18 a robust team here tonight. You can also
19 approach any one of the members of the team
20 here personally face-to-face, one-on-one.
21 Next slide.

22 So, again, thank you for coming in
23 tonight. I appreciate your participation and

1 your input. Our team is going to be back by
2 the posters. They will be accessible to you.
3 As long as you need us, we will be here to
4 answer questions. Thank you, and travel
5 safely home tonight.

6
7 (Meeting concluded at 7:36 p.m.)

8 * * * * *

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23

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1 STATE OF NEW YORK)

2) ss.

3 COUNTY OF ERIE)

4
5 I, [REDACTED], Notary Public, in and for
6 the [REDACTED] e, State of New York, do
7 hereby certify:

8 That the witness whose testimony appears
9 hereinbefore was, before the commencement of
10 their testimony, duly sworn to testify the
11 truth, the whole truth and nothing but the
12 truth; that said testimony was taken pursuant
13 to notice at the time and place as herein set
14 forth; that said testimony was taken down by
15 me and thereafter transcribed into
16 typewriting, and I hereby certify the
17 foregoing testimony is a full, true and
18 correct transcription of my shorthand notes so
19 taken.

20 I further certify that I am neither counsel
21 for nor related to any party to said action,
22 nor in anyway interested in the outcome
23 thereof.

IN WITNESS WHEREOF, I have hereunto
subscribed my name and affixed my seal this
18th day of January, 2017.

[REDACTED]

of New York

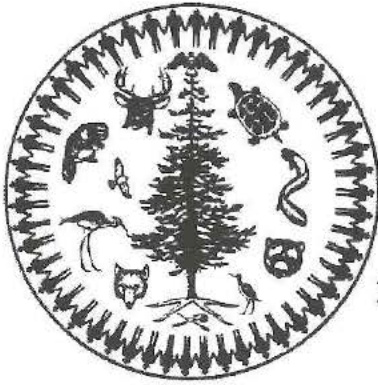
No. 01FI6240227
Qualified in Erie County
My commission expires 5/02/19

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ATTACHMENT 2
Tuscarora Nation Letter

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HAUDENOSAUNEE

TUSCARORA NATION

2006 MT. HOPE ROAD — VIA: LEWISTON, NEW YORK 14092

January 28, 2017

U.S. Army Corps of Engineers
Buffalo District
Attention: Environmental Project Manager
1776 Niagara Street
Buffalo, New York 14207

To Whom It May Concern:

The Tuscarora Nation wish to thank you for making the right decision in regards to the Occidental Chemical Company Property located in the Town of Porter, as presented at Public Hearing on January 11, 2017 at the Town of Lewiston Senior Center. The removal of the contaminated soil is the proper action to take, Infact aLL THE SOIL IN THE OLD LAKE ONTARIO ORDNANCE WORKS should be removed and no type of such waste be allowed in the Town of Porter or Town of Lewison Area.

The Tuscarora Nation wish to inform you that the Nation will not allow any of the material from this project to cross the Tuscarora Nation Territory durning this project, from start to finish. The Tuscarora Nation wish to be informed of every step of this proect.

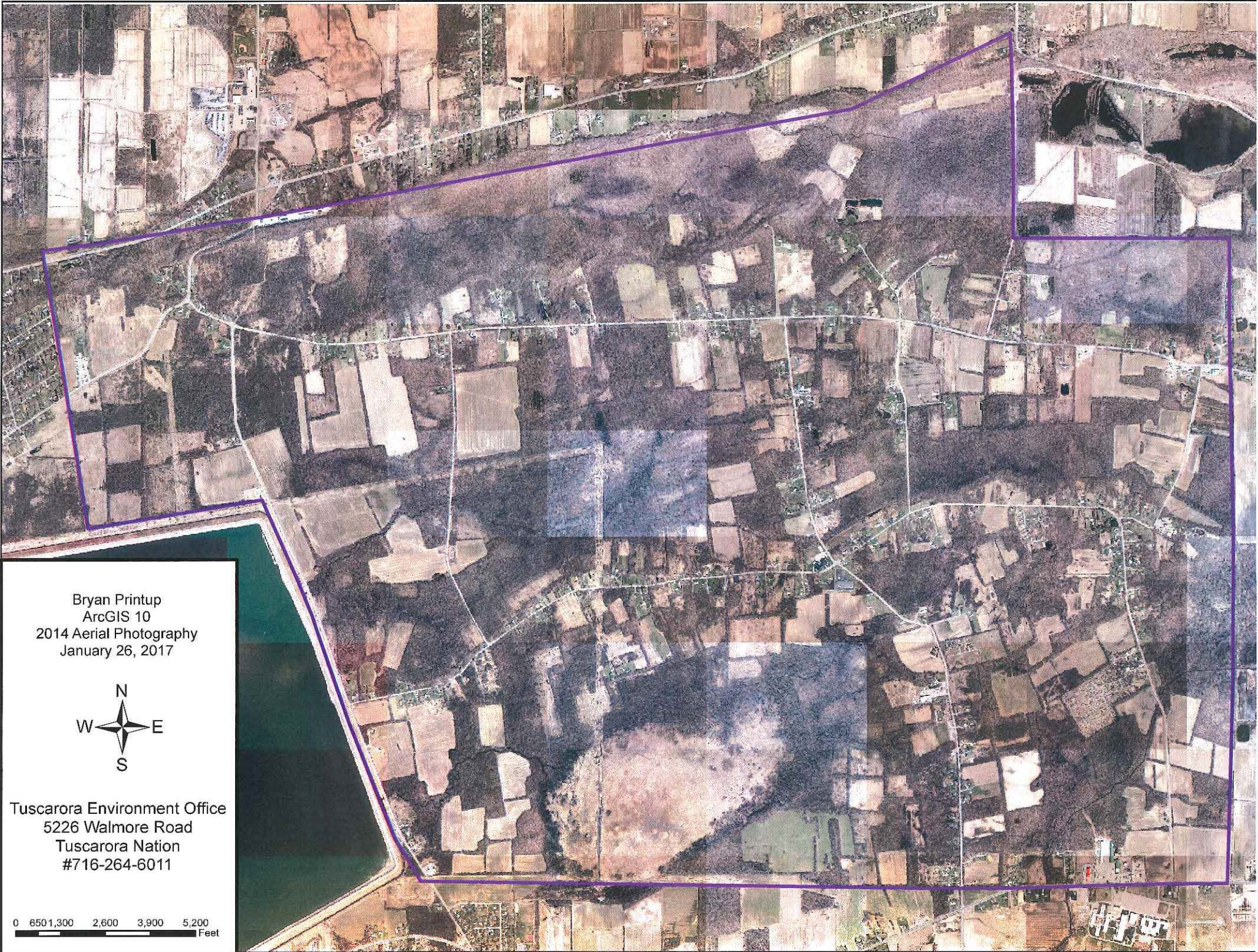
Please find two maps of the Tuscarora Nation Territoty for you to recognize the borders of the Tuscarora Nation.

Thank you for your cooperation in this vital matter.

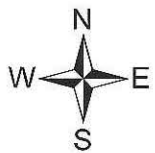
ONEH

Tuscarora Nation

cc: [REDACTED]
Tuscarora Nation Attorney

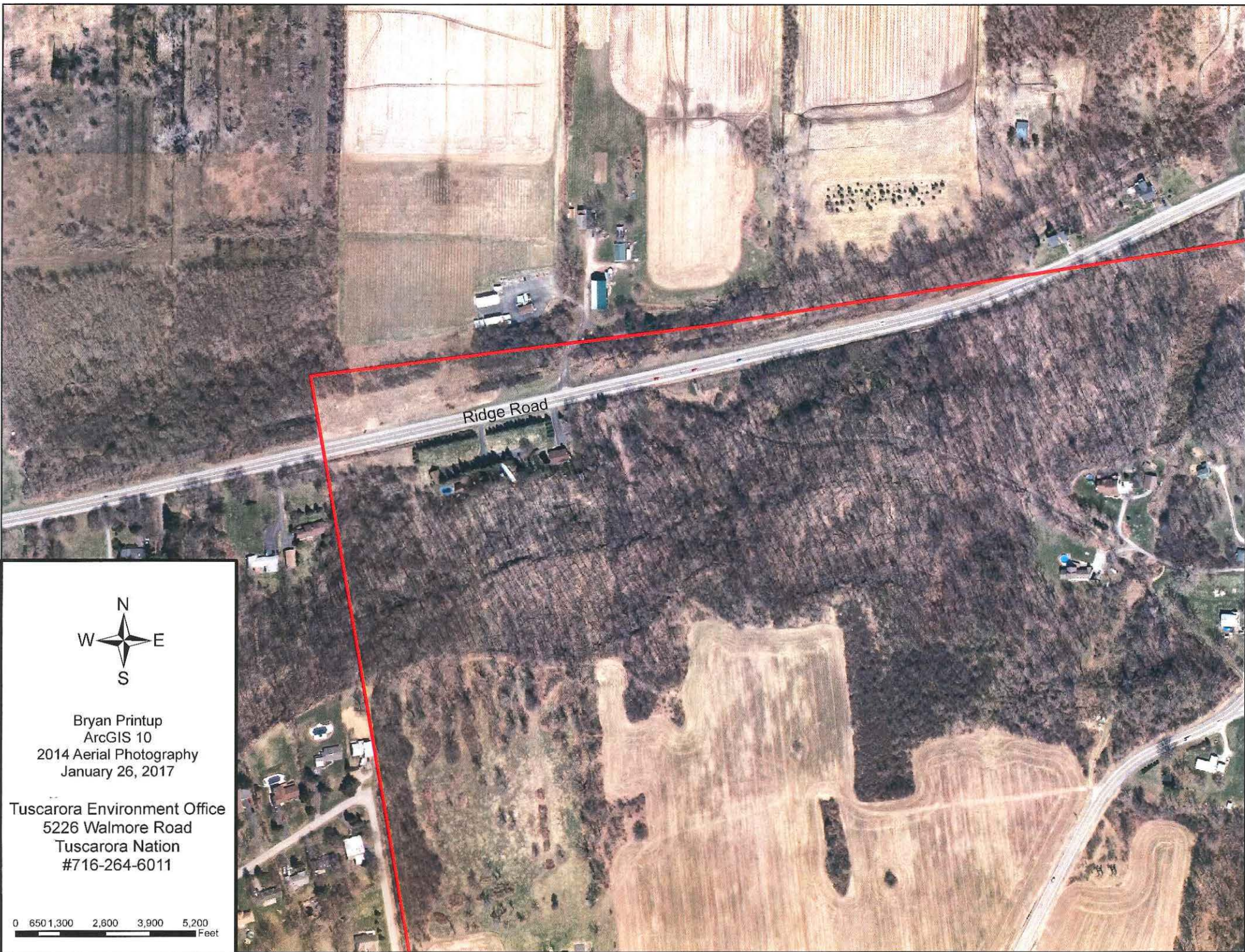


Bryan Printup
ArcGIS 10
2014 Aerial Photography
January 26, 2017



Tuscarora Environment Office
5226 Walmore Road
Tuscarora Nation
#716-264-6011

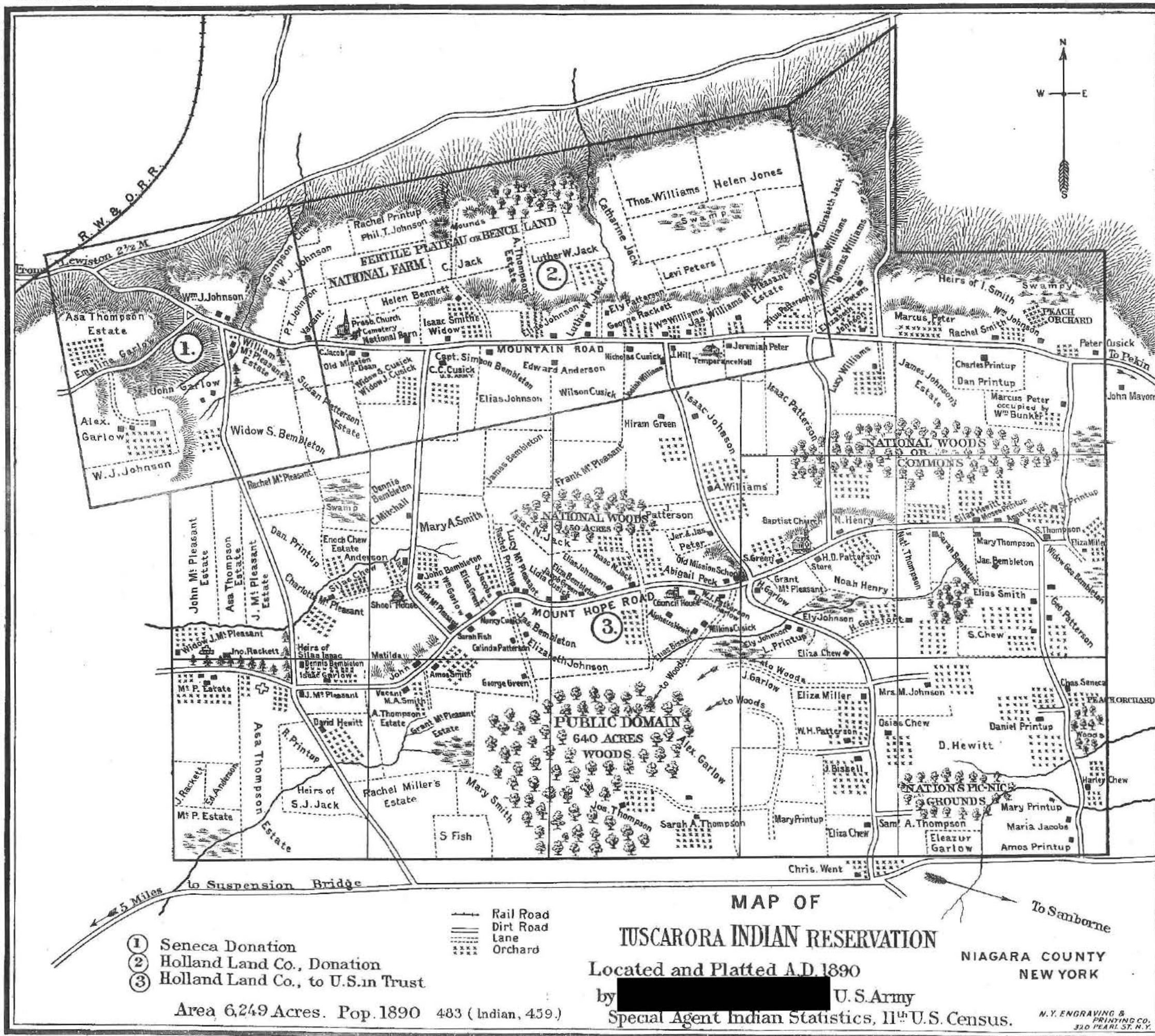
0 650 1,300 2,600 3,900 5,200
Feet



Bryan Printup
ArcGIS 10
2014 Aerial Photography
January 26, 2017

Tuscarora Environment Office
5226 Walmore Road
Tuscarora Nation
#716-264-6011

0 650 1,300 2,600 3,900 5,200
Feet



ATTACHMENT 3
New York State Department of Environmental Conservation Letter

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau E
625 Broadway, 12th Floor, Albany, NY 12233-7017
P: (518) 402-9813 | F: (518) 402-9819
www.dec.ny.gov

January 18, 2017

[REDACTED]
USACE Buffalo District
1776 Niagara Street
Buffalo, New York 14207-3199

RE: Proposed Plan for OCC Property at the Former LOOW

Dear [REDACTED]

The New York State Department of Environmental Conservation (the "Department"), has received the "Proposed Plan for the Occidental Chemical Corporation Property at the Former Lake Ontario Ordnance Works Site, Niagara County, New York" (the Plan). The Plan identifies a preferred alternative which was previously presented, along with other alternatives, as part of the Feasibility Study (FS) in 2015.

As part of the FS, five (5) remedial alternatives were evaluated. The Alternatives underwent evaluation using the nine (9) criteria outlined in the Comprehensive Environmental Response, Compensation and Liability Act. The preferred alternative (Alternative 4) includes excavation and off-site disposal of impacted soils. Soil sampling would be conducted after soil removal to confirm compliance with the remedial goals. This alternative ranked high for all the criteria, eliminates the need for long-term monitoring and land use controls, and the lowest cost.

Upon review of the Plan, the Department concurs with the USACE's selection of preferred alternative for AOC 1 at the Occidental Chemical Corporation Property.

If you have any questions on this matter, please contact me at 518-402-9813.

Sincerely,

[REDACTED]

Engineering Geologist
Remedial Bureau E
Division of Environmental Remediation

cc:

[REDACTED]



Department of
Environmental
Conservation

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ATTACHMENT 4
Niagara County Legislature Resolution

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NIAGARA COUNTY LEGISLATURE

FROM: Legislators [REDACTED] DATE: 01/17/17 RESOLUTION # TJ-002-17
and [REDACTED]

APPROVED	REVIEWED	COMMITTEE ACTION	LEGISLATIVE ACTION
CO. ATTORNEY	CO. MANAGER		Approved: Ayes Abs. Noes 0.
[REDACTED]			Rejected: Ayes Abs. Noes
			Referred:

RESOLUTION IN SUPPORT OF COMPLETE REMOVAL OF MATERIALS TEMPORARILY BURIED AT THE LAKE ONTARIO ORDINANCE WORKS (L.O.O.W.), MODEL CITY, N.Y.

WHEREAS, in the late 1940's the United States Government operated a site for the production of Trinitrotoluene (T.N.T.) for war purposes at the Model City site on Balmer Road in the Towns of Porter and Lewiston, N.Y., and

WHEREAS, in ensuing years these lands were also used for production of other toxic and radioactive materials, which were subsequently consolidated and buried there for future disposition, and

WHEREAS, this Legislature along with the citizens of Niagara County have on many occasions enacted resolutions requesting complete removal of these radioactive and dangerous materials away from the area to remove the threat of serious health conditions which could present themselves in the event of leakage or exposure, and

WHEREAS, the mere existence of this burial ground is detrimental to the health, economic vitality and desirability for business and residential improvements as well as reducing property values in this beautiful rural environment adjoining a great water resource, the Niagara River and Lake Ontario, and

WHEREAS, the issue of disposition is long overdue, and the Niagara County government and populace are unanimous in agreement with the US Army Corps of Engineers best recommendation to pursue Alternative 4, Excavation and Off Site Removal to address the area of concern (AOC) of the Occidental Chemical Corporation Property, now, therefore, be it

RESOLVED, on behalf of the citizens of Niagara County, this Legislature sincerely requests that the actions described in the above Whereas be carried out at the earliest and safest time available, and be it further

RESOLVED, that copies of this resolution be sent to the Cities, Towns, Villages, State Senators and Assemblymen, as well as Congressman Chris Collins

[REDACTED]



NIAGARA COUNTY LEGISLATURE
Lockport, New York

[Redacted]

Vice Chairman

DISTRICT OFFICE
2512 Parker Road
Ransomville, New York 14131
(716) 791-3111

LEGISLATIVE CHAMBERS
Courthouse
Lockport, New York 14094
(716) 439-7000
(716) 439-7124

Jan 31, 2017

*As per town meeting
at Lewiston Senior Center
and your request, enclosed
is copy of Legislature
Resolution you requested.*

Regards,

[Redacted]

ATTACHMENT 5
Town of Lewiston Resolution

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TOWN OF LEWISTON
1375 Ridge Road
Lewiston, New York 14092
(716) 754-8213
www.townoflewiston.us

TOWN OF LEWISTON
RESOLUTION 2017 - 3

WHEREAS, in the late 1940, the United State government operated a site for the production of Trinitrotoluene (TNT), for war produced at the Model City Site on Balmer Road in the Towns of Porter and Lewiston, NY, and

WHEREAS, in ensuing years these lands where also used for production of other toxic and radioactive materials which were subsequently consolidated and buried for future disposition, and

WHEREAS, the Town of Lewiston has on many occasions' enacted resolutions requesting complete removal of these radio-active and dangerous materials away from the area. To remove the threat of serious health conditions which could present themselves in the event of leakage or exposure, and

WHEREAS, the mere existence of this burial ground is detrimental to the health, economic vitality and desirability for business and residential improvements as well as reducing property value in this beautiful rural environment adjoining the great water resource of the Niagara River and Lake Ontario.

NOW WHEREAS, the issue of dispositions is long over-due and the Town of Lewiston ampoules are unanimous in agreement with the Corps of Engineers best recommendation to pursue Alternative 4 - Excavation and Off site Removal to address the area of concern (AOC) of the Occidental Chemical Corporation Property.

NOW, THEREFORE, BE IT RESOLVED, on behalf of the citizens of the Town of Lewiston, this Town Board requests that the actions described in the above be carried out at the earliest and safest time available.

BE IT FURTHER RESOLVED, that copies of this Resolution be sent to the Army Corps of Engineers, Niagara County Legislature, Village of Lewiston, Town of Porter, Village of Youngstown, State Senators and Assemblyman as well as Congressman [REDACTED]

[REDACTED]

January 23, 2017

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ATTACHMENT 6
Town of Lewiston Environmental Commission Resolution

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TOWN OF LEWISTON
1375 Ridge Road
Lewiston, New York 14092
(716) 754-8213
www.townoflewiston.us

February 1, 2017

Department of the Army
Buffalo District, Corps of Engineers
1776 Niagara Street
Buffalo, NY 14207-3199

Gentlemen:

At a Special Meeting of the Town of Lewiston Environmental Commission held on January 31, 2017, the Commission unanimously approved the enclosed Resolution (2017-01) to be filed as a public record with the Army Corp of Engineers.

Sincerely,

Secretary, Environmental Commission

**RESOLUTION IN SUPPORT OF COMPLETE REMOVAL OF MATERIALS TEMPORARILY
BURIED AT THE LAKE ONTARIO ORDNANCE WORKS (L.O.O.W.), MODEL CITY,**

WHEREAS, in the late 1940's the United States Government operated a site for the production of Trinitrotoluene (T.N.T.) for war purposes at the Model City site on Balmer Road in the Towns of Porter and Lewiston, N.Y.; and

WHEREAS, in ensuing years these lands were also used for production of other toxic and radioactive materials which were subsequently consolidated and buried there for future disposition; and

WHEREAS, this Environmental Commission, along with the citizens of the Town of Lewiston, have on many occasions enacted resolutions requesting complete removal of these radioactive and dangerous materials away from the area to remove the threat of serious health conditions which could present themselves in the event of leakage or exposure; and

WHEREAS, the mere existence of this burial ground is detrimental to the health, economic vitality and desirability for business and residential improvements as well as reducing property values in this beautiful rural environment adjoining a great water resource, the Niagara River and Lake Ontario; and

WHEREAS, the issue of disposition is long overdue and the Town of Lewiston Government and populace are unanimous in agreement with the Corps of Engineers best recommendation to pursue Alternative 4, Excavation and Off Site Removal to address the area of concern (AOC) of the Occidental Chemical Corporation Property;;
NOW, THEREFORE, BE IT

RESOLVED, on behalf of the citizens of the Town of Lewiston, this Environmental Commission sincerely requests that the actions described in the above Whereas be carried out at the earliest and safest time available, and be it further

RESOLVED, that a copy of this Resolution be filed as a public record with the Army Corp of Engineers; and copies sent to U.S. Senators Charles Schumer and Kirsten Gillibrand; Congressman Chris Collins; Senator Robert Ort; Assemblyman Angelo Morinello; and the Town of Lewiston Town Board.

The Resolution was offered for adoption on January 31, 2017 by [REDACTED]
Seconded by [REDACTED] with the vote as follows:

[REDACTED]
Aye
Aye
Aye
Excused
Aye
Aye
Aye

Carried 6-0

TOWN OF LEWISTON ENVIRONMENTAL

ATTACHMENT 1

Figures

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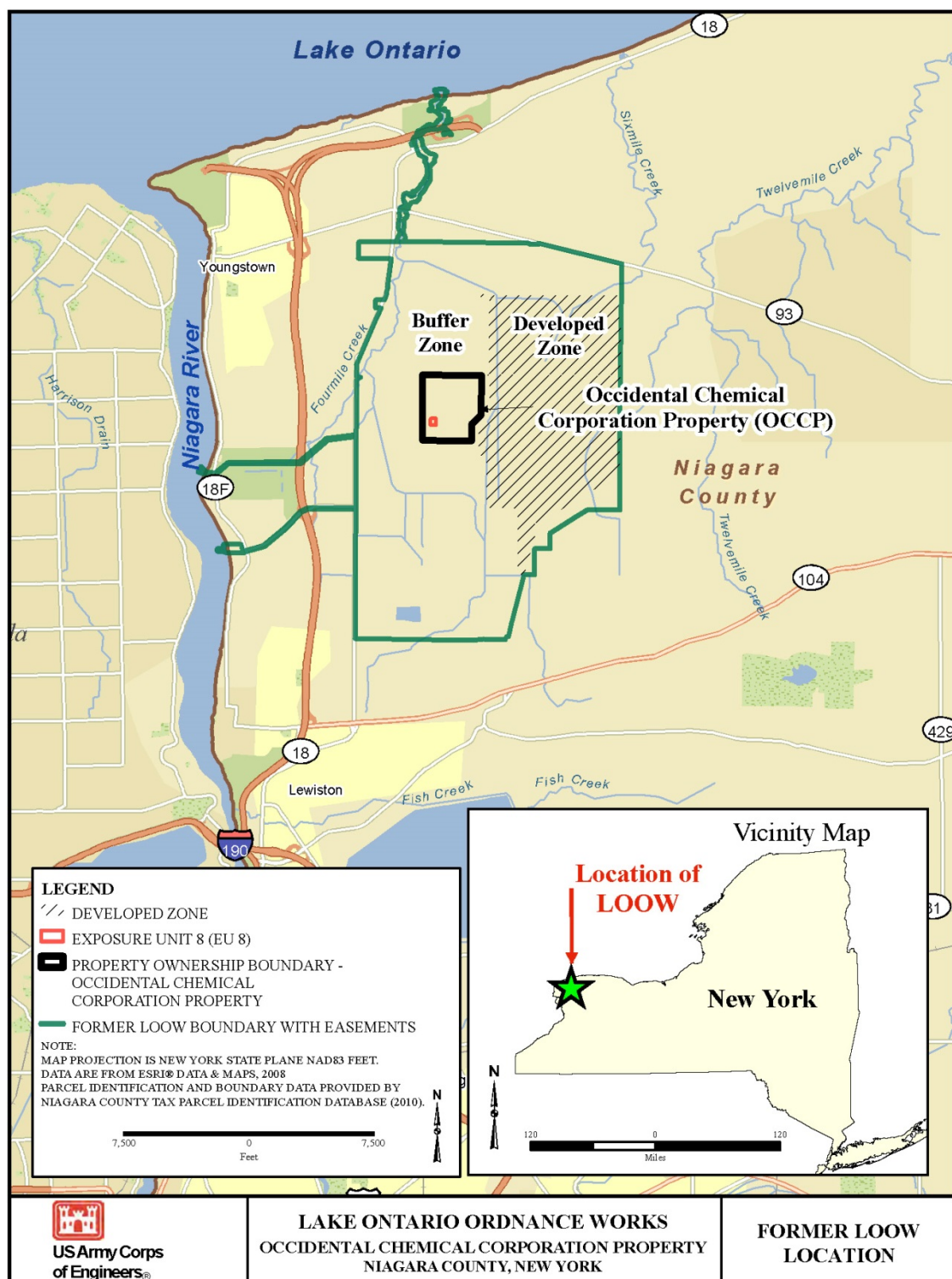
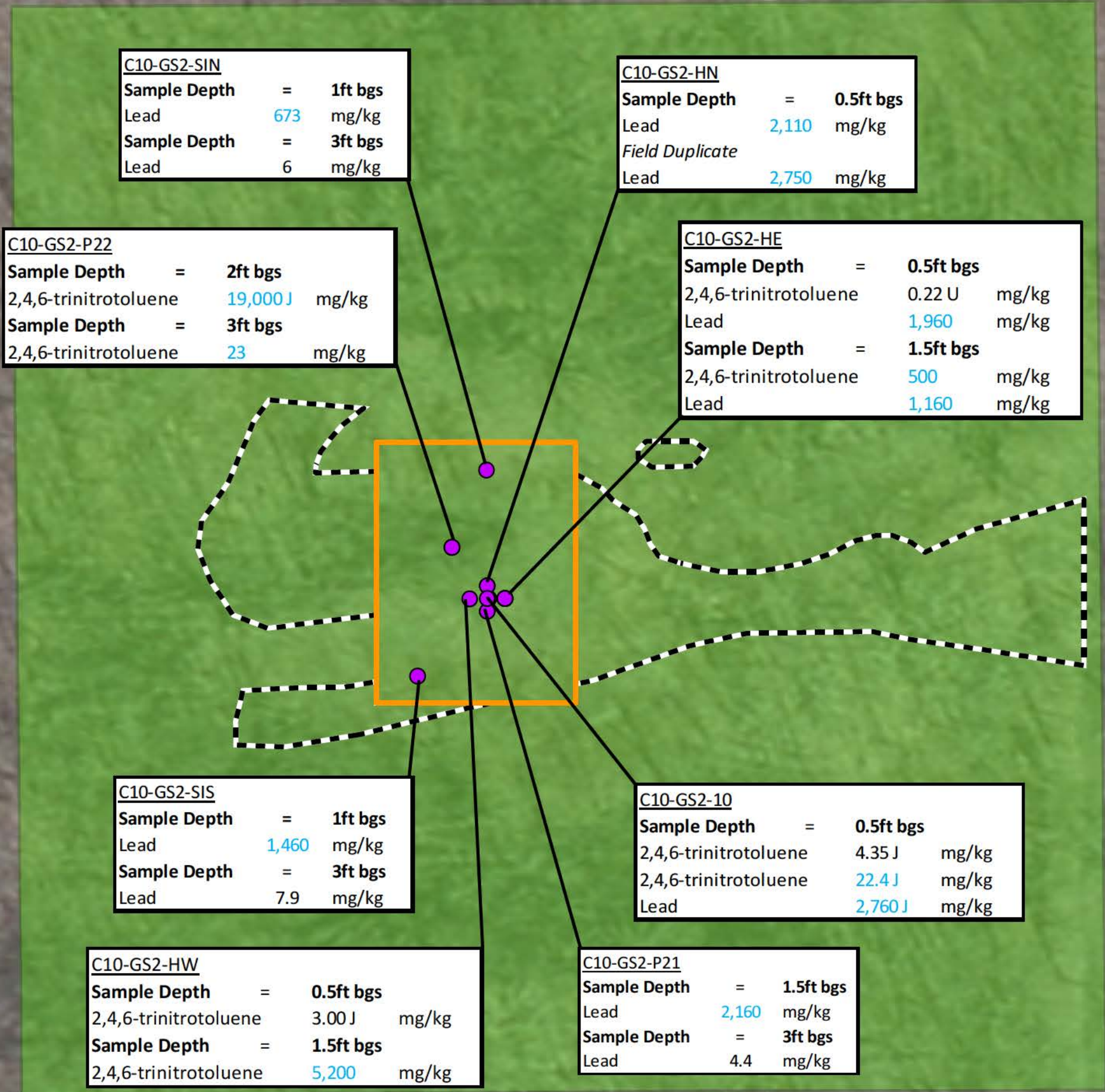


Figure 1. Location of the OCCP within the Former Lake Ontario Ordnance Works

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Soil Sample Locations

Approximate Area of Contaminated Soil / Fill (100' x 55')

Approximate Area of Debris

AOC 1

Label Key

Sample Location	Sample Depth	=	depth ft bgs
Analyte	Result	Qualifier	Unit

Results in blue exceed the PRG

J = estimated value
mg/kg = milligram per kilogram
ft bgs = feet below ground surface

Preliminary Remedial Goal (PRG) for 2,4,6-trinitrotoluene is 18 mg/kg
PRG for lead is 400 mg/kg

**HUMAN HEALTH CONCEPTUAL SITE MODEL,
EU 8 - OCCIDENTAL CHEMICAL CORPORATION PROPERTY
FORMER LAKE ONTARIO ORDNANCE WORKS (LOOW)**

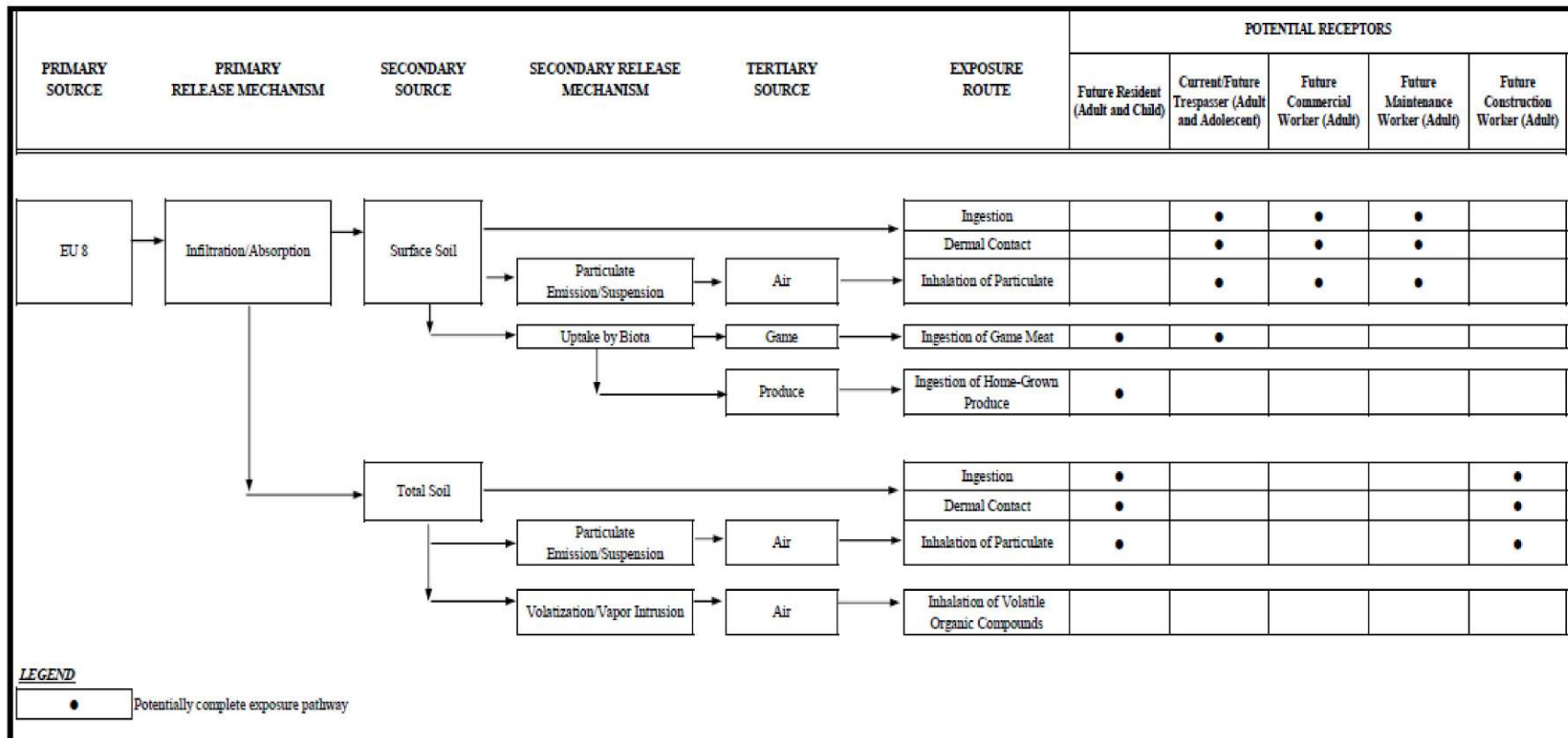


Figure 4: Human Health Conceptual Site Model for AOC 1

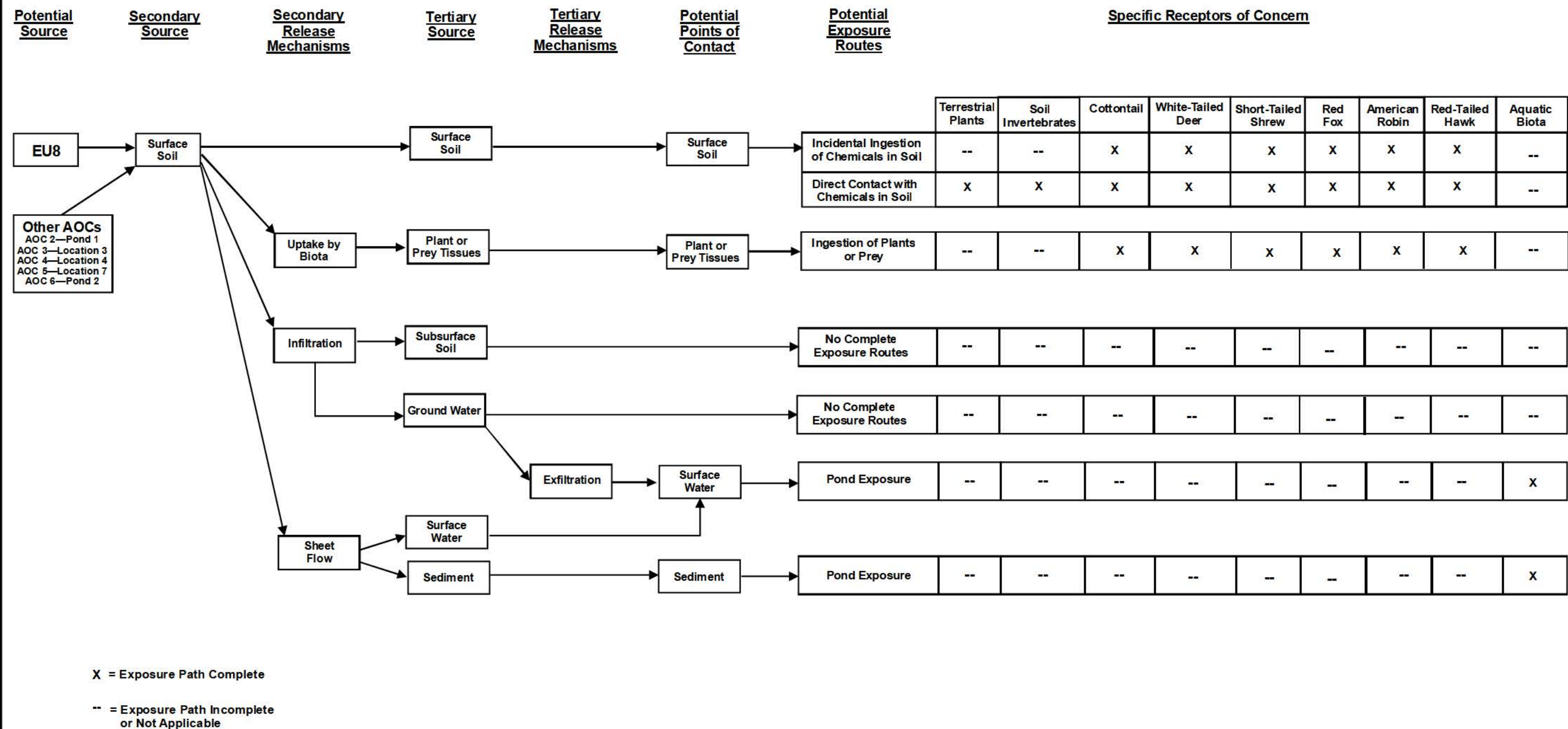


Figure 5: Ecological Conceptual Site Model for the OCCP

ATTACHMENT 2

Public Notice

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**US Army Corps
of Engineers.**

BUILDING STRONG.

**Proposed Plan Available
Occidental Chemical Corporation Property
Former Lake Ontario Ordnance Works
Formerly Used Defense Site**

The U.S. Army Corps of Engineers Buffalo District is pleased to announce the release of the *Proposed Plan for the Occidental Chemical Corporation Property at the Former Lake Ontario Ordnance Works, Niagara County, New York*, and a fact sheet summarizing the document at <http://www.lrb.usace.army.mil/Missions/HTRW/DERPFUDS/LakeOntarioOrdnanceWorks.aspx> on the Buffalo District website.

The Corps of Engineers' preferred alternative outlined in the proposed plan is Alternative 4, Excavation and Off-Site Disposal, to address contaminated soils at Area of Concern (AOC) 1 of the Occidental Chemical Corporation Property (OCCP). No further action is required by the Department of Defense for AOCs 2, 3, 4, 5, and 6 of the OCCP. You are encouraged to review and provide your comments on the proposed plan. The public comment period for the proposed plan begins December 5, 2016, and ends February 7, 2017. Written comments may be provided at the public meeting; emailed to derpfuds@usace.army.mil; or mailed to the U.S. Army Corps of Engineers, Buffalo District, Attention: Environmental Project Management Team, 1776 Niagara Street, Buffalo, New York 14207.

Public Meeting Wednesday, January 11, 2017, 6:30 p.m.

Town of Lewiston Senior Center

4361 Lower River Road • Youngstown, New York 14171

6:30 p.m. - poster session

7:00 p.m. - presentation

7:30 p.m. - public comments recorded

The former LOOW is located in the towns of Lewiston and Porter, Niagara County, New York, and was used during World War II as a trinitrotoluene (TNT) manufacturing facility. The Occidental Chemical Corporation Property (OCCP) is a 304-acre parcel within the undeveloped area of the former LOOW in the town of Porter. AOC 1 is a 425-foot by 325-foot area within the southwestern portion of the OCCP.

The proposed plan was prepared as part of the Corps of Engineers' environmental response project conducted under the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. § 9601 et seq. as amended) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300).

The proposed plan and supporting documents are available electronically in the administrative record file for the site, which is located in the Town of Lewiston Public Library, 305 South Eighth Street, Lewiston, New York, and the Youngstown Free Library, 240 Lockport Street, Youngstown, New York. The administrative record file is also available for review by appointment at the Buffalo District Office Library located at 1776 Niagara Street in Buffalo, New York.

If you require additional information on the former LOOW, please contact 1-800-833-6390 (Option 4) or email derpfuds@usace.army.mil.