

**FINAL**  
**SITE OPERATIONS PLAN**  
**FOR**  
**SOILS REMEDIAL ACTION**  
**AOC 1 AT OCCIDENTAL CHEMICAL CORPORATION**  
**PROPERTY**  
**FORMER LAKE ONTARIO ORDNANCE WORKS**  
**NIAGARA COUNTY, NEW YORK**

**Contract No.: W912QR-12-D-0011**

**Delivery Order: W912P417F0022**

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**Prepared for:**



**US Army Corps  
of Engineers®**  
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**March 2018**

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Final  
Site Operations Plan  
For  
Soils Remedial Action  
AOC 1 at Occidental Chemical Corporation Property  
Former Lake Ontario Ordnance Works  
Niagara County, New York

***Prepared for:***

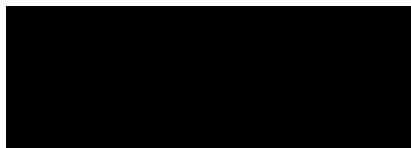
U.S. Army Corps of Engineers  
Buffalo District

Contract No. W912QR-12-D-0011  
Delivery Order W912P417F0022

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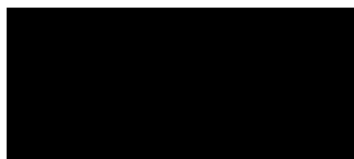
Project Manager

8 March 2018

Date

### **COMPLETION OF SENIOR TECHNICAL REVIEW**

This document has been produced within the framework of the ERT, Inc. (ERT) quality management system. As such, a senior technical review has been conducted. This included review of all elements addressed within the document, proposed or utilized technologies and alternatives and their applications with respect to project objectives and framework of U.S. Army Corp of Engineers regulatory constraints under the current project, within which this work has been completed.



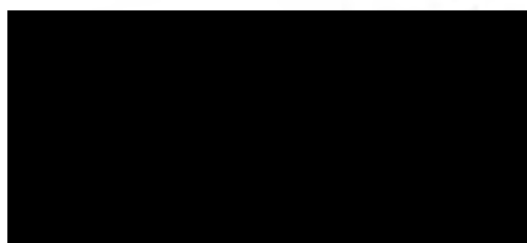
7 March 2018

Date

Senior Technical Reviewer

### **COMPLETION OF INDEPENDENT TECHNICAL REVIEW**

This document has been produced within the framework of ERT, Inc. quality management system. As such, an independent technical review, appropriate to the level of risk and complexity inherent in the project, has been conducted. This included review of assumptions (methods, procedures, and material used in analyses), alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the project objectives. Comments and concerns resulting from review of the document have been addressed and corrected as necessary.



7 March 2018

Date

Independent Technical Reviewer

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## LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
APP	Accident Prevention Plan
A-Zone	A-Zone Environmental, LLC.
bgs	below ground surface
CELRB	USACE Buffalo District
COR	Contracting Officers Representative
CQCP	Contractor Quality Control Plan
DERP	Defense Environmental Restoration Program
DO	Delivery Order
DoD	Department of Defense
DQOs	Data Quality Objectives
DUs	decision units
ERT	ERT, Inc.
ft	feet
FUDS	Formerly Used Defense Site
ISM	Incremental Sampling Methodology
LOOW	Lake Ontario Ordnance Works
NRAA	Niagara River Anglers Association
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OCCP	Occidental Chemical Corporation Property
PM	Project Manager
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QCSM	Quality Control Systems Manager
RA	Remedial Action
RI	Remedial Investigation
SAP	Sampling and Analysis Plan
SOP	Site Operations Plan
SOW	Scope of Work
TNT	trinitrotoluene
UFP	Uniform Federal Policy
USACE	United States Army Corps of Engineers

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## 1.0 INTRODUCTION

ERT, Inc., (ERT) has been contracted to perform the Soils Remedial Action (RA) for Area of Concern (AOC) 1 at Occidental Chemical Corporation Property (OCCP) on the Former Lake Ontario Ordnance Works (LOOW) under the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS). Remedial Actions will be performed under a Firm Fixed Price Delivery Order (DO), as outlined in the Scope of Work (SOW), under U.S. Army Corps of Engineers (USACE), Buffalo District (CELRB) contract W912QR12D0011, DO W912P417F0022.

The OCCP was first investigated during a LOOW site-wide Phase II remedial investigation (RI) (USACE 2002), and during subsequent investigations that encompassed portions of the OCCP in 2004 and 2008 (USACE, 2008a). A risk assessment of ten potential Department of Defense (DoD)-impacted areas across LOOW was performed; it provided an initial risk evaluation for AOC 1 (USACE, 2008b, c). In 2013, a more comprehensive investigation of the entire OCCP was completed. Results of the investigation and an updated risk assessment for AOC 1 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 concluded that there is potential risk to current and potential future receptors at the site caused by elevated concentrations of lead and 2,4,6-trinitrotoluene (TNT). The contaminated area of AOC 1 is approximately 55 feet (ft) by 100 ft and extends approximately 3 ft deep.

A remedial action objective was established 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. The remedial alternative selected in the Decision Document is Alternative 4 – Excavation and Off-site Disposal (USACE, 2017a). Alternative 4 includes excavation and off-site disposal of all soil/fill above remedial goals and comingled debris from AOC 1. Excavated soil/fill and comingled solid debris will be placed in containers and disposed of at a permitted treatment, storage, and disposal facility. Any non-contaminated debris will be disposed of at a Subtitle D landfill. The excavated area will be inspected, and soil samples will be collected for laboratory analysis to test for any remaining contamination. Excavation and sampling/analysis will continue until it is determined that all contaminated material above the remedial goals has been removed. AOC 1 will be restored to match the surrounding New York State freshwater forested/shrub wetland.

This Site Operations Plan (SOP) has been prepared to define ERT's overall framework and general procedures during the project, which will ensure a successful execution and completion of the awarded tasks in accordance with applicable local, state and federal regulations and guidance. The SOP describes the major processes that will be implemented during the project to prevent and correct any quality issues. The SOP will detail the size, scope, and character of the remedial action. The intent of this plan is to present the general sequence of pre-construction and remedial construction activities planned. In addition, this plan summarizes the proposed methods for performing the phases of work, describes the equipment and personnel to be used, the general sequencing of the work activities, the use of the site for staging, stockpiling and other activities, and maintaining security. Construction activities will be performed in compliance with USACE and DoD planning, design, and construction directives relevant to this project.

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## 2.0 SITE DESCRIPTION

### 2.1 Site Location

The OCCP is located off Balmer Road in the Town of Porter, Niagara County, New York. The physical address of the site is 1014 – 1350 Balmer Road, Youngstown, New York 14174. It is a 304-acre parcel in the undeveloped portion of LOOW that is owned by Occidental Chemical Corporation (**Figure 1**). AOC 1 is approximately 425 ft by 325 ft. **Figure 2** shows the OCCP and AOC 1. Currently, the property is vacant and undeveloped; no structures are present. The area is zoned low-density residential. Property south of the OCCP is used by the Niagara River Anglers Association (NRAA) as a wilderness preserve. A north-south gravel dirt road through the OCCP is used for access to the preserve by club members. An easement for the electrical power transmission lines is located to the east, beyond which is property owned by Waste Management, LLC and a former waste water treatment plant now owned by the town of Lewiston. Undeveloped property owned by the Lewiston-Porter Central School District is located to the west of OCCP, and Balmer Road is immediately north of the OCCP (USACE, 2017b).

### 2.2 Site History

The area was originally mixed agricultural land consisting of forest, orchard, and farms with some ponds. LOOW, a 7,500-acre parcel of land, was constructed in 1942 as a TNT production facility by the War Department. Of the total parcel, 2,500 acres were used for production operations, production support, and storage. The remaining 5,000 acres were left undeveloped to serve as a buffer zone and to allow for possible expansion.

In 1945, the U.S. Congress transferred the 5,000-acre buffer zone to the General Services Administration for sale to private owners. A 304-acre parcel (the OCCP) was purchased by Hooker Chemical and Plastics Corporations in 1975 from a private owner. It was later sold to the Occidental Petroleum Corporation. The use and ownership between 1945 and 1975 is unknown. There is no known use or storage of radioactive materials on the OCCP by the Manhattan Engineer District or the Atomic Energy Commission.

### 2.3 Environmental Setting

The site is relatively flat and heavily wooded. Two perennial surface water bodies (ponds) are located on OCCP. A New York State freshwater forested/shrub wetland (LE-18) is also present.

During the operation of LOOW, a system of drainage ditches, temporary in nature, was constructed to drain surface water runoff. They included preexisting agricultural ditches that had been used to irrigate farmland and drainage ditches constructed during development of LOOW. The drainage ditches have not been maintained and overland flow is now impeded. The Southwest Drainage Ditch is a receiving surface water body west of the OCCP. It discharges to Four Mile Creek north of Balmer Road. Four Mile Creek is a New York State Class B water body from Lake Ontario to approximately 0.9 mile upstream, where it becomes a Class C water body.

The area is underlain by approximately 30 to 60 ft of unconsolidated glacial deposits that overly shale bedrock of the Queenston Formation. Glacial deposits consist of fine sand, silty sand with

clay, and clay-sand mixtures with occasional traces of gravel. A glaciolacustrine clay layer is present between 12 and 20 ft below ground surface (bgs) which separates a discontinuous upper water-bearing zone and a confined lower water-bearing zone (USACE 2002).

### **3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES**

#### **3.1 USACE**

The USACE is responsible for the overall management of the Soils RA at the LOOW AOC 1. The USACE project team is comprised of a Project Manager (PM), Contracting Officers Representative (COR), and Technical Manager. The USACE is responsible for maintaining communication with the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH), the regulatory agencies overseeing this RA. Furthermore, the USACE is responsible for reviewing and accepting all planning documentation, RA activities conducted, and reporting.

#### **3.2 ERT**

ERT is the prime contractor responsible for executing the Soils RA at the LOOW AOC 1. ERT has developed a project team with the appropriate qualifications and demonstrated capabilities to successfully execute the requirements of this DO. The Organizational Chart (**Exhibit 1**) identifies project personnel required to manage and successfully complete the identified project elements outlined in the SOW. The project delivery team is composed of a Program Manager, PM, Quality Control System Manager (QCSM), QCSM Appointee, Safety and Health Manager, Site Safety and Health Officer, Project Superintendent, Waste Manager, Data Manager, and Project Chemist. The core project delivery team is supported by field technicians and subcontractors. Additional technical staff may be added to the project team, if needed. Further detail regarding the project organization and responsibilities is provided in the Contractor Quality Control Plan (CQCP).

#### **3.3 Subcontractors**

ERT has subcontracted a highly qualified and trusted team including A-Zone Environmental, LLC. (A-Zone) to provide construction support. ERT and A-Zone have a history of working together on DoD DOs for over 10 years, and have established a unified perspective to project excellence in quality and safety. Additional trusted subcontractors include, Tree Doctor to provide vegetation clearance, grubbing, and revegetation services; Modern Disposal Services, Inc. to support off-site transportation and disposal of excavated soil; MAX Environmental Technologies, Inc. to support off-site transportation and disposal of hazardous material; Heinrich Services to support off-site transport and dispose of site debris; A-1 Landcare, Inc. to supply and transport clean fill material; SJB Services to support geotechnical analysis of clean import material; Klettke Land Surveyors, P.C. to provide civil survey services; Test America Inc. St. Louis, who is accredited to conduct analysis under the DoD Environmental Laboratory Accreditation Program accreditation, to complete the sample analysis; and HSW Engineering, Inc. to complete the data validation.

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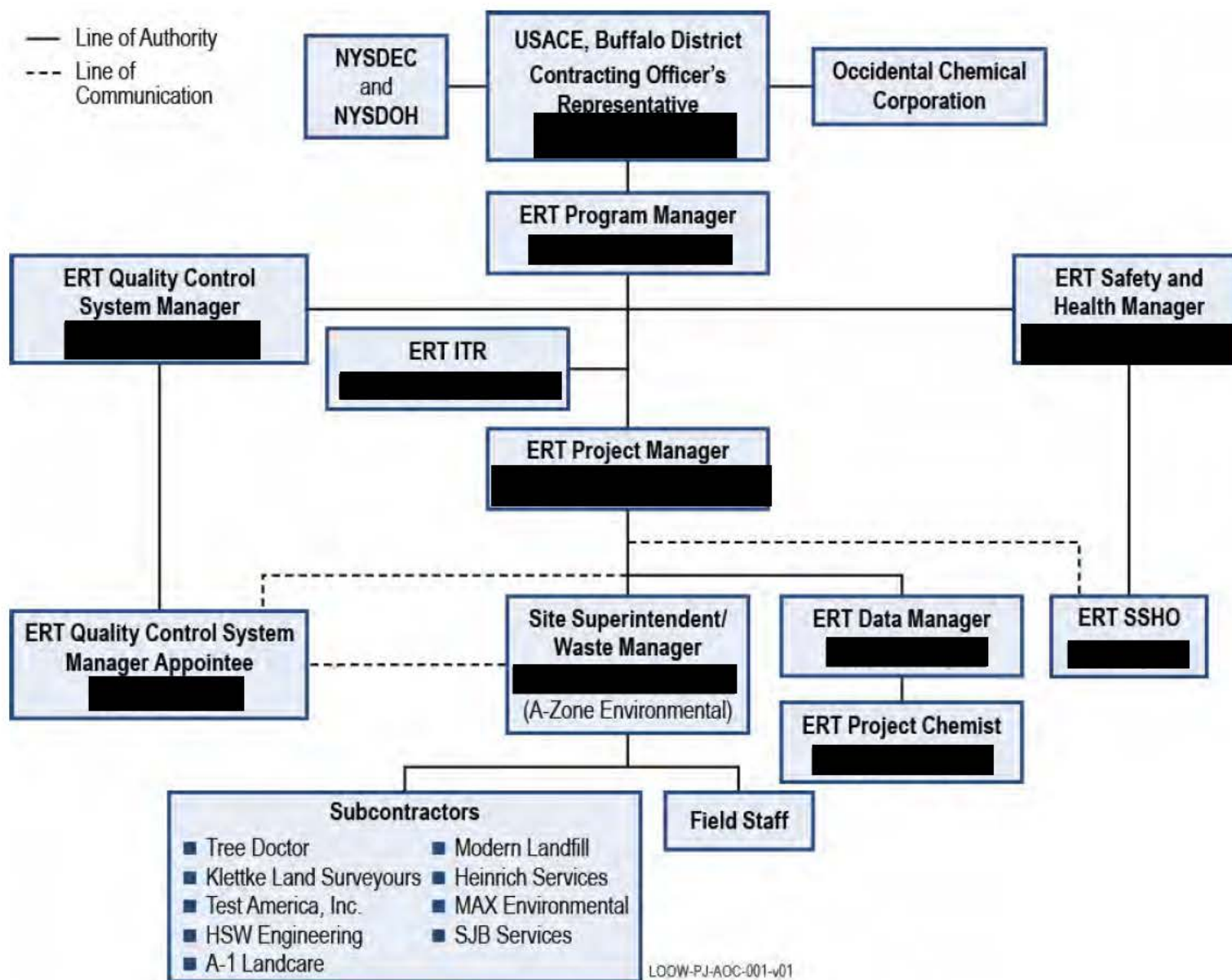


Exhibit 1. Project Organizational Chart

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#### **4.0 REGULATORY COMPLIANCE**

Work under this DO will be completed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act Section 104, the Superfund Amendments and Reauthorization Act of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan, Sections 300.120(d) and 300.400(e). Additionally, project tasks will be completed in accordance with all applicable federal, state and local regulations. The NYSDEC and NYSDOH are the lead regulatory agencies.

All field activities will comply with applicable local, state, and federal regulations. Air emissions will be monitored and controlled in accordance with this SOP and Accident Prevention Plan (APP). Site water will be controlled, monitored, treated (if necessary), and discharged in accordance with this SOP. Erosion and sediment control best management practices will be implemented in accordance with the Storm Water Pollution Prevention Plan (Section 7.3.2 of this plan). All work conducted within the identified New York State wetlands will be done so in accordance with applicable NYSDEC regulations.

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## **5.0 PROJECT SCHEDULE**

A project schedule has been developed for the Soils RA at the LOOW AOC 1 (**Exhibit 2**). The project schedule identifies the definable features of the project, start and completion dates, critical activities (as applicable), and milestones required to successfully complete the Soils RA. ERT will coordinate activities with the USACE to ensure that the proposed project schedule does not conflict with other activities on site. The schedule will be updated, as needed, during the project.

All site work will be completed Monday through Friday during daylight hours (between 0600 and 1800). Weekend work may be permitted if requested and approved by USACE and OCCP. At no time will work be allowed during nighttime hours.

Additional information regarding definable features of work and milestones can be found in the CQCP and the Uniform Federal Policy-Quality Assurance Project Plan/Sample and Analysis Plan (UFP-QAPP/SAP).

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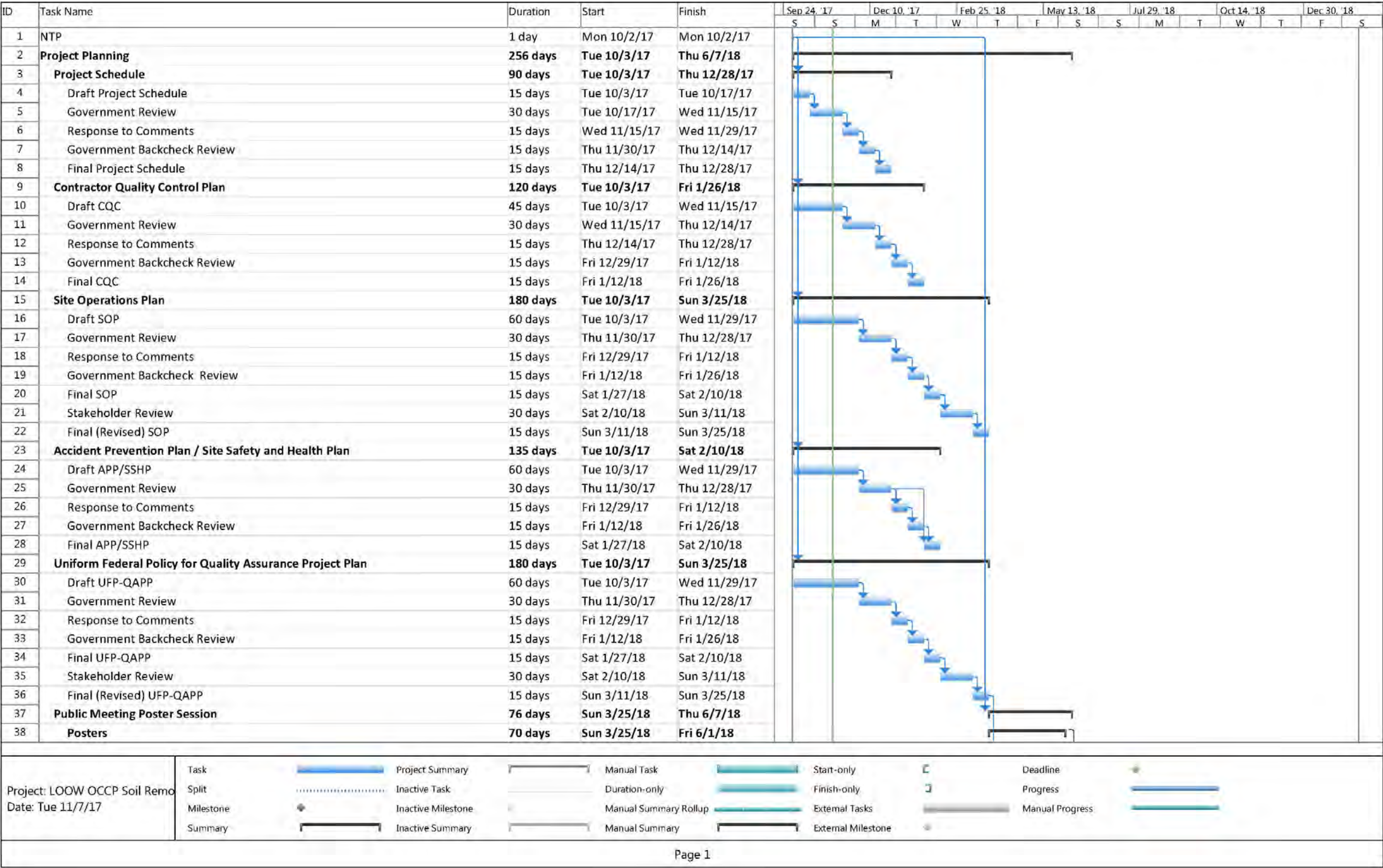


Exhibit 2. Initial Project Schedule



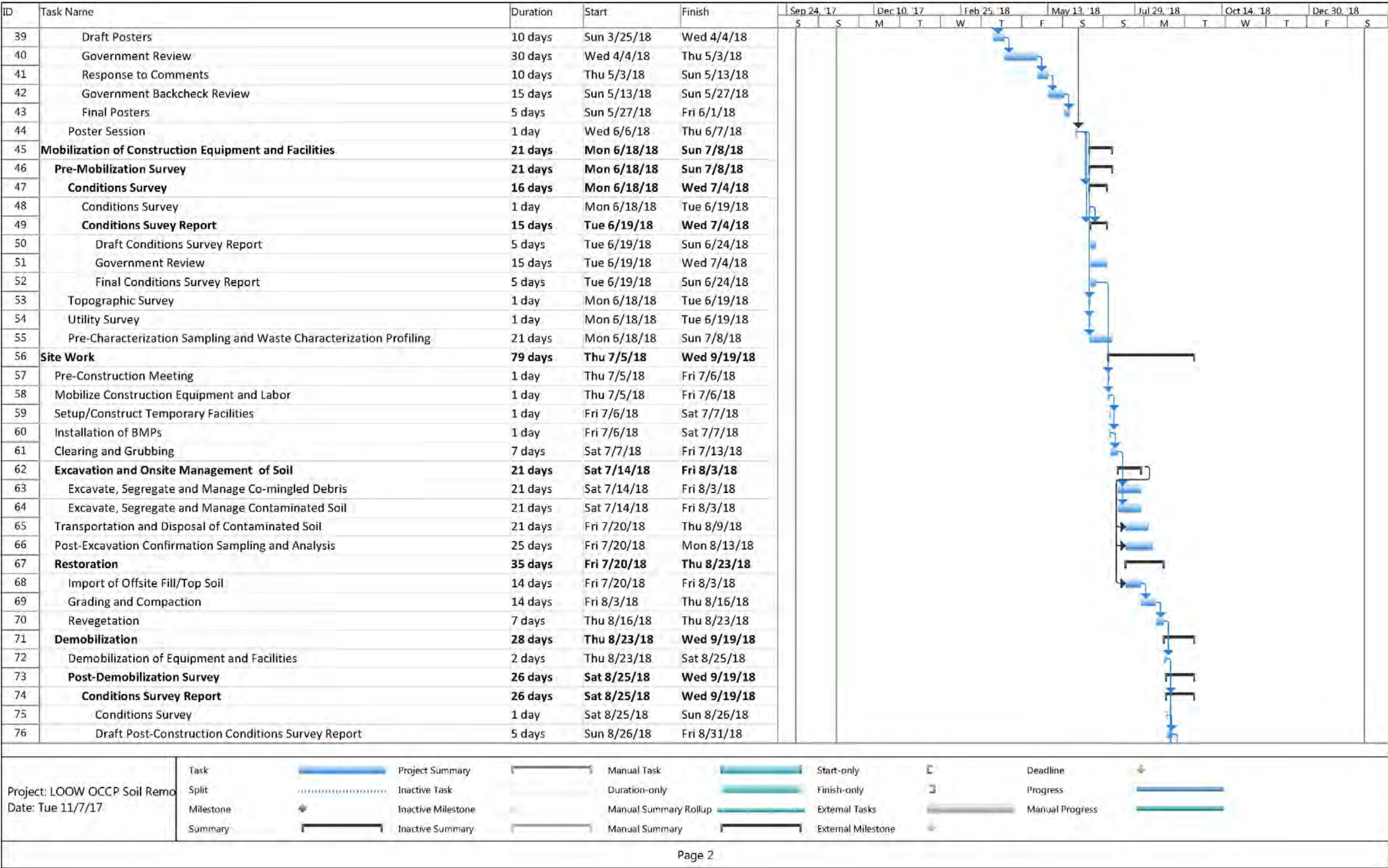


Exhibit 2. Initial Project Schedule

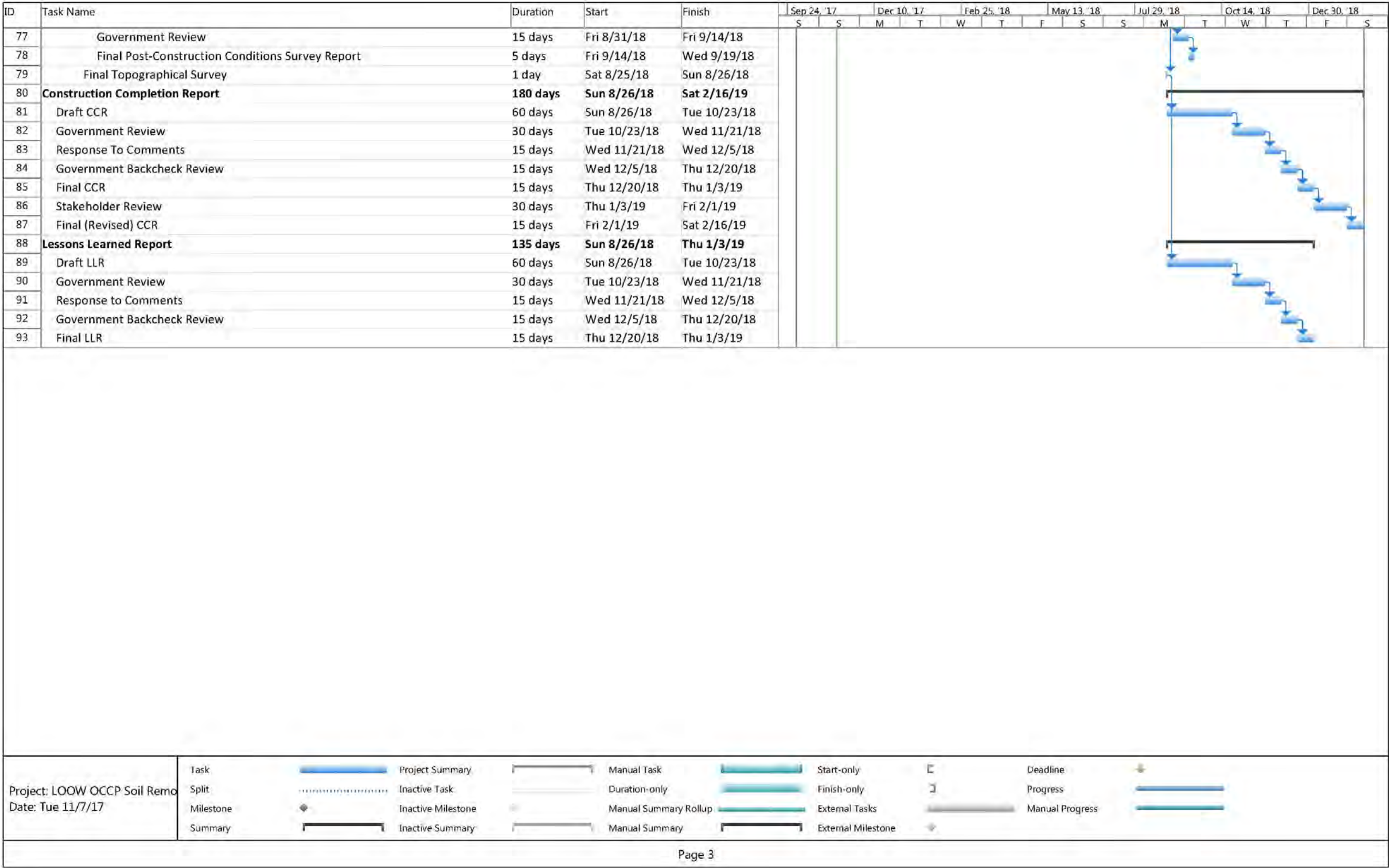


Exhibit 2. Initial Project Schedule

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## **6.0 PREPARATORY WORK**

### **6.1 Submittals/Work Plans**

ERT will develop applicable project planning documents identified in the SOW, outlining the proposed management and technical approaches to be implemented. Field activities will begin after acceptance of work plan documents and will be conducted in accordance with accepted project plans. Project planning documents for this DO include a Project Schedule, CQCP, this SOP, UFP-QAPP/SAP, and APP.

#### **6.1.1 *Project Schedule***

A project schedule, included in Section 5, has been developed which identifies the definable features of the project, start and completion dates, critical activities, and milestones required to successfully complete the Soils RA at the LOOW AOC 1.

#### **6.1.2 *Contractor Quality Control Plan***

The CQCP defines ERT's overall framework and general procedures during the project, which will ensure that ERT is operating in accordance with all environmental requirements and has concurrence from the USACE project team and stakeholders, and the successful execution and completion of the awarded tasks. The CQCP describes the major processes that will be implemented during the project to prevent and correct any quality issues. The CQCP documents the roles, responsibilities, policies, procedures, data collection, and reporting activities for the successful completion of the Soils RA activities, and provided the basis for timely and accurate reporting regarding the execution of this DO. With this document, ERT developed an activity-based schedule that fully supports the technical approach and outlines the due dates for all milestones and payable deliverables. As part of the CQCP, ERT has identified a means for providing project status reports to the USACE PM and USACE COR. Additionally, communication channels will be established to ensure timely, accurate, and meaningful coordination between the project team.

#### **6.1.3 *Site Operations Plan***

This SOP has been prepared to define ERT's overall means, methods, and sequencing of work to be implemented during the project, which will ensure a successful execution and completion of the awarded tasks. The SOP details the size, scope, and character of the remedial action. The intent of this plan is to present the general sequence of pre-construction and remedial construction activities planned. In addition, this plan summarizes the proposed methods for performing the phases of work, describes the equipment and personnel to be used, the general sequencing of the work activities, the use of the site for staging, stockpiling and other activities, and maintaining security. Construction activities will be performed in compliance with USACE and DoD planning, design, and construction directives relevant to this project.

#### **6.1.4 *Uniform Federal Policy –Quality Assurance Project Plan/Sampling and Analysis Plan***

The UFP-QAPP/Sampling and Analysis Plan (SAP), developed following the recommended format for quality assurance project plans outlined in the "Uniform Federal Policy for

Implementing Environmental Quality Systems – Evaluating, Assessing and Documenting Data Collection/Use and Technology Program” (IDUTF, 2005), establishes the project quality assurance for sampling, measurements, and analytical requirements associated with the remediation activities. The UFP-QAPP/SAP describes applicable data quality objectives (DQOs), analytical methods and measurements, quality assurance/quality control (QA/QC) protocols, and data assessment procedures for identifying any data limitations. It also includes adequate detail describing the technical detail and direction for the field and laboratory personnel to understand project sample analysis, QC and data reporting requirements. Analytical methods, required detection limits, QC requirements, and data validation and reporting requirements are also described within the UFP-QAPP/SAP. Procedures and protocols for project-specific field activities, sampling, documentation, sample packaging/control/shipping, QC, off-site laboratory analysis, technical details and full detail for personnel to perform all on-site activities required to attain project DQOs.

#### **6.1.5 Accident Prevention Plan**

The APP outlines site-specific safety procedures to identify and mitigate hazards, minimize potential site-specific accidents, and ensure worker safety and health during soils remedial activities. The APP has been developed in accordance with applicable federal and State of New York safety regulations for general industry and construction, Occupational Safety and Health Administration and National Institute for Occupational Safety and Health safety standards/guidance documents, USACE safety standards/guidance documents (EM 385-1-1), ERT’s Corporate Safety and Health Plan, and ERT’s Standard Operating Procedures. The APP governs project activities performed by ERT during soil remedial activities at the LOOW AOC 1.

### **6.2 Pre-Mobilization Survey and Site Preparation**

Prior to the commencement of site work, a pre-mobilization survey will be conducted to adequately document the site conditions prior to remedial activities. The pre-mobilization survey will include documentation of site conditions, land surveying, and soils characterization. The results of the pre-mobilization survey will be summarized and reported to the USACE for concurrence.

#### **6.2.1 Site Condition Survey**

Site conditions will be recorded via written and photographic documentation by ERT personnel. The focus of this survey will be the condition of areas expected to be contaminated by remedial activities. The area within and immediately surrounding AOC 1 as well as the access road and surrounding vegetation will be assessed. The initial site condition survey will be submitted to USACE prior to mobilizing construction crews for the remedial action.

#### **6.2.2 Land Survey**

The pre-mobilization land survey will be completed by Klettke Land Surveyors, a New York state licensed surveyor, to document pre-construction elevations of the site, access road and AOC 1. The survey activities will include a minimum of four (4) semi-permanent horizontal control points established outside of the proposed remediation area, accompanied by a recovery sketch with at least three (3) swing ties. Horizontal datum will be referenced to NAD 83 New

York State Plane Coordinate, West Zone and vertical datum to NAVD 88. The intent of the initial land survey is to develop initial topography from which the volume of soil removed will be generated, and on which progress and restoration will be measured. Post-excavation surveys will be completed to document the amount of soil and debris that has been removed. Initial and post-excavation topographic maps will be submitted to USACE once completed.

### **6.3 Soil Waste Characterization**

Soils within AOC 1 will be characterized for the purposes of waste disposal prior to any RA activities to allow for live-loading of contaminated soils. Based on previous sampling results, soil outside of the TNT and lead contaminated area is not expected to contain chemicals at concentrations that would be characterized as hazardous waste. Three decision units (DUs) for waste characterization soil sampling (**Figure 3**) have been identified. ERT will collect one composite waste characterization soil sample in the TNT and lead contaminated area and two composite waste characterization soil samples outside of the contaminated area but within the debris field, representing a volume of soil no larger than 950 square yards (cubic yards cannot be calculated at this time since the exact depth of the debris pile unknown). ERT will conduct waste characterization soil sampling using composite sampling and each composite sample will be comprise of four increments; ERT will collect the increments in a systematic random fashion to ensure the sample is representative of the DU. Each increment will be collected with the use of a mini-excavator, to the depth of the native soil as determined by the site geologist. The sample from each DU will be deposited directly into laboratory prepared containers for submittal to the laboratory. Waste characterization samples will be submitted to TestAmerica, St. Louis, Missouri for laboratory analysis of Resource Conservation and Recovery Act (RCRA) hazardous waste characteristics ignitability, corrosivity, and reactivity. Toxicity will be determined via TCLP analysis for metals, herbicides/pesticides, VOCs, SVOCs and total PCBs in accordance with the Modern Landfill Generator Waste Characterization Report. Waste characterization sampling data will be compared to RCRA hazardous waste standards. Soil characterization is described in further detail in the LOOW AOC 1 UFP-QAPP/SAP.

### **6.4 Utility Clearance**

Prior to any intrusive activities, all underground utilities will be identified and marked accordingly. A request for utility locating and marking will be placed to Dig Safely New York (1-800-962-7962). Additionally, Waste Management will be consulted regarding the type, location, and depth of any underground utilities and/or pipelines to or from the adjacent facility.

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## 7.0 MOBILIZATION AND SITE WORK

The sequence of work will be conducted in a manner that allows for the efficient and effective execution of site activities to complete the objectives of the Soils RA. Initially, a pre-mobilization survey will be conducted to characterize the site conditions. Following the site survey, predetermined areas within AOC 1 will be cleared of vegetation and grubbed. Once sufficient area has been cleared to allow for the construction of temporary facilities, those facilities will be mobilized and/or constructed within the designated staging area. Vegetation clearance will continue until all necessary areas have been cleared. A construction entrance and haul road will be established as those areas become available per the vegetation clearance. Upon the completion of vegetation clearance, all vegetation debris will be consolidated and prepared for transportation and disposal.

Following vegetation clearance, loose debris within remedial action footprint will be containerized for offsite disposal. Once all debris has been removed, onsite operations will transition to the excavation of contaminated soils and mixed debris. Excavated soils will be temporarily stockpiled until sufficient volume is available for disposal. Soils will be live-loaded into tri-axle dumps until all contaminated soils have been removed. As the excavation progresses and confirmation sampling results validate, excavation areas which require backfilling will be done so with clean borrow fill. At the completion of debris and contaminated soils removal, all affected areas will be restored to match the pre-excavation conditions. Following acceptance of restoration activities, all onsite equipment and personnel will be demobilized.

### 7.1 Mobilization

Upon completion of pre-mobilization survey activities, project field personnel and equipment will mobilize to the site. Use of the access road will be coordinated with the NRAA prior to mobilization. Remedial activities will include vegetation clearance and grubbing, setup/construction of temporary facilities, installation of stormwater best management practices, debris removal, soil removal, confirmation sampling, and restoration. Each of these activities is described in further detail below.

### 7.2 Vegetation Clearance and Grubbing

ERT's subcontractor Tree Doctor will conduct vegetation clearance, tree falling, and grubbing of the site. Vegetation clearance, tree falling, and grubbing will commence at the construction entrance and temporary facilities area. Additional areas to be cleared and grubbed include the area of contaminated soil and the debris field. Within the debris field, discretion by the Project Superintendent will be used during the clearance and grubbing as to reduce any potential impact to the surrounding vegetation. Vegetation clearance within the debris field will be restricted to that which is necessary for the adequate removal of debris and contaminated soil. Cleared vegetation will be consolidated and stockpiled onsite until transported to the Heinrich Services vegetating debris disposal facility.

### 7.3 Temporary Facilities

Temporary facilities will be setup/constructed following vegetation clearance of the area designated for the location of all temporary facilities (**Figure 4**). A temporary haul road will be

constructed to allow tri-axle dump trucks to access the area of contaminated soils for live-loading of excavated soils. The access road will be constructed of granular material to a depth that will accept the weight of loaded truck traffic. The road and entrance/exit will be periodically maintained to ensure a clear and level runway for construction traffic and field vehicles.

Facilities anticipated onsite include a mobile office, equipment and materials staging area, a roll-off dumpster, a frac tank, sanitary facilities, and a construction entrance/decontamination area. The support area will be prepared including the use of granular material as necessary to accept the temporary placement of a mini-mobile/conex box (mobile office), fractalization (frac) tank, and other site equipment. This area will be used for initial equipment inspections, staging of materials and onsite vehicles.

Prior to the commencement of site activities, a temporary project safety fence will be erected along the perimeter of the proposed work area. This safety fence will be a high visibility orange colored, high-density polyethylene grid no shorter than 42 inches in height. Steel posts will be used to support the fence, affixed at a maximum of 10 ft on center. The project safety fence will be maintained throughout the course of field activities and removed during demobilization.

## **7.4 Contamination Control**

### **7.4.1 Water Management**

Water management is expected to be minimal as the RA activities are scheduled to be conducted during the dry summer months. Additionally, groundwater is not expected to be encountered as the excavation of soil is not anticipated to extend very far below the ground surface (e.g., to the top of the groundwater table). However, in the event water accumulates in the excavation, it will be considered potentially contaminated. If dewatering is necessary, it will be pumped using a standard trash pump (or similar) and 2-inch hose from the excavation into the onsite frac tank and held until it has been characterized. A water sample will be collected from the removed water and submitted to the laboratory for analysis. Dependent upon the results of the laboratory analysis, the collected water will either be discharged onsite or disposed of at an offsite permitted location. Any discharge of water on-site will be done in accordance with state regulations.

### **7.4.2 Stormwater Pollution Prevention Plan**

A National Pollution Discharge Elimination System permit is not required for the execution of this RA. However, to reduce the potential for stormwater pollution during RA activities, best management practices will be implemented as necessary. As presented in **Figure 4**, a silt fence will be installed surrounding the perimeter of the site, encompassing the entire debris field, area of contaminated soils, construction staging area, and site entrance. Surface water present within the construction area will be avoided and measures will be taken to ensure construction activities do not impact those waters. A rock construction entrance/exit will be constructed for truck traffic leaving the site to minimize the potential for tracking sediments onto the NRAA access road. Additional measures used to reduce the movement of water within the site may include bermed material, additional silt fence, and/or silt socks/fiber rolls. In the event stormwater accumulates within the excavation area, it will be pumped and containerized within the onsite frac tank for characterization and management.

Best management practices will be inspected during each work day and after a significant rain event (determined by rainfall of greater than 0.5 inches). If repairs are necessary, they will be

identified in the Daily QC Report and the repairs are expected to be completed within 24-hours, or before a rain event, and prior to continuing any work within 100 feet of the necessary repair. Best management practices will remain in place until site restoration has been completed.

#### **7.4.3 Decontamination**

The objective of equipment decontamination is to remove potentially contaminated soil from the surfaces of the excavation equipment and transportation vehicles. All trucks will be loaded on area or platform we create in a “clean” area (out of gravel). Each truck will be inspected to make sure no soil designated for disposal is present on tires or outside of bed before it leaves the site. Before leaving the site, each piece of heavy equipment will be dry decontaminated (any soil will be removed) and scrubbed using soapy water and rinsed on plastic sheeting at the site. Only portions of the equipment that came into contact with impacted soil will be scrubbed. The water will be recovered and transferred to drums or on-site storage tank. If soil deemed “hazardous” requires excavation, removal, and loading is required, the decontamination water recovered will be segregated from decontamination water generated during non-hazardous operations.

Sampling devices used for analytical soil sample collection will be decontaminated prior to and between collection of samples. Decontamination procedures will be conducted in accordance with ERT Standard Operating Procedure-03-1. Decontamination of sampling equipment is further described in the LOOW AOC 1 UFP-QAPP/SAP.

#### **7.4.4 Monitoring**

Air monitoring will be conducted continually during RA activities in accordance with the APP. The primary concern regarding air monitoring during RA activities will be the generation of fugitive dust during excavation of contaminated soils that may carry contaminants or irritants. Real-time monitor with data logging capabilities will be used to identify downwind particulate concentrations and the readings will be downloaded daily. Readings from the air monitor will be recorded in the field log and included in the daily report. Additional details regarding air monitoring and the Respiratory Protection Plan are included in the APP.

#### **7.4.5 Housekeeping**

ERT requires that all site personnel practice good housekeeping in both common areas and at the work site. The Project Superintendent along with the Site Safety and Health Officer will conduct periodic inspections to ensure that good housekeeping practices are being followed by site personnel. All work areas will be kept clean, and waste receptacles will be available. Drinking water will be readily available to all workers and will be provided via bottles. No potable water supplies will be mixed with non-potable water supplies. Portable toilet facilities will be located at the staging area.

### **7.5 Equipment**

Equipment will be mobilized to the site once the staging area has been established and will be stored onsite within the designated areas (**Figure 4**). All equipment onsite will be maintained, inspected, and operated in accordance with manufacturer’s specifications and the project APP. All equipment will undergo an inbound inspection to identify an operational or mechanical deficiencies and ensure all safety devices are operational. During the short duration of this project it is not anticipated that service or repairs will be necessary, however if required the



servicing will be performed by mechanics employed by the equipment dealer or A-Zone, and the work performed in the designated equipment staging area.

Light duty trucks will be used for transportation of site personnel, supplies, and materials when feasible. During debris removal activities, a Caterpillar 303E mini-excavator (or equivalent) with a bucket and claw will be utilized. During soil excavation, backfilling, and grading activities a Caterpillar 300 (or equivalent) and Caterpillar 320 D (or equivalent) with a 1-yard bucket will be utilized. Additional support equipment will be mobilized as necessary, such as a fractalization tank, a skidsteer with road cleaning brush, dewatering pumps and associated hose.

## **7.6 Site Security**

Site security will be maintained by onsite personnel during working hours. Site access will be coordinated with USACE and the ERT PM. All site visitors will be required to sign in and be escorted by a field employee while onsite. There are no security fences currently installed and based on the nature of the work, the construction of security fences is not planned.

## **7.7 Excavation of Soil/Fill and Debris**

Visual surveillance will be used to identify debris for removal. The debris is expected to be at or near the ground surface, including within mounded soils in the debris field area. A mini-excavator will be used for the removal of debris. Debris removal will begin on the eastern edge of the debris field and continue in a westerly direction. Debris within the contaminated soils area will be removed last to prevent the potential migration of contamination. Certain debris that is not accepted at the identified landfill will be segregated to be recycled, such as tires and metals. Segregated materials will be loaded into roll-off containers for offsite management.

Following the removal of all debris from within the debris field and outside of the contaminated soils area, the excavation of contaminated soils and debris will commence. The area of excavation is expected to be predominantly mounded fill material. As such, excavation is not expected to be below the surrounding native surface grade. Contaminated soils will be live-loaded into tri-axle dumps until all contaminated soil within the identified contaminated soils area has been removed. The volume of contaminated soils is estimated to be 611 bank cubic yards.

As contaminated soils are removed and confirmation sampling DUs become accessible (**Figure 5**), confirmation sampling will be conducted to confirm the extent of the excavation addressed all soils with concentrations of TNT and lead above their respective remedial goals. ERT will conduct confirmation soil sampling on each of six confirmation sampling DUs using the ISM and each sample will be comprise of 30 increments; ERT will collect the increments in a systematic random fashion. Each increment will be collected with a step probe with handle having the coring dimensions of 6 to 12 inches by ½ inch. The sample from each DU will be deposited directly into a 1 to 2-gallon re-sealable zipper storage bag for submittal to the laboratory. Once analytical data confirm that contaminated soils have been completely removed, clean fill material will be transported to the site and the excavation will be backfilled and graded as needed. Fill material will only be used to fill in areas below the native surface grade where removal has occurred, for example if tree root balls required removal. Fill material will not be used to achieve the initial grade of the mounded debris field. Further detail regarding the excavation of soil/fill and debris is provided in the project specific UFP-QAPP/SAP.



## 7.8 Waste Transportation and Disposal

The Waste Manager, Mr. Michael Bruzzesi, CPG as identified in the CQC Plan, is responsible for all waste regulatory matters and has the overall responsibility for total waste and disposal compliance. The Waste Manager will be supported by the ERT PM, who is a CHMM, and the identified waste disposal facilities to complete the required tasks. Site employees supporting the Waste Manager will all have current HAZWOPER training (29 CFR Part 1910.120) and meet the minimum training requirements identified in 49 CFR Part 172, Subpart H. USACE will be review and accept all shipping documents prior to off-site transportation. Final bills of lading and, if necessary, hazardous waste manifest will be kept in the project file and provided to USACE after the remedial action is complete.

Non-hazardous waste will be transported by and disposed of at Modern Landfill, 1698 Pletcher Road, Youngstown, NY 14174 under NYSDEC Permit Number 9-2924-00016/00043. Modern Landfill's phone number is 800-330-7107. Hazardous waste, if generated, will be transported and disposed of by MAX Environmental, 233 MAX Lane, Yukon, PA 15698 under PADEP Permit Number PAD004835146. The MAX Environmental Yukon, PA facility phone number is 724-722-3500. Both Modern Landfill and MAX Environmental will provide dedicated vessels for the transportation and disposal of waste streams generated during the project.

If hazardous materials are generated, the material will be handled in accordance with 40 CFR 260-272, 49 CFR 171-178, and any state, local, or other applicable laws and regulations. A letter from MAX Environmental will be prepared based on the results of waste characterization sampling acknowledging that the anticipated waste stream can be accepted. The letter will include information including applicable USEPA identification numbers for the waste stream and transporter(s), estimated quantities of soil requiring treatment and disposal, and transportation routes intended to be used. Where applicable, select transportation routes will comply with 49 CFR Part 397, Subpart D, unless a deviation is necessary. Route deviations may occur due to emergency conditions making the preferred route unsafe or impassable. Drivers will immediately report any route deviations.

The transportation mode and type transportation containers will be dependent upon the characteristics and volumes of soil requiring hazardous treatment and waste disposal. However, all packaging and shipments will be executed in accordance with 49 CFR Part 173. If necessary based on the characteristics of any hazardous waste identified, an amendment to this SOP may be required prior to transportation and disposal.

All excavated material will be handled in accordance with applicable state and federal regulations. Debris and soil will be containerized onsite and transported to an appropriate facility. If the excavated material is saturated, it will either be allowed to dry or be amended with kiln dust, or similar, to achieve optimum moisture content prior to loading and off-site transportation. Off-site shipments of waste requiring placarding will be performed in accordance with 49 CFR Subpart F. Excavated soil and debris will be disposed of at a Subtitle D landfill. If hazardous material is identified, some pretreatment/stabilization of contaminated soil/fill may be necessary to meet land disposal restrictions if analytical data determines that the contaminated soil/fill is hazardous waste in accordance with 40 CFR Part 261. Treatment and disposal of hazardous waste will be completed by MAX Environmental at its Yukon, PA facility. If waste characterization data confirms a hazardous waste stream, the volume of hazardous waste will remain in place until all appropriate permits have been obtained, and containers and

transportation are arranged allowing for the direct loading of the subject hazardous waste stream. Any hazardous material leaving the site will do so only under a USACE-reviewed and -approved hazardous waste manifest. The Waste Manager will confirm that all pertinent items included in Checklist 1 through Checklist 10 of Engineering Pamphlet 200-1-2 (USACE, 2010) have been completed before allowing the material to be transported from the site.

There is a possibility of spills during equipment/vehicle refueling. Fuel spills represent both a respiratory and fire hazard. Fuel will be stored only in Department of Transportation (DOT) compliant containers. A fuel spill kit or absorbent will be on hand when fueling of vehicles and/or equipment is taking place. In the event a spill occurs during refueling, every effort will be made to contain the spill and clean it up immediately. If soil is spilled during the loading of trucks; spilled soil will be gathered with hand tools and construction equipment from the loading area and re-loaded into the dump truck. Spoils resulting from any spill will be disposed of in accordance with the requirements for that item.

ERT's Subcontractor Heinrich Services will support the off-site transportation and disposal of debris. ERT's subcontractor Modern Landfill, will support the off-site transportation and disposal of Subtitle D contaminated soil/fill and debris. MAX Environmental will support the off-site transportation and disposal of Subtitle C hazardous material. The USACE or designee will review and sign all waste profiles and waste manifests for the disposal of project waste at an approved facility. Further detail regarding the transportation and disposal of excavated soil/fill and debris is provided in the project specific UFP-QAPP/SAP.

## **7.9 Sampling, Testing and Analysis**

The project specific UFP-QAPP/SAP details the frequency of sampling, media to be sampled, analysis to be performed, and DQOs to be achieved. Laboratory sample analysis will be conducted by Test America. ERT's Project Chemist will ensure DQOs and responsibilities, sampling and analysis requirements, data documentation and validation requirements, and reporting requirements are attained. ERT's Data Manager will coordinate and oversee laboratory subcontractors and deliverables and to communicate issues and concerns to ERT PM.

Sampling and analysis, and testing will be performed to:

- Characterize containerized surface water and decontamination water for disposal
- Characterize soil for disposal, including RCRA characteristics for ignitability, corrosivity, reactivity, and toxicity as detailed in the UFP-QAPP/SAP
- Confirm achievement of the remedial goal
- Calibrate health and safety equipment
- Calibrate land survey equipment
- Characterize fill material (if necessary)

## **7.10 Site Restoration**

Upon completion of an excavation area, the QCSM will inspect the excavation for any sign of contamination or debris, and then assign the sampling team to collect requisite confirmation samples for laboratory analysis. Upon receipt of the analytical data, the QCSM will be satisfied

that the work has met the performance criteria standards and designate the excavation area for restoration.

Areas disturbed during the soils excavation and debris removal will be restored in a manner that returns the disturbed area as similar as possible to the surrounding New York State freshwater forested/shrub wetland in accordance with applicable state requirements.

#### **7.10.1 Backfill and Grading**

Clean imported fill material will be used to backfill excavations. Backfill material will meet the requirements of clean fill as defined in the SOW; soils not containing lead and 2,4,6-TNT above remediation goals and meet the Unrestricted Residential Soil Cleanup Objectives established in title 6 of the Official Compilation of New York Codes, Rules and Regulations Part 375, Table 375-6.8(a). Imported backfill material will also be tested for geotechnical properties and results of geotechnical testing will be presented to the USACE for approval. Acceptable imported backfill material will consist of GW, GP, GM, GC, SW, SP, SM, SC, ML, MH, CL, or CH soils with particle sizes of no more than 6 inches. Backfill material will be placed and distributed in maximum 12-inch lifts. Sufficient compaction of each lift will be accomplished by the tracking of the excavator used for distributing and grading the fill material. Following the backfill and grading, the site will be restored at the surface with 6-inches of topsoil. The topsoil will be fine grade above surrounding grade to accommodate any settling of the fill material.

#### **7.10.2 Plantings and Erosion Control Materials**

Vegetation will be reestablished to match the surrounding New York State freshwater forested/shrub wetland. An appropriate grass seed mix will be used to restore the vegetation. Grass seed will be applied at the recommended volume per the manufacturers recommendations. Following application of the seed, straw will be distributed across the restoration area to help establish the seed. Stormwater best management practices will not be removed until such time that the restoration vegetation has been sufficiently re-established.

### **7.11 Construction QA/QC**

All construction activities will be conducted in accordance with the project specific CQCP. A member of the quality control staff, the QCSM or appointee, will be onsite throughout the duration of construction activities. The QC staff will implement the three-phase control system for specified work. Inspections will be performed for definable activities as stated in the UFP-QAPP/SAP. Preparatory, initial, and follow-up inspections will be scheduled and performed for each definable activity by the QCSM, or designee. The frequency of inspections will be finalized prior to the initiation of the activity and agreed upon by the USACE COR. A Preparatory and Initial Inspections record will be maintained. A project final inspection will be formally scheduled and completed with the USACE COR. A Contractor Quality Control Report will be generated and submitted within the Resident Management System at the completion of each day's activities. Further details regarding construction QA/QC are provided in the CQCP.

### **7.12 Transportation Plan**

Transportation vehicles will access the site via the NRAA access road located off Balmer Road. While onsite, including the NRAA access road, vehicles will follow the maximum 15 miles per hour speed limit. Vehicles will be required to enter the site through the construction entrance

and immediately report to the Project Superintendent. Construction vehicles will remain in the staging area until permitted to travel on the temporary haul road. The Project Superintendent or designee will manage traffic so that all vehicles onsite are accounted for and travel on the access road is not impeded. Transportation of excavated material will be conducted with licensed waste haulers using on-road haul vehicles. All relevant U.S Department of Transportation requirements, including proper labeling and placarding, and weight limits will be followed. All vehicles leaving the site will undergo dry and wet (if needed) decontamination procedures prior to exiting.

Any haul vehicle used to support this project will be prohibited from traveling on the section of Creek Road where the Lewiston Porter Intermediate Education Center is located or any road within the recognized Tuscarora Nation's boundaries. The prescribed haul routes for Modern Landfill and MAX Environmental are presented in **Figure 6** and **Figure 7**, respectively.

### **7.13 Project Meetings and Reporting**

Project meetings and reporting will be used to maintain effective communication regarding the quality and progress of project activities. Progress meetings will be held on a weekly basis while onsite work is being conducted. Weekly project meetings will be held onsite, and via conference call lines as necessary. Project reporting will include daily and monthly progress reports. Project meetings and reporting are detailed further in the project CQCP.

## **8.0 DEMOBILIZATION**

Demobilization will occur following the satisfactory completion of the Soils RA field activities. As equipment, personnel, and facilities are no longer needed to support the field activities, they will be prepared for demobilization. All equipment (and facilities as applicable) will be decontaminated (dry) prior to demobilization. A post-excavation survey (including photographic and topographic surveys) will be completed to document the amount of soil and debris that has been removed and to document the final site conditions. As the project nears completion, temporary facilities will be deconstructed, including the temporary haul road and staging area. Once all equipment and facilities have been demobilized, and following final inspection, all personnel will demobilize from the site.

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## **9.0 CONSTRUCTION COMPLETION AND LESSONS LEARNED REPORTS**

### **9.1 Construction Completion Report**

Following completion of soil remediation, ERT will prepare a Construction Completion Report (CCR) documenting the remedial activities. The report will identify and describe all work performed in the successful completion of the remedial action activities, including methods of RA activity execution, environmental sampling and analysis, quantities of contaminated soil/fill removed, quantities of debris removed, quantities of clean fill replaced, and disposal documentation.

### **9.2 Lessons Learned Report**

A Lessons Learned Report (LLR) will be developed following the completion of the Soils RA field activities. This report will document issues encountered and the resolutions prescribed throughout the execution of this DO. The LLR will be developed and maintained throughout the life of the project. This report will be submitted to the USACE following the completion of the Soils RA field activities.

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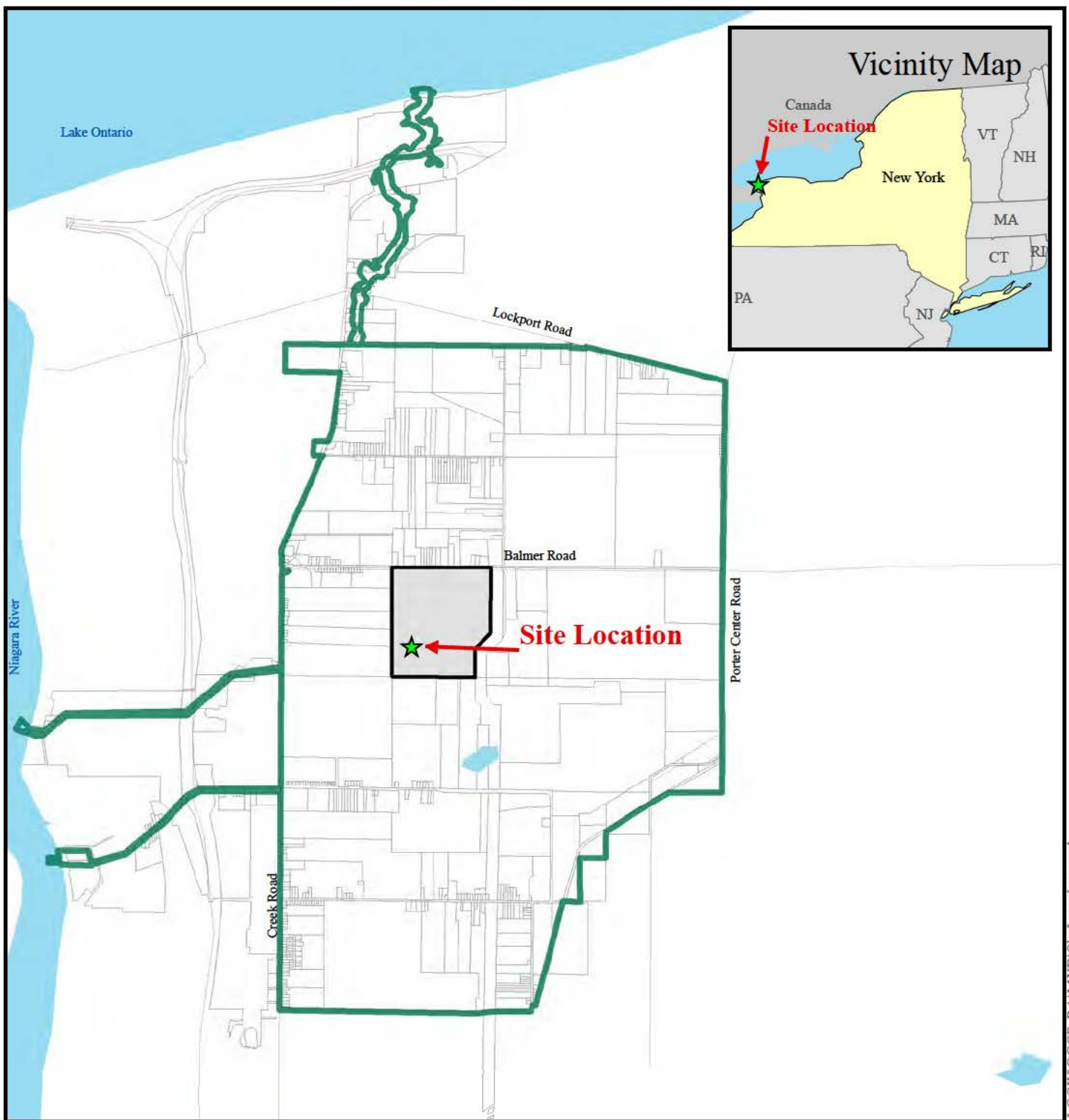
## 10.0 REFERENCES

- USACE, 2002. *Final Report of Results for the Phase II Remedial Investigation at the Former Lake Ontario Ordnance Works (LOOW), Niagara County, New York*. February.
- USACE 2008a. *Report of Results for the Remedial Investigations of Underground Utility Lines Formerly Used by the Department of Defense, Lake Ontario Ordnance Works (LOOW), Niagara County, NY, Volumes I-IV*. December.
- USACE 2008b. *Final Human Health Risk Assessment of Selected Exposure Units (EU1-EU6), EU8, EU9, EU10) at the Former Lake Ontario Ordnance Works (LOOW), Niagara County, New York*. December.
- USACE 2008c. *Final Screening Level Ecological Risk Assessment of Selected Exposure Units Within the Former Lake Ontario Ordnance Works, Niagara County, New York*. December.
- USACE, 2017a. *Final Decision Document Occidental Chemical Corporation Property at the Former Lake Ontario Ordnance Works, Niagara County, New York*. April.
- USACE, 2017b. *Scope of Work, Soil Remedial Action AOC1 at Occidental Chemical Corporation Property, Former Lake Ontario Ordnance Works, Niagara County, New York, Defense Environmental Restoration Program for Formerly Used Defense Sites (FUDS Property Number C02NY0025)*. June.

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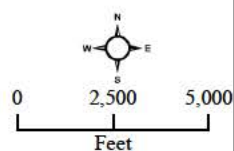
## FIGURES

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#### LEGEND

- ★ Site Location
- Property Ownership Boundary Occidental Chemical Corporation
- Tax Parcel Boundaries
- Lakes/Rivers/Ponds
- Roads
- Former LOOW Boundary with Easements



**Figure 1**  
**Occidental Chemical Corporation**  
**Site Location**

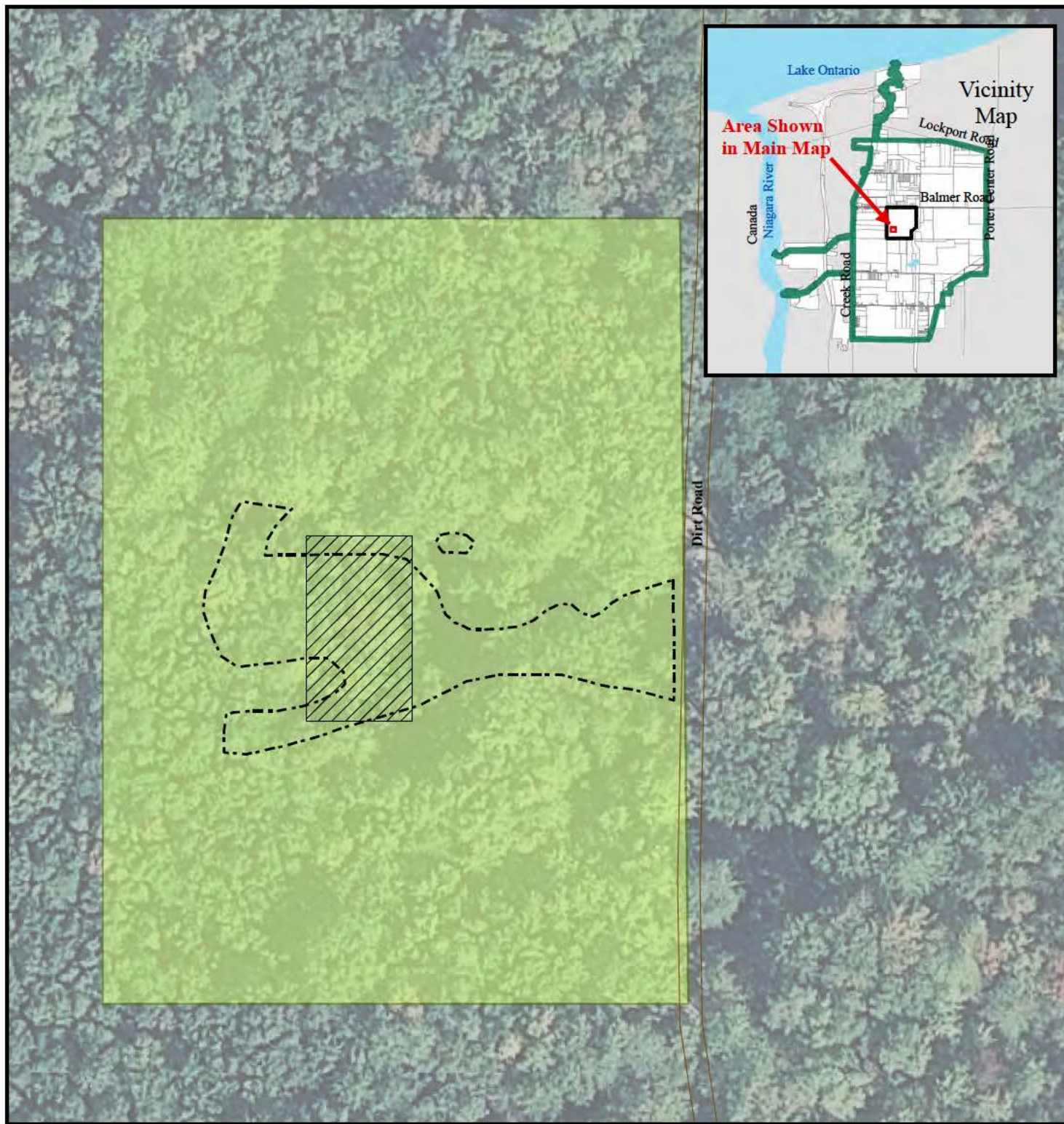
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#### LEGEND

Approximate TNT and Lead Impacted Area

Approximate Area of Debris – Approximate Extent of Slightly Elevated Areas Within AOC 1 (TEC, 2002)

Area of Concern 1 (AOC 1)

Property Ownership Boundary Occidental Chemical Corporation

Tax Parcel Boundaries

Former LOOW Boundary with Easements

Roads



0 37.5 75  
Feet

**Figure 2**  
**Occidental Chemical Corporation**  
**Property Site Map**

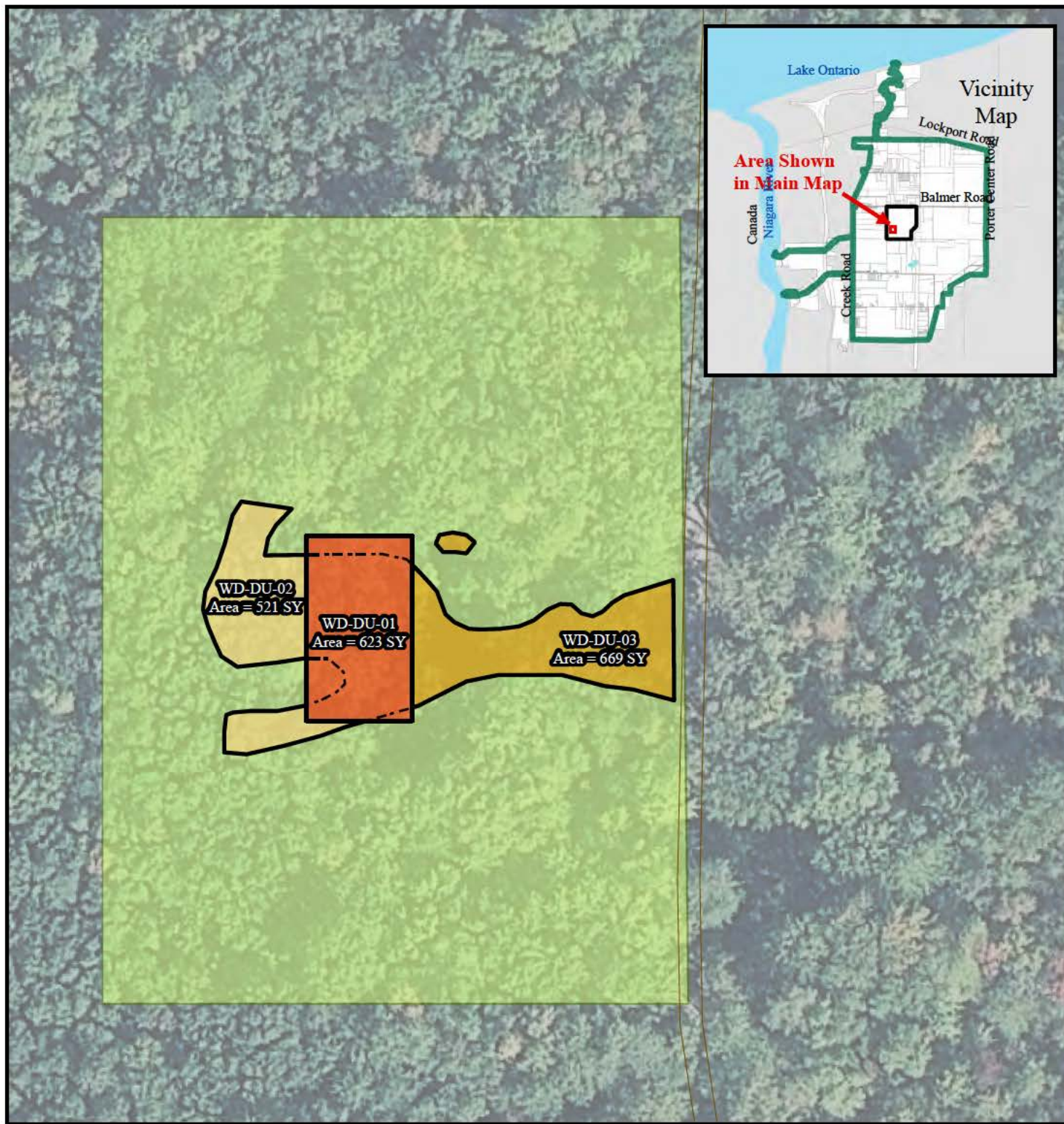
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#### LEGEND

Decision Units (DUs)

WD-DU-01

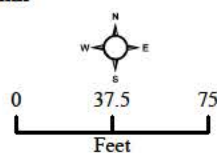
WD-DU-02

WD-DU-03

Approximate Area of Debris - Approximate Extent of Slightly Elevated Areas Within AOC 1 (TEC, 2002)

Area of Concern 1 (AOC 1)

Roads



**Figure 3**  
**Waste Characterization Soil Sampling**  
**Decision Units (DUs)**

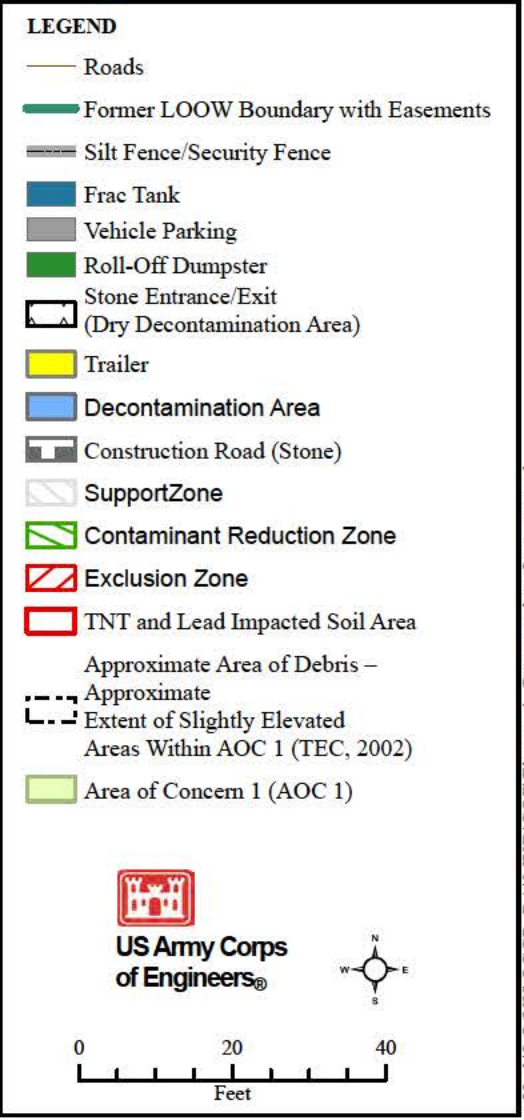
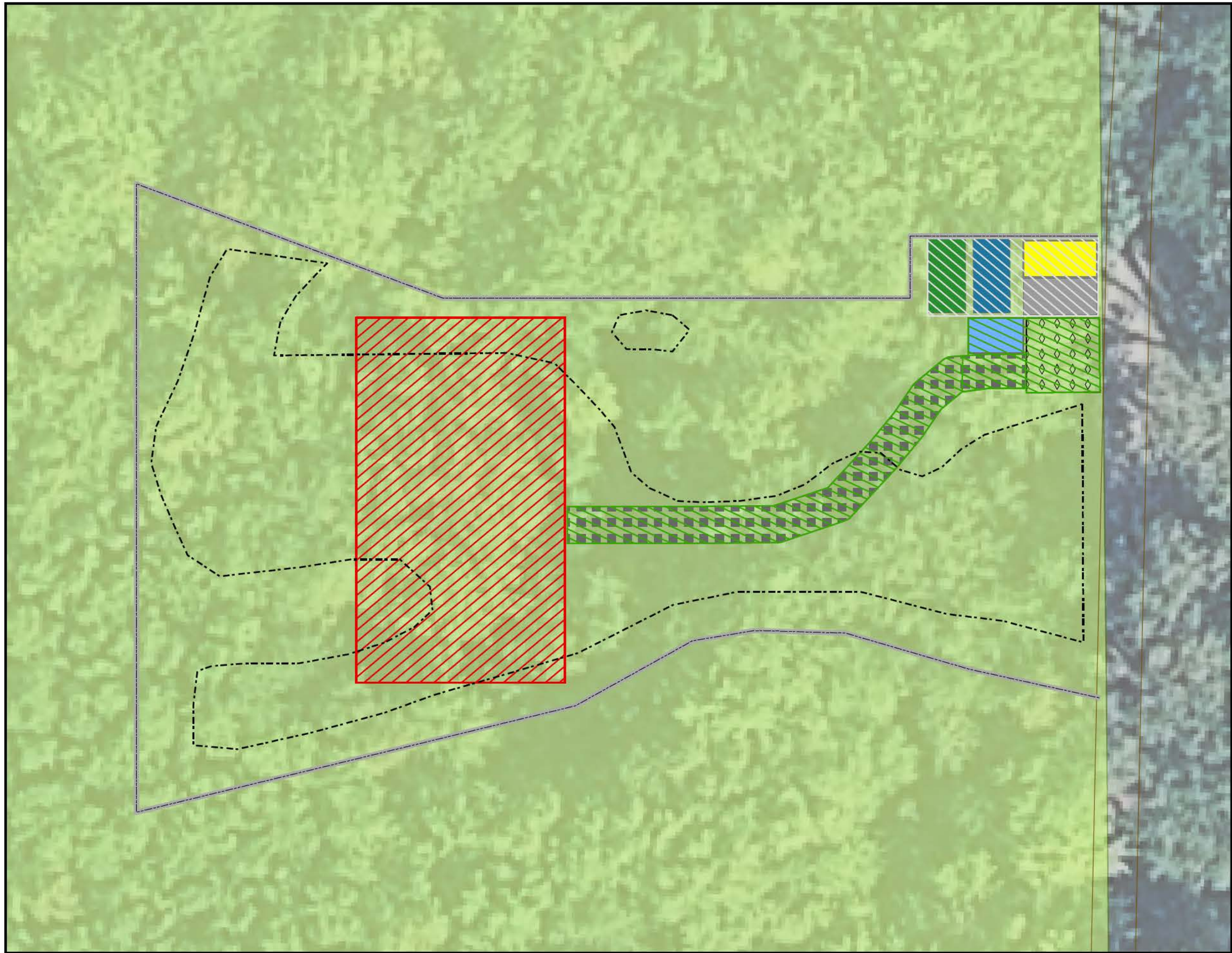
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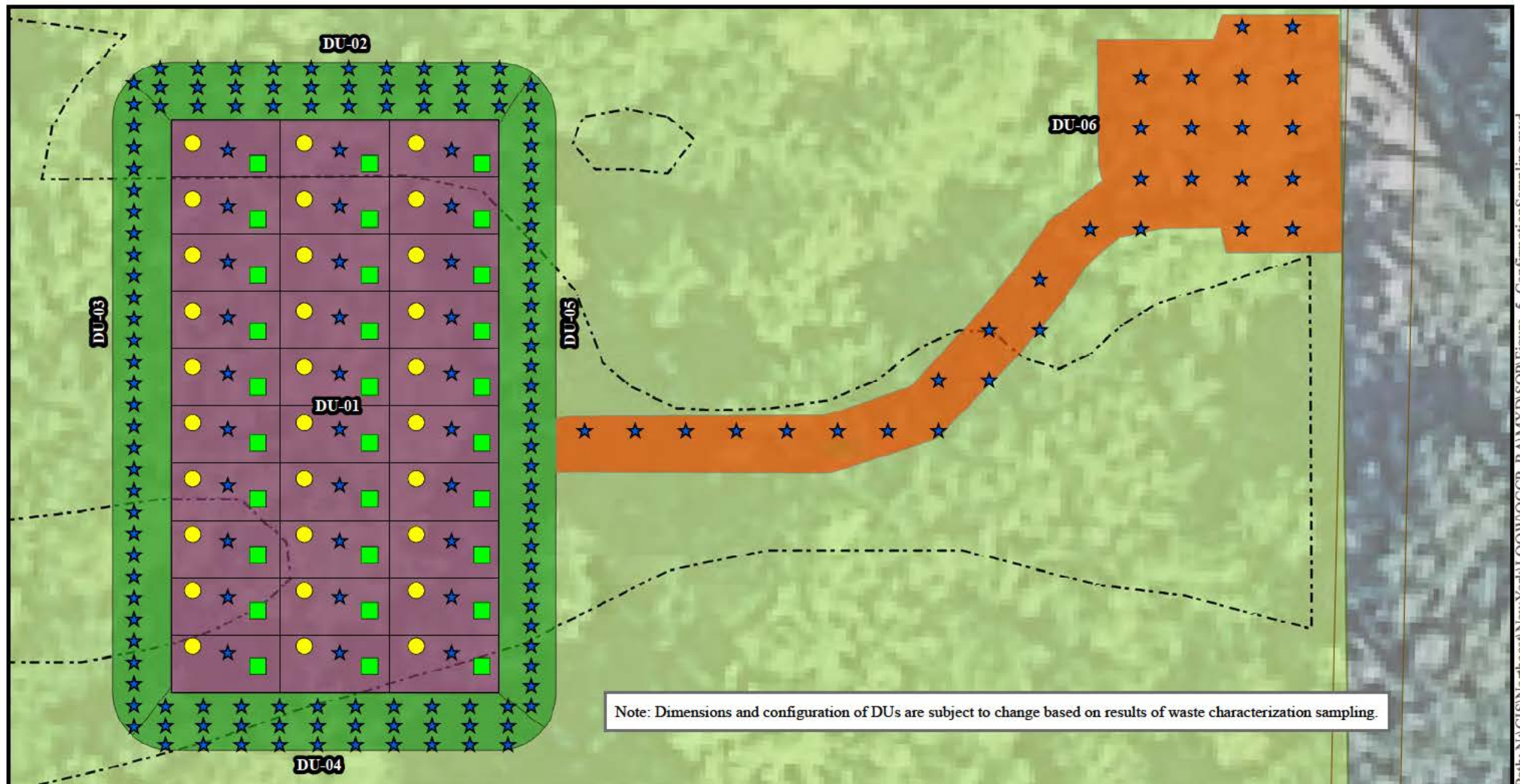
**Figure 4**  
**Construction Layout**

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Path: N:\GIS\Northeast\NewYork\LOOW\OCCP\_RAMXD\SOP\Figure\_4\_Construction\_Layout.mxd

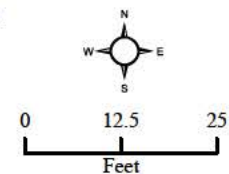


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#### LEGEND

- |   |                                      |   |
|---|--------------------------------------|---|
| ★ First Replicate Sample or Sample Increment Location | Confirmation Sampling Decision Units | Approximate Area of Debris – Approximate Extent of Slightly Elevated Areas Within AOC 1 (TEC, 2002) |
| ● Second Replicate Sample Increment Location          | Excavation Area                      | Area of Concern 1 (AOC 1)   |
| ■ Third Replicate Sample Increment Location           | Perimeter                            |   |
|   | Construction Support                 |   |
|   | Roads                                |   |



**Figure 5**  
Confirmation Soil Sampling  
Incremental Sampling  
Methodology  
Decision Units (DUs) and  
Increment Sampling Locations

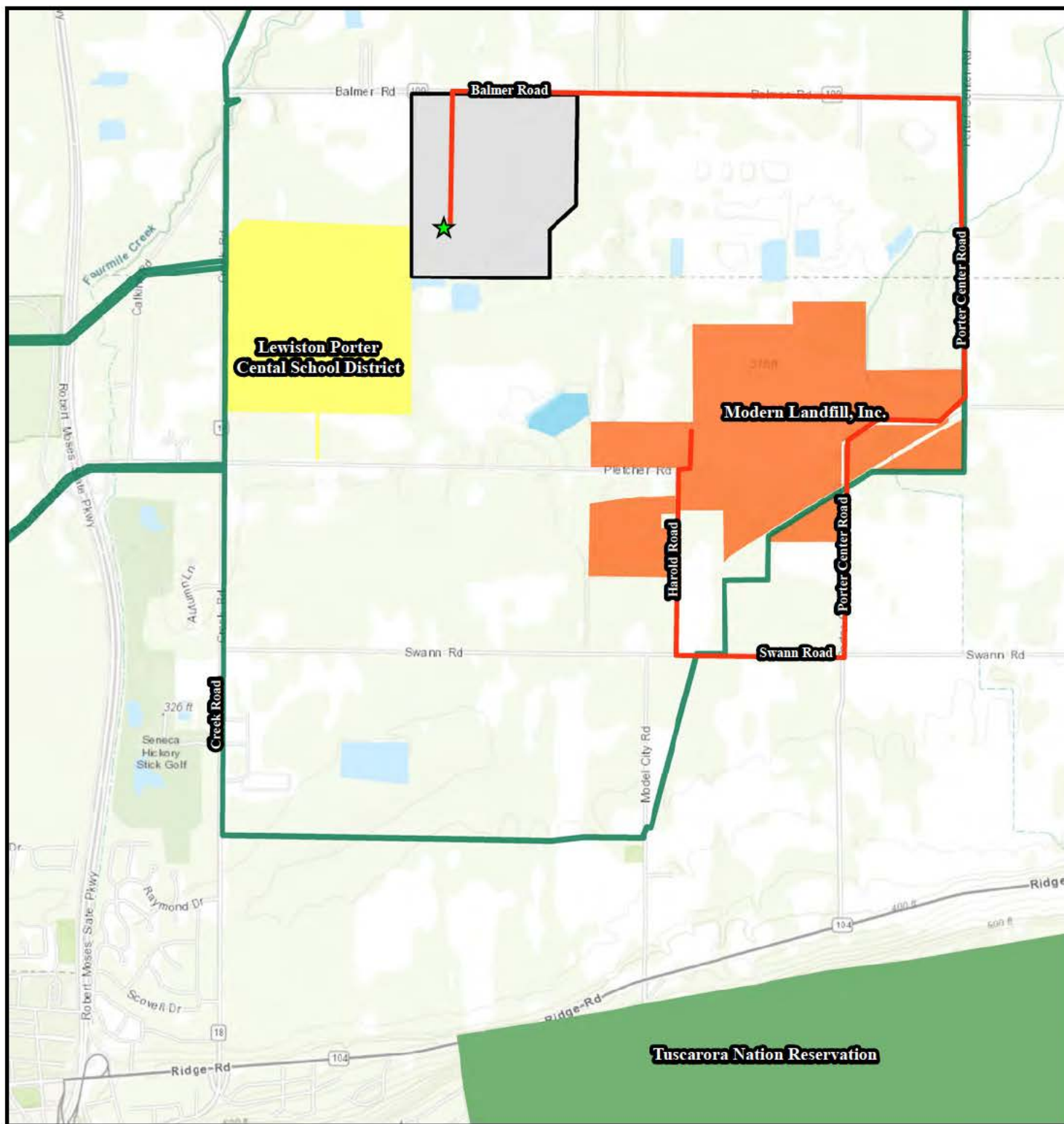
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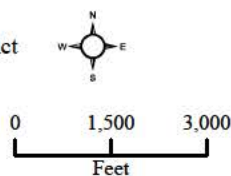
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#### LEGEND

- Work Site Location
- Haul Road
- Former LOOW Boundary with Easements
- Lakes/Rivers/Ponds
- Property Ownership Boundary Occidental Chemical Corporation
- Lewiston Porter Cental School District
- Tuscarora Nation Reservation
- Modern Landfill, Inc.

Data Sources: USACE, ESRI Online, U.S. Census Bureau



**Figure 6**  
**Non-Hazardous Waste Haul**  
**Route to Modern Landfill**

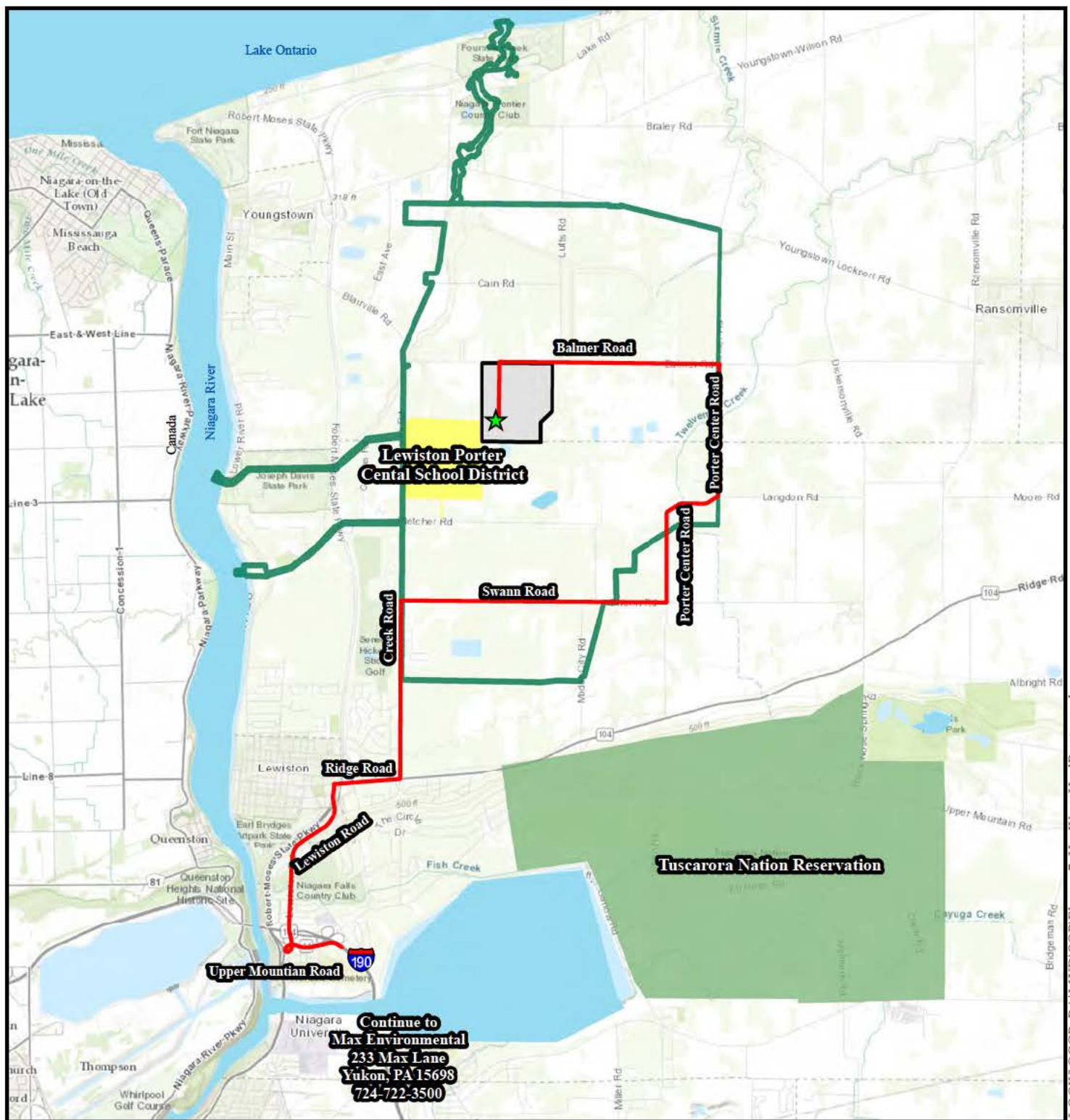
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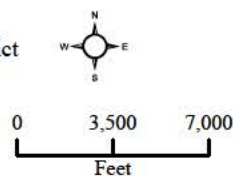




#### LEGEND

- Work Site Location
- Haul Route
- Former LOOW Boundary with Easements
- Lakes/Rivers/Ponds
- Property Ownership Boundary Occidental Chemical Corporation
- Lewiston Porter Cental School District
- Tuscarora Nation Reservation

Data Sources: USACE, ESRI Online, U.S. Census Bureau



**Figure 7**  
**Hazardous Waste**  
**Haul Route to**  
**Nearest Interstate**

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