Final Backfill & Restoration Plan

Niagara Falls Storage Site Remedial and Site Services - Balance of Plant, Lewiston, New York

Contract No: **W912P423D0010**

Delivery Order No: **W912P423F0042**

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ACRONYMS AND ABBREVIATIONS

ASTM	American Society for Testing and Materials
CVOCs	Chlorinated Volatile Organic Compounds
EFS	Environ-Fix Solutions LLC
EM	Engineering Manual
EU	Exposure Unit
GPS	Global Positioning System
NFSS	Niagara Falls Storage Site
NYCRR	New York Codes Rules and Regulations
OSHA	Occupational Safety and Health Administration
ROD	Record of Decision
UFP-QAPP/SAP	Uniform Federal Policy Quality Assurance Project Plan / Sampling and Analysis Plan
SATOC	Single Award Task Order Contract
SOW	Statement of Work
UFGS	Unified Facilities Guide Specifications
USACE	United States Army Corps of Engineers

SIGNATURES

This Draft Backfill and Restoration Plan has been prepared by Enviro-Fix Solutions LLC (EFS) to describe the backfill and restoration activities for the Niagara Falls Storage Site (NFSS) Remediation Single Award Task Order Contract (SATOC), Lewiston, New York Project in accordance with Unified Facilities Guide Specifications (UFGS) 01 35 13.43 SPECIAL PROJECT PROCEDURES.

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1.0 INTRODUCTION

Enviro-Fix Solutions LLC (EFS) prepared this Draft Backfill and Restoration Plan for United States Army Corps of Engineers (USACE) under the Contract No. W912P423D0010 and Delivery Order No. W912P423F0042, to perform the project entitled: Niagara Falls Storage Site Remedial and Site Services – Balance of Plant located at Lewiston, Niagara County, New York.

This Draft Backfill and Restoration Plan discusses backfill operations for the fourteen (14) Exposure Units (EU) excavation areas and reviews the survey, backfill material, backfill operation, and site restoration requirements and activities to be performed.

2.0 CIVIL SURVEYS

EFS will engage a NY state licensed professional land surveyor with 40-Hr Occupational Safety and Health Administration (OSHA) trained staff to establish survey control and boundary markers using durable wooden pickets per SOW Section 01 35 13.43 10. All locations are surveyed with a GPS ensuring centimeter accuracy. Civil surveys shall conform with EM 200-1-15, EM 1110-1-2909, and EM 1110-1-1003 and are conducted to document the excavated area conditions during the following site operations:

(1) Prior to excavation

(2) Weekly during excavation

(3) After excavation

(4) Weekly during backfilling

(5) After placement and compaction of fill

(6) After final site grading

3.0 BACKFILL MATERIALS

Prior to excavation, the required utility locates performed. Although not anticipated, EFS will ensure that, if encountered, any public utilities will be sufficiently protected during excavation activities and properly backfilled as per the local utility provider requirements.

EFS will use material imported from an approved borrow source to replace excavated soils in accordance with Section 01 35 13.43 10 of the USACE Buffalo District Technical Requirements and Unified Facilities Guide Specifications (USACE, 2022). Additionally, area EU-4 which has been impacted by Chlorinated Volatile Organic Compounds (CVOCs) will be backfilled with clay soil. During the excavation of EU-4, additional "place-back soil" will be removed from outside the excavation perimeter due to benching for soil stability and will be stockpiled for re-use as backfill.

All backfill material, including "place-back soil" removed from outside the EU-4 excavation perimeter, will be sampled and analyzed in accordance with the Uniform Federal Policy Quality Assurance Project Plan / Sampling and Analysis Plan (UFP-QAPP/SAP). All results will meet the Unrestricted Residential Soil Cleanup Objectives established in 6 NYCRR Part 375, Table 375-6.8(a) and will not contain contaminants above the remediation goals listed in the ROD and SOW.

Proposed fill material will be sampled and tested by an approved soil testing laboratory as follows:

Grain Size	ASTM D 422
Soil Type (Classification)	ASTM 2487
Compaction	ASTM D 698
Permeability	ASTM D 5084

Soils with a classification of GW or GP will not be used as a borrow source. The material will be of a classification that will provide appropriate compaction to prevent settling in the excavation area. The final soil classification of the backfill (including clean place-back soil) will meet the requirements of the geotechnical testing lab to ensure stability of the soils.

During backfill operations, a geotechnical consultant will be contracted to sample the soil and provide classification, grain size, moisture density and provide Standard Proctor Compaction Testing on site during backfill operations. Compaction Testing is discussed further in Section 4.3.

The final backfill layer will be topsoil placed on the surface to a thickness of 4 inches at a minimum to promote re-vegetation. An estimated total of 184,900 ft^2 will require restoration. Of this, EFS estimates 96,000 ft^2 of area will be restored with approved topsoil as required in Section 32 92 19 including the application of an approved seed mix and the remaining 88,900 ft^2 will be restored/replaced with asphalt to match pre-existing conditions.

3.1 Sequence of Work

Once the backfill materials have been sampled, analyzed, and confirmed to be in accordance with the UFGS specifications and approved by the USACE, backfill operations will commence. EU areas will be backfilled in the same sequence they were excavated. **Figure A-1** identifies the locations and sequence of the backfill operation. After backfilling operations have completed, site restoration activities will commence, which are discussed further in Section 5.0.

4.0 FILL PLACEMENT, COMPACTION, AND TESTING METHODS

EFS will complete an initial survey to document all existing conditions prior to commencing fieldwork. Once work has been completed, all sites will be returned to pre-exiting conditions including the support area, roadways (asphalt and gravel) and excavation locations (topsoil and seed) within the 14 EUs. EFS will ensure that all off-site backfill is analyzed for chemical

parameters and geotechnical classification well in advance in accordance with the approved UFP-QAPP/SAP. All results will meet the Unrestricted Use Soil Cleanup Objectives established in 6 NYCRR Part 375, Table 375-6.8(a) and will not contain contaminants above the remediation goals listed in the ROD and SOW.

4.1 Fill Placement

EFS will conduct fill placement of smaller excavations utilizing a Link Belt 145 track excavator, Bell B20 E off road truck, 54" Single Drum Roller, Takeuchi TL 12 skidsteer loader and a Link Belt 80 track excavator. Larger excavations will be backfilled utilizing a Link Belt 145, John Deere 650 series dozer, 84" single drum roller and a Takeuchi TL 12 skidsteer loader. If listed equipment is unavailable, acceptable equivalent equipment will be used. For areas inaccessible to a drum roller, an approved plate compactor or remote trench roller will be used. Approved clean processed gravel (crushed stone) will be placed, compacted, and tested, prior to replacement of asphalt in areas where asphalt was the pre-existing surface material.

4.2 Compaction

EFS will compact the backfill soil to 90 percent of ASTM D 698 maximum dry density. Density tests will be performed at a frequency of one per 10,000 ft^2 per lift. A minimum of one density test will be performed on each lift of backfill placed. Compaction test results will be provided to the Contracting Officer within fourteen calendar days after completion of the tests.

4.3 Testing Methods

All backfill material is tested in advance for both geotechnical parameters required as well as chemical contamination. One density test is performed on each lift of placed backfill by our 3rd party geotechnical subcontractor in accordance with ASTM D 1556 or ASTM D 2167. All results are documented in the daily reports and provided to USACE's Contracting Officer within fourteen calendar days. Daily compaction test results are included in the Contractor Quality Control Reports, and a summary including all compaction test results will be provided to the Contracting Officer as a single submittal after completion of backfilling operations.

5.0 SITE RESTORATION ACTIVITIES

EFS will establish a vegetative cover using hydro-seeding in accordance with Section 01 35 13.43 10 of the USACE Buffalo District Technical Requirements and Unified Facilities Guide Specifications. Vegetative cover will be applied to the areas outside of gravel roadways. Topsoil will be placed on the surface to a thickness of 4 inches at a minimum. EFS estimates 96,000 ft^2 of area is to be restored with approved topsoil as required in Section 32 92 19 including an approved seed mix and 88,900 ft^2 of asphalt to be restored/replaced to match pre-existing conditions. The

disturbed areas will be graded with approved topsoil (4 inches), the areas will be seeded and then the sediment barriers surrounding the excavation will be removed and properly disposed offsite.

FIGURE A-1

EFS Proposed NFSS EU Backfill Sequence

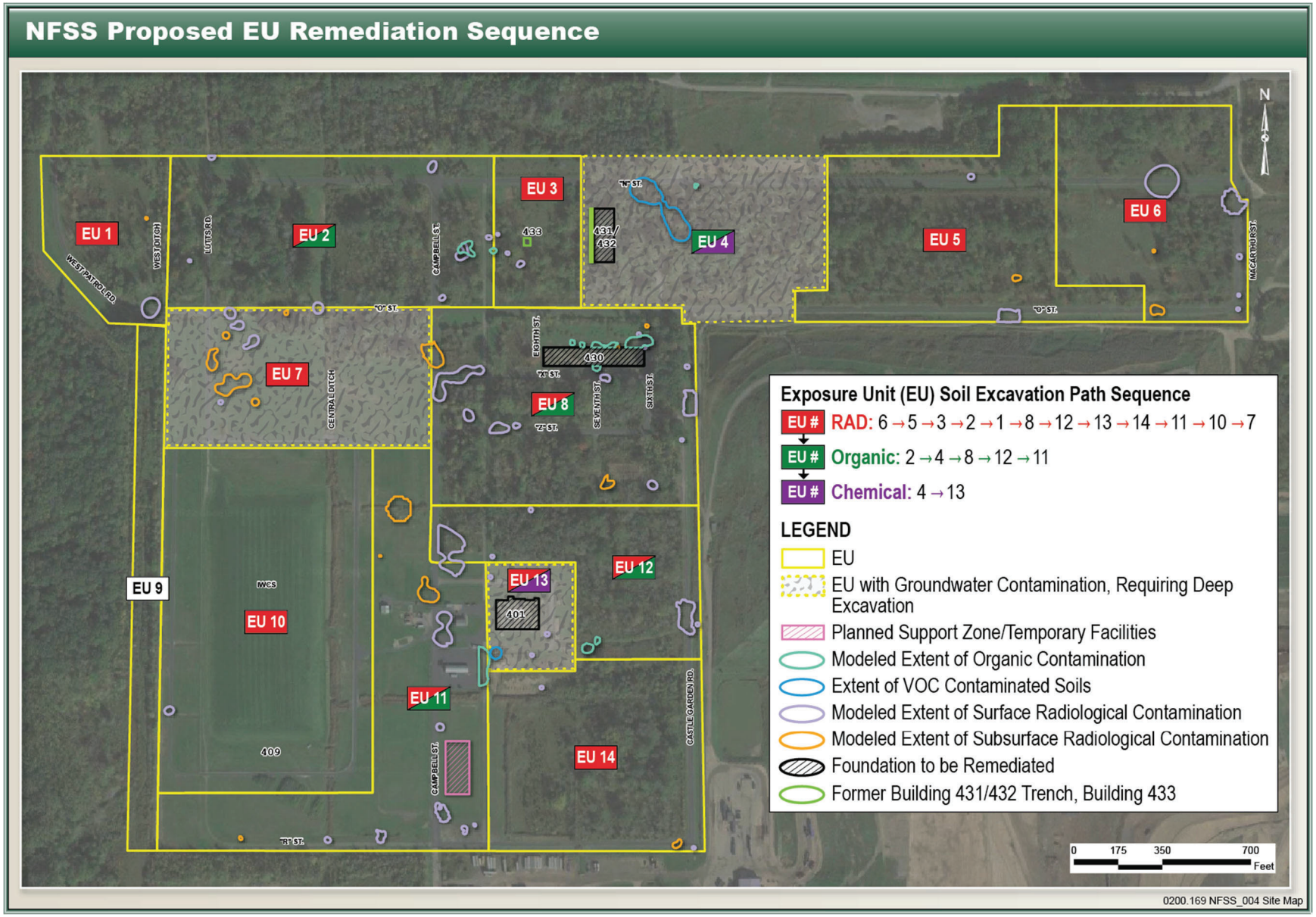

Figure A-1. EFS Proposed NFSS EU Backfill Sequence.