REPORT

Remedial Action Work Plan (RAWP)

Unnamed Tributary Remediation Area III Lower Portion Operable Unit 2

Prepared for:
Arconic Inc.

June 1, 2018

CDM Smith

UNNAMED TRIBUTARY REMEDIATION
AREA III, OPERABLE UNIT 2
REMEDIAL ACTION WORK PLAN

New York State Professional Engineer Certification

"I Michael S Schultz certify that I am currently a New York State Registered Professional Engineer as defined under 6 NYCRR Part 375 and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10)."

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Signature:

Date: 6/1/2018

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Acronyms

Alcoa	Alcoa USA Corp.
Arconic	Arconic, Inc.
bgs	below ground surface
BMPs	best management practices
CAMP	community air monitoring plan
CCR	Construction Completion Report
DQA	Data Quality Assessment
DUSR	data usability summary report
El.	elevation
FER	Final Engineering Report
fps	feet per second
ICs	Institutional Controls
MS/MSD	matrix spike/matrix spike duplicate
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OHW	Ordinary High Water
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PM10	particulate matter less than ten microns
ppm	part per million
psi	pounds per square inch
PQL	Practical Quantitation Limit
QA/QC	Quality assurance and quality control
QAPP	Quality Assurance Project Plan
RAWP	Remedial Action Work Plan
RCP	reinforced concrete pipe
ROD	Record of Decision
ROW	Right-of-Way
The Manual	Environmental Laboratory, 1987
UNT	Unnamed Tributary
UNT Area III LPOU2	Unnamed Tributary Area III Lower Portion of Operable Unit 2
UNT Area III UPOU2	Unnamed Tributary Area III Upper Portion of Operable Unit 2
USACE	U.S. Army Corps of Engineers New England District
USEPA	United States Environmental Protection Agency
VOCs	volatile organic compounds

Section 1
Introduction

This Remedial Action Work Plan (RAWP) presents the proposed scope of work to complete remedial action for the Unnamed Tributary Area III, Lower Portion Operable Unit 2 (UNT Area III LPOU2), located in Massena, New York. A site locus plan, included as **Figure 1-1,** shows the location of the project site. This RAWP summarizes the nature and extent of contamination based on samples collected as part of the field investigation performed in August and December 2016 and October-December 2017, as well as historic samples collected during prior investigations in the early 1990's. Additionally, this RAWP provides site background, a thorough site description, a description of the selected remedy, details for the remedial construction, and follow-on activities such as verification sampling and site restoration.

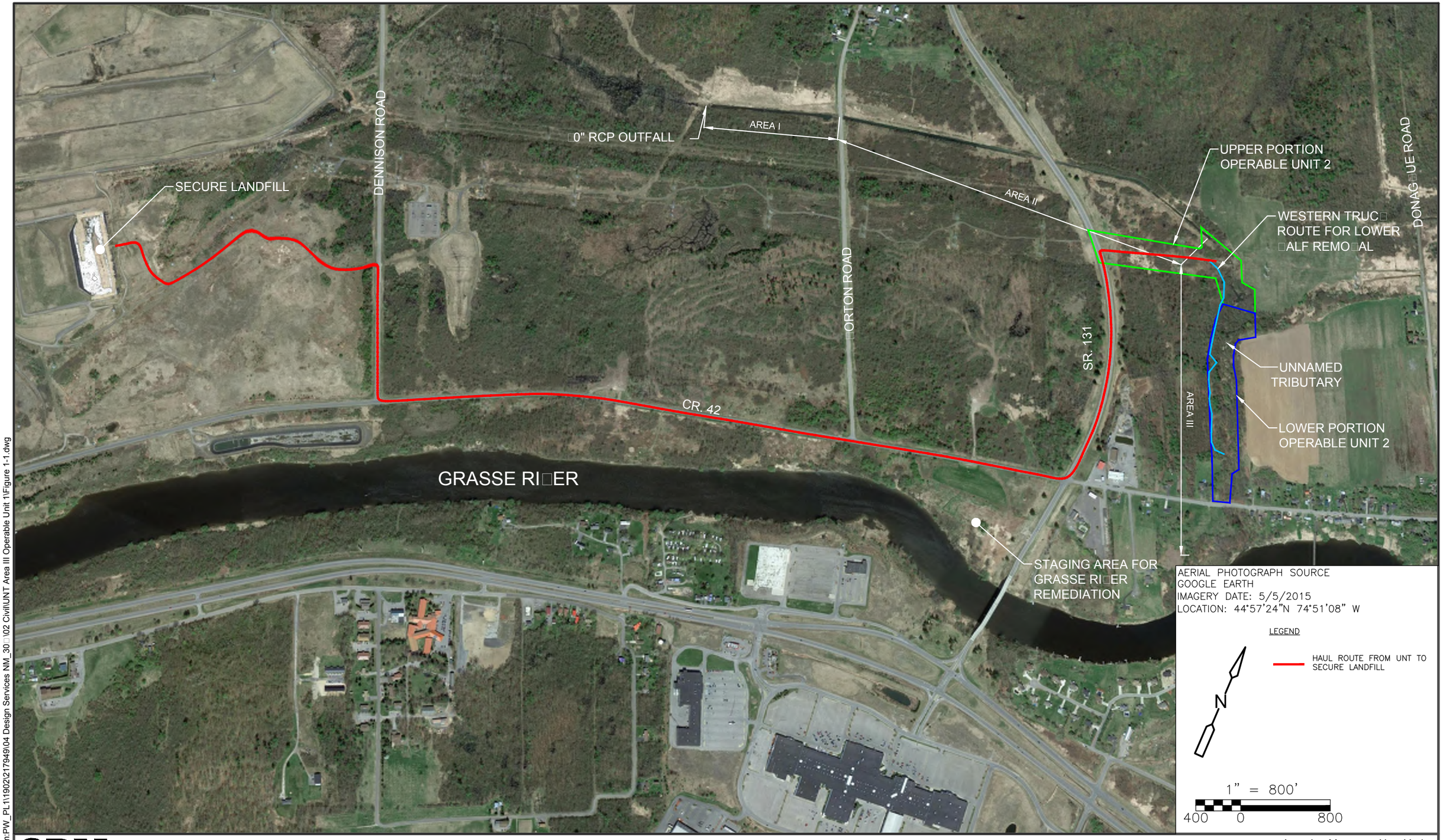
1.1 Regulatory Setting

This RAWP has been prepared in accordance with the New York State Department of Environmental Conservation's (NYSDEC) May 2010 DER-10 Technical Guidance for Site Investigation and Remediation. This RAWP provides details on implementation of the selected remedy that meets the remedial objectives in accordance with DER-10.

The UNT is subject to the conditions of the March 1991 Record of Decision (ROD) between Alcoa Inc., and NYSDEC. Alcoa Inc. recently formed two companies, Arconic Inc. (Arconic) (formally Alcoa Inc.) and Alcoa USA Corp. (Alcoa). Arconic will proceed to address the requirements for the UNT in an agreement with Alcoa. The cleanup goals for the UNT were established in the March 1991 ROD and included polychlorinated biphenyls (PCBs) (areas outside of groundwater management units, 1 ppm), Polycyclic Aromatic Hydrocarbons (PAHs), and cyanide. In conversations with the Department and based on the results of verification samples collected in Operable Unit 1 (Areas I and II of the UNT), Arconic understands that the site-specific cleanup goal for UNT Area III LPOU2, is limited to total PCBs in sediments at a concentration of less than or equal to one (1) part per million (ppm).

The selected remedial action includes the excavation of PCB-contaminated sediments. The UNT is a Class D waterbody and is therefore not regulated under 6 NYCRR Part 608 Use and Protection of Waters. The UNT discharges to the Grasse River, a Class B waterbody. Regardless of classification, best management practices (BMPs) to address soil erosion and sediment control will be required to minimize the generation of turbidity to the maximum extent practicable.

Implementation of the remedy, will require permits or approvals from several regulatory agencies. Arconic may be exempt from obtaining certain permits/approvals issued by New York State and local agencies pursuant to DER-10 section 1.10. It is important to note the site activities are to be conducted in such a manner as to satisfy all substantive regulatory and technical requirements applicable to the activity. Although NYSDEC may determine Arconic is exempt from the requirement to obtain certain permits, the RAWP and implementation of the remedial measure will be in conformance with the requirements/intent of the implementing regulations.



AERIAL PHOTOGRAPH SOURCE
GOOGLE EARTH
IMAGERY DATE: 5/5/2015
LOCATION: 44°57'24"N 74°51'08" W

LEGEND

HAUL ROUTE FROM UNT TO SECURE LANDFILL

N

1" = 800'

400 0 800

CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III SITE LOCUS AND □AUL ROAD PLAN FIGURE 1-1

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pw:\\pw.cdmsmit□.com:PW_PL11902\217949\04 Design Services NM_30□102 Civil\UNT Area III Operable Unit 1\Figure 1-1.dwg

Table 1-1 below summarizes the applicable regulatory requirements and permitting/approval requirements under the current regulatory settings for the UNT:

Table 1-1 Summary of Applicable Regulatory and Permit/Approval Requirements

Regulatory Agency	Regulatory Citation	Permit/Approval Name	Notes
US Army Corp of Engineers	Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act	Nationwide Permit (NWP) NWP#14 – Linear Transportation Projects NWP33 – Temporary Construction, Access & Dewatering NWP#38 – Cleanup of Hazardous & Toxic Waste	• Use Joint Application Form. • Requires consistency approval by NYSDOS. • Requires 401 WQ Cert to be issued by NYSDEC (needed for NWP#38).
New York State Department of State	15 CFR part 930.41	Consistency Approval	Consistency determination issued by DOS for NWP#33 and 38. No submittal required if action meets regional conditions. Consistency determination required for NWP#14.
New York State Department of Environmental Conservation	Section 401 of the Clean Water Act	Section 401 Water Quality Certification	• Use Joint Application Form. • Blanket Section 401 WQC for NWP# 33 & #14 (with special conditions). • Required for activities authorized under ACE NWP#38.
New York State Office of Parks Recreation and Historic Preservation	Section 106 of the National Historic Preservation Act	Cultural Resources Assessment (Phase 1A/1B)	Determination by OPRHP included with Joint Application Form.
Additional Regulatory Permits			
New York State Department of Environmental Conservation	Article 17, Titles 7, 8 and Article 70 of the ECL	SPDES General Permit for Stormwater Discharges during Construction (GP-0-15-002)	SWPPP required + filing of NOI for disturbance equaling 1+Acres.
New York State Department of Conservation (Regional Office)/NYS Natural Heritage Program	6 NYCRR Part 182 Section 7 of the Endangered Species Act NLEB Final 4(d) Rule	Incidental Take of Endangered/Threatened Species	• Use Joint Application Form. • Required if action is likely to take any species listed as endangered/threatened or destroy/adversely modify habitat of such species.

1.2 Operable Units

In correspondence, dated March 28, 2017 and included in **Appendix A** with other agency correspondence, Arconic proposed to address environmental remediation of the UNT in two phases. A RAWP for the Unnamed Tributary Area III Upper Portion Operable Unit 2 (UNT Area III UPOU2) (Sta. 46+00 to Sta. 53+50) was previously submitted on August 1, 2017 to the NYSDEC and approved on August 14, 2017. This initial phase of work was originally scheduled to be completed in 2017; however, it will now be implemented in 2018 during the UNT Area III LPOU2 work.

Based on available characterization data, in addition to UNT Area III UPOU2, Arconic is prepared to proceed with the remediation of the lower portion of the UNT Area III, to be referred to as UNT Area III LPOU2. This reach extends from the terminus of UNT Area III UPOU2 at approximately Sta. 53+50 to Sta. 72+00 where the UNT enters a culvert under County Road 42. Material at isolated locations between Sta. 53+50 to 68+00 where PCBs exceed 1 ppm will be subject to targeted removal. Material will be comprehensively removed from Stat. 68+00 to 72+00, a depositional area where sampling data have documented an area with PCB concentrations more consistently above 1 ppm.

One additional area of the UNT had a detection of PCBs greater than the ROD cleanup goal of 1 ppm total PCBs; an accumulation of sediment at the mouth of the UNT's intersection with the Grasse River. In a letter addressed to NYSDEC on May 14, 2018, Arconic provided a work plan for additional sampling at the confluence of the UNT and the Grasse River consistent with prior sampling performed in the lower reach of Area III of the UNT. Based on the result of this additional sampling, Arconic will provide NYSDEC with a RAWP for the confluence of the UNT with the Grasse River.

1.3 Document Organization

The remedy described in this document is consistent with the procedure defined in DER-10 and complies with all applicable standards, criteria, and guidance.

The RAWP is organized into the following sections:

- Section 1 – Introduction: This section includes an overview of the regulatory framework, scope of work for the Site and document organization.
- Section 2 – Site History and Setting: This section includes general site information, a physical description of the Site and the surrounding land use, and a discussion of the environmental attributes.
- Section 3 – Nature and Extent of Contamination: This section presents the nature and extent of the contamination, including historical sampling, UNT Area III LPOU2 PCB delineation, and the conceptual site model.
- Section 4 – Selected Remedy: This section documents the remediation requirements, selected remedy rationale, and relevant institutional controls.

- Section 5 – Remedial Construction: This section describes the components of the remedial construction, including: the removal areas, construction methods, erosion and sedimentation controls, and the planned temporary facilities.
- Section 6 – Verification Sampling and Contingencies: This section describes the rationale, methodology, and analysis for the verification sampling and contingencies.
- Section 7 – Site and Stream Restoration: This section documents evaluation of the existing environmental conditions, functions and values and presents the planned actions for the site and stream restoration following the remedial actions.
- Section 8 – Health and Safety: This section describes the health and safety plan requirements for this project, as well as those for the community air monitoring plan.
- Section 9 – Construction Schedule: This section documents the planned construction scheduled for completion of the remedial activities.
- Section 10 – Reporting: This section documents the documentation and reporting for remedy construction of the UNT Area III LPOU2 and ultimately the UNT as a whole.
- Supporting Materials (Figures, Appendices, Tables): Figures, tables, and appendices are included to provide additional information regarding remedial activities. Appendix A includes agency correspondence. **Appendix B** includes a site-specific Health and Safety plan prepared by Perras Excavating, Inc. for the Area III UPOU2. **Appendix C** includes a Community Air Monitoring Plan (CAMP) prepared for the UNT Area III UPOU2 and LPOU2, submitted to NYSDEC and the New York State Department of Health (NYSDOH) on May 15, 2018.

Section 2
Site History and Setting

This section provides relevant information on site history and the physical and environmental setting, and attributes of the site as they pertain to the proposed remedial action and restoration of the UNT.

2.1 Site History

In the 1950s, coincident with the Massena Power Canal being taken out of service, Alcoa began using and discharging through outfalls to the Grasse River, the Massena Power Canal, and the Unnamed Tributary. As a result of these past practices, the UNT was historically contaminated with PCBs.

Remediation of the UNT was included in the March 1991 Record of Decision that addressed eight sites at the Arconic Massena (West Plant) facility. Characterization of the UNT began in 1990 and most recent active remediation ended in 1998. During initial remediation activities, the UNT was divided in three sections: Area I, Area II and Area III. Based on sediment sampling results, remedial plans were approved by NYSDEC and implemented. Areas I and II were remediated by excavating a defined channel. A decision was made based on the existing sample results to perform no active remediation in Area III of the UNT and to monitor the biota throughout all sections: Area I, Area II and Area III.

Post-closure monitoring of the UNT consists of collecting biota (frogs and fish), water, and sediment samples. Baseline sampling was conducted in 1999 and 2000 as part of the 5-year biological monitoring requirement of the ROD (NYSDEC, March 1991). Supplemental sampling was conducted in 2002 and 2004 as part of the 5-year biological monitoring requirement of the ROD. This is defined in the Post-Closure Monitoring Plan for The Unnamed Tributary (CDM, October 1998). The Unnamed Tributary Supplemental Evaluation Report (CDM, August 2005) presented the results of this sampling. Based on the results, the report recommended continued monitoring of the UNT. Sampling has occurred every three years, beginning in 2007. The latest round of sampling was completed in 2016. Results for this sampling were submitted to NYSDEC on March 16, 2018.

Alcoa proposed modifying the post-closure monitoring plan in a letter to NYSDEC, dated August 17, 2015. In their review, NYSDEC requested characterization of sediment in Area III. A work plan was developed by CDM Smith and submitted to NYSDEC on February 11, 2016. The work plan was approved by NYSDEC in a letter dated, May 23, 2016 and the document was finalized on June 8, 2016. Sediment sampling in Area III was performed in accordance with this work plan, the results of which are discussed in Section 3.

2.2 Physical Setting

The UNT Area III, shown on **Figure 2-1**, is located east of the Arconic Massena Operations aluminum production facility. The UNT in its entirety consists of a 60-inch reinforced concrete pipe (RCP) and an open stream which extends from near the Arconic Massena Operations' Plant

Area III Impoundment (not connected to the UNT) to the Grasse River and is approximately 7,380 feet in length. The 60-inch RCP continues to function as a storm water over flow for the Area III Impoundment for extreme, e.g., 24-hour, 50-year, storm events. However, there is no record of storm water being discharged from the Area III Impoundment to the UNT. This RAWP details the remediation planned for UNT Area III, LPOU2 of the UNT. Area III LPOU2 is the reach of the UNT from the terminus of UNT Area III UPOU2 at Sta. 53+50 to Sta. 72+00.

The immediate vicinity surrounding the site is primarily wooded and heavily vegetated. A review of the area land use, based on the online GIS database for St. Lawrence County (DANC Internet Mapping, 2017), shows that the predominate land use is farmland, including "farmland of statewide importance", "prime farmland", and "prime farmland if drained". Additionally, state and federal wetlands were identified within ½ mile of the UNT. To the east of the UNT is agricultural land; to the south is County Road 42, residential houses and ultimately the Grasse River; and to the west and north of the UNT is undeveloped wooded land until State Route 131. The UNT site originates at an underground 60-inch reinforced concrete pipe transitioning to an open ditch and subsequently to an unnamed tributary to the Grasse River. The open ditch and stream areas have been identified as Areas I, II, and III respectively. Land above and adjacent to the 60-inch RCP is primarily undeveloped woodland and an open field. Land adjacent to the straight sections of the UNT (Areas I and II) is primarily low-lying woodlands. Active farmland, woodlands and meadow abuts the lower portion of Area III where the work subject to this RAWP will take place.

Arconic has an easement along the UNT as shown on **Figures 2-2, 2-3 and 2-4**. Abutting properties along the UNT are not owned by Arconic, however, access has been secured through modifications to the easement and agreements with the landowners. Properties which abut the UNT that will require access include private property to the east and west of the UNT and an electrical power line utility easement that runs from east to west and crosses the UNT in UPOU2 from approximately Sta. 49+75 to 51+50. Within the utility easement, a utility line access road crosses the UNT over a culvert located at approximately Sta. 50+00. This roadway will be used for access and to transport material from the UNT remediation project to the Secure Landfill on the Arconic Massena West Plant property.

2.3 Topography and Drainage

The topography and slope of the lower portion of the UNT drops from approximately elevation (El.)182 feet at the ponded area near Sta. 53+00 to El. 176 feet at Sta. 57+00 and El. 174 feet at Sta. 58+00. The slope of the UNT flattens at approximately El. 172 feet at Sta. 60+00 before dropping to El. 168 feet from Sta. 67+00 to Sta. 72+00. Features along the UNT include the beaver dam located at Sta. 53+50, several floodplain areas between Sta. 56+00 to Sta. 58+00, and a tributary joining the UNT at approximately Sta. 55+70. County Route 42 runs south-east to north-west and crosses the UNT between Sta. 73+00 and Sta. 74+00.

ALCOA OTL

NYPA OTL

AREA III LOWER PORTION
OPERABLE UNIT 2

AREA III UPPER PORTION
OPERABLE UNIT 2

STATE ROUTE 131

C.R. 42

NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.
3. ALCOA OVERHEAD TRANSMISSION LINES (OTL) – ALCOA AES 32.60

WORKING CLEARANCES – FROM HIGH VOLTAGE LINES – RESTRICTED ZONE FOR MOBILE EQUIPMENT AROUND ENERGIZED CONDUCTORS 50KV OR LESS IS 10 FEET AND INCREASES FOUR INCHES FOR EVERY 10KV OVER 50KV.

FOR 115KV: AES 32.60 ROUNDS UP TO 13 FEET.
FOR 230 KV: 16 FEET.

MOBILE EQUIPMENT IN TRANSIT – CLEARANCE FROM HIGH VOLTAGE LINES

OVER 115KV TO 230KV: 10 FEET
OVER 230KV: 16 FEET

ADDITIONAL TEMPERATURE INFLUENCE ON LINE HEIGHT MUST BE CALCULATED AND CONSIDERED.

4. CONTRACTOR SHALL VERIFY TRANSMISSION LINE LOCATION AND CLEARANCE W/ SURVEY AND ALCOA/AGENCIES.
5. NEW YORK POWER AUTHORITY OTL – ALCOA STANDARDS AND REQUIREMENTS APPLY. ADDITIONALLY, NYPA PERMIT STANDARDS REQUIRE A MINIMUM 20 FOOT WORKING CLEARANCE IN ALL DIRECTIONS FROM NYPA 230 KV OTL. CONTRACTOR SHALL VERIFY, THEN ADHERE TO THIS REQUIREMENT INCLUDING ADJUSTMENTS DUE TO TEMPERATURE AT ALL TIMES.
6. TERRAIN MODEL ACCURACY IS A DIRECT FUNCTION OF SPOT ELEVATION DENSITY. THE CURRENT MODEL ACCURACY IS SUFFICIENT FOR ENGINEERING DESIGN, HOWEVER ADDITIONAL SPOT ELEVATIONS WOULD BE NEEDED TO COMPUTE QUANTITIES FOR PAYMENT VALIDATION. THEREFORE QUANTITIES ARE ESTIMATED.

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT

N

1" = 200'

100 0 200

CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III
EXISTING SITE PLAN - OPERABLE UNIT 2
FIGURE 2-1

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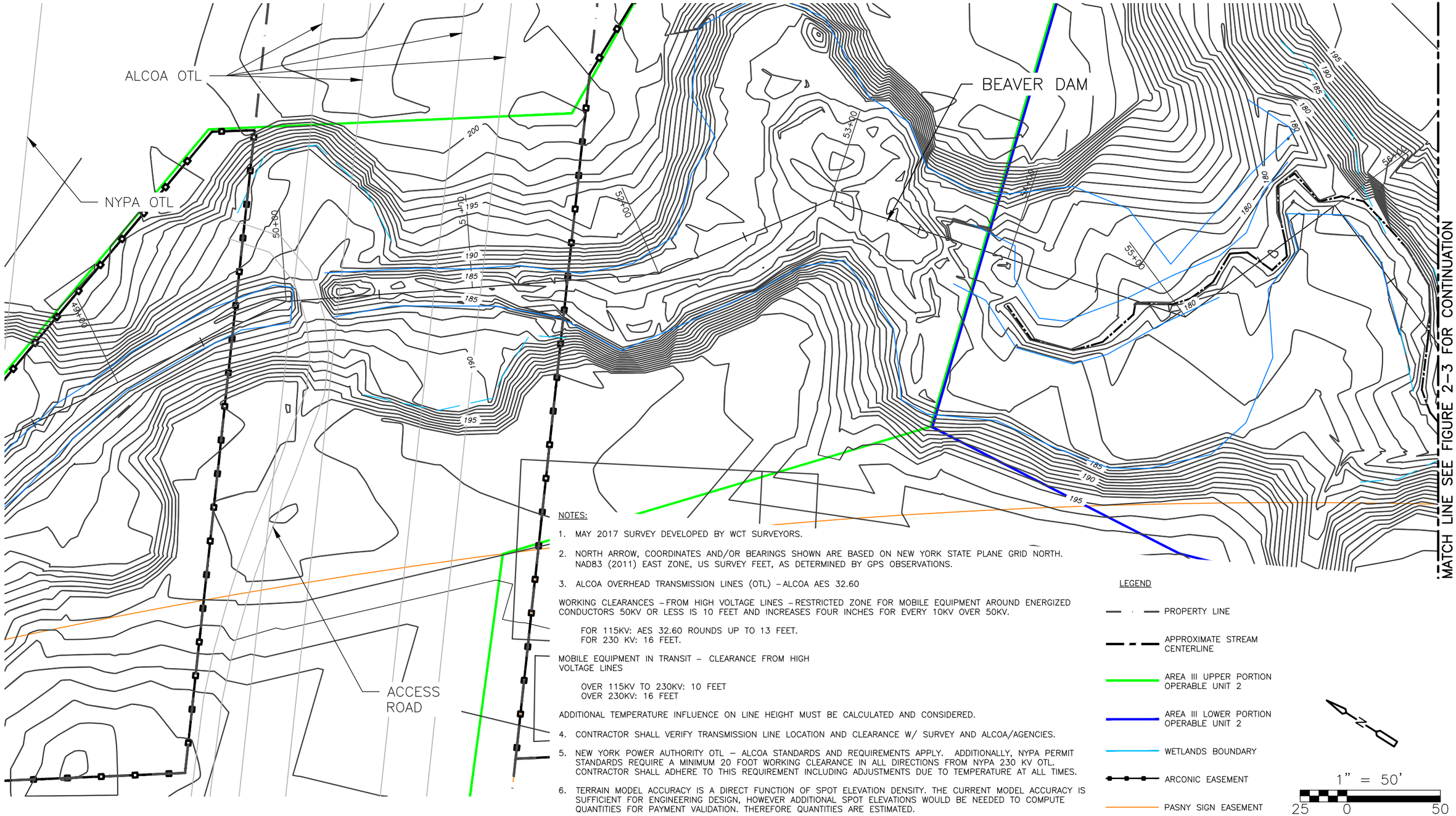

NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.
3. ALCOA OVERHEAD TRANSMISSION LINES (OTL) – ALCOA AES 32.60

WORKING CLEARANCES – FROM HIGH VOLTAGE LINES – RESTRICTED ZONE FOR MOBILE EQUIPMENT AROUND ENERGIZED CONDUCTORS 50KV OR LESS IS 10 FEET AND INCREASES FOUR INCHES FOR EVERY 10KV OVER 50KV.

FOR 115KV: AES 32.60 ROUNDS UP TO 13 FEET.
FOR 230 KV: 16 FEET.

MOBILE EQUIPMENT IN TRANSIT – CLEARANCE FROM HIGH VOLTAGE LINES

OVER 115KV TO 230KV: 10 FEET
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ADDITIONAL TEMPERATURE INFLUENCE ON LINE HEIGHT MUST BE CALCULATED AND CONSIDERED.

4. CONTRACTOR SHALL VERIFY TRANSMISSION LINE LOCATION AND CLEARANCE W/ SURVEY AND ALCOA/AGENCIES.
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LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT

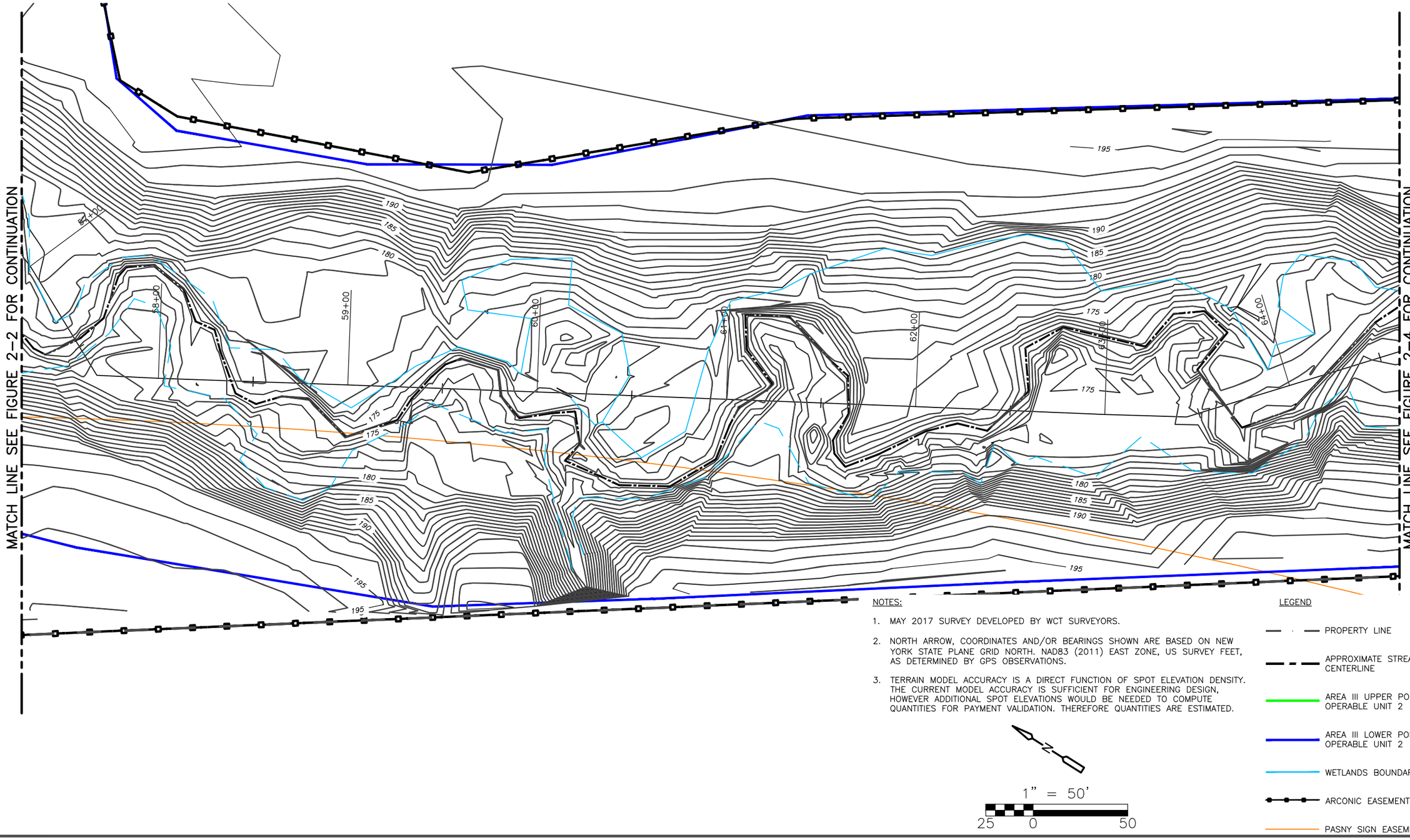
N

1" = 50'
25 0 50

CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III
EXISTING SITE PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 53□50 TO 5□□90
FIGURE 2-2



CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III
EXISTING SITE PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 5□□90 TO □4□90
FIGURE 2-3

MATCH LINE SEE FIGURE 2-3 FOR CONTINUATION

HISTORIC WELL

NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.
3. TERRAIN MODEL ACCURACY IS A DIRECT FUNCTION OF SPOT ELEVATION DENSITY. THE CURRENT MODEL ACCURACY IS SUFFICIENT FOR ENGINEERING DESIGN, HOWEVER ADDITIONAL SPOT ELEVATIONS WOULD BE NEEDED TO COMPUTE QUANTITIES FOR PAYMENT VALIDATION. THEREFORE QUANTITIES ARE ESTIMATED.

1" = 50'

25 0 50

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- TREE

CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III
EXISTING SITE PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 4+90 TO 72+50
FIGURE 2-4

The total watershed area of the UNT is approximately 956 acres. The tributary joining the UNT at approximately Sta. 56+00 accounts for around 469 of the 956 acres of the total UNT watershed. The UNT watershed consists of primarily wooded, farmed fields and heavily vegetated areas.

Section 5.3.1 Stormwater Runoff Analysis provides additional details regarding water shed and possible storm events.

2.4 Environmental Attributes

Surface water quality classification of the UNT is Class D under Regulation 910-949. The best usage of Class D waters is fishing (6NYCRR Part 701.9). Class D waters are suitable for fish, shellfish and wildlife survival, and suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes. Due to such natural conditions as perennial flow, water conditions conducive to propagation of game fishery, stream bed conditions, and evidence of fish habitation, the waters of the UNT will support fish propagation.

Wetlands resources were demarcated in the field on April 26 through 28, 2017 by CDM Smith Professional Wetlands Scientist. Existing field delineated wetlands resource boundaries were evaluated for conformance with the New York State Freshwater Wetlands Act and the three-parameter delineation method as described in the U.S. Army Corps of Engineers 1987 Wetlands Delineation Manual (Environmental Laboratory, 1987) [the Manual], and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (v 2.0) ERDC/EL TR-12-1, dated January 2012.

In the absence of vegetated wetlands, the federal jurisdiction under Section 404 of the Clean Water Act, extend to the Ordinary High Water (OHW) line. The limits of the OHW were demarcated in the field by the use of flagging and incorporated into the survey. Three vegetated wetlands areas along the UNT were demarcated. Hydric soils (Adjidaumo silty clay) are present throughout the stream valley and on the steep slopes and beyond.

The UNT channel is located within a 14- to 26-foot-deep 150-foot-wide riverine valley (see Figures 7-1, 7-2, and 7-3). The UNT within the project area consists of a meandering channel with sharp bends. Channel widths are 15- to 20-feet with 1.5- to 2.5-foot banks with approximately 2.5:1 bank slopes. However, banks are much higher and steeper between Sta. 61+10 to Sta. 61+50, and 62+50 to 63+00. No remediation work is proposed within these two stream reaches. Emergent vegetated wetlands are present on shelves adjacent to the UNT channel throughout the riparian corridor. The wetland opens-up into a wider floodplain wetland at the downstream end of the project area between Sta. 68+00 to Sta. 72+00 before the UNT channel is culverted beneath County Route 42 (see Figure 7-3). Two tributaries feed the UNT channel at approximately Sta. 60+10 (wetland flags 6-22 to 6-24, and 7-1 to 7-3) and at approximately Sta. 55+70 (flags OHW 2-24 to 2-26 and OHW 4-1 to 4-4).

The vegetation along the banks within the riparian corridor consists mainly of dense stands of nannyberry (Viburnum lentago), northern wild raisin (Viburnum cassinoides), red-osier dogwood (Cornus alterniflora), silky dogwood (Cornus amomum), and honeysuckle (Lonicera sp.) with mainly honeysuckles providing overhang along the stream banks for cover and shade.

The sparse tree canopy is dominated by red maple (Acer rubrum), yellow birch (Betula alleghaniensis), black cherry (Prunus serotina), and black ash (Fraxinus nigra).

The dominant vegetation species within the emergent wetlands along the shelves consist of soft rush (Juncus effusus), yellow marsh-marigold (Caltha palustris), sedges (Carex sp.), sensitive fern (Onoclea sensibilis), Canada goldenrod (Solidago altissimo), and common horsetail (Equiseteum arvense).

The stream bottom consists mainly of very dense silty clay not suitable for burrowing wildlife, however, burrowable sand/gravel beds are present throughout the project area. Tree logs, branches and other debris have accumulated in the sharp bends of the channel creating snags which help with slowing down the water flow and preventing erosion. Boulders were also observed throughout the corridor.

A *Wetland Functions and Values Assessment* evaluation of the UNT and associated vegetated wetlands (delineated April 2017) was also conducted, refer to Section 7. Based on the functions and values assessment conducted, the principal functions of this wetland system are sediment/toxicant retention and sediment/shoreline stabilization.

Section 3

Nature and Extent of Contamination

This section includes a discussion of the recent characterization and contaminant delineation work conducted in Area III to identify the areas proposed for remediation. Results of the historic UNT sampling conducting in the early 1990's are also presented.

3.1 Historic Sampling Results

Historic sampling was conducted during site investigations in the early 1990's as the initial step to characterize the full length of the UNT. Results indicated that the PCB contamination located in what is now called Area I and Area II was not only higher, but would need to be remediated first to avoid the release or flushing of PCB sediments downstream.

The data collected by Engineering Science in Area III of the UNT as a part of their Unnamed Tributary Post Interim Remedial Measures Sampling Program, May 1992, was collected from approximately Sta. 47+00 to 76+00. Forty-six (46) sediment samples were collected by Engineering Science within UNT Area III LPOU2 at depths up to 8-inches. Twelve (12) of the 46 samples collected in UNT Area III LPOU2, ranging downstream from Sta. 57+32 (1.5 ppm) to Sta. 70+71 (1.6 ppm), exceeded the 1 ppm criterion for PCBs. The highest concentration of PCBs was detected at Sta. 68+00 (3.7 ppm). All other samples collected in UNT Area III LPOU2 were below 1 ppm.

3.2 UNT Area III LPOU2 Delineation Sampling – 2016 & 2017

3.2.1 Summary of Sampling Activities

This section discusses recent sampling activities in the UNT Area III LPOU2 in 2016 and 2017.

August 2016

The initial round of Area III delineation sampling was conducted by CDM Smith personnel between August 1 and August 8, 2016. Generally dry conditions existed at the time of sampling. Of the stretches with standing or flowing water, the depth of water was on average 4 inches.

Two-inch diameter plastic sampling tubes were easily advanced into the underlying clay layer at most locations. The tubes hit refusal in areas of the UNT where a coarse bottom consisting of cobbles and gravel was encountered. Samples were collected using a hand trowel at these locations. A hand trowel was also used to collect samples from the downstream areas between station Sta. 72+00 and Sta. 76+00 where only a 1-inch thick layer of sediment was present. The majority of samples submitted to the laboratory were collected from depths ranging from 1 to 6 inches.

However, there were eight locations where 12 inches or more of accumulated sediment was observed. The deepest sediment sample was collected at Sta. 70+00, to a depth of 17 inches, and the deepest flood plain sample was collected at Sta. 58+00, to a depth of 18 inches. In total, 10 samples were collected deeper than 6 inches.

During the August 2016 event, 5 beaver dams were identified, four in Area III of the UNT and 1 immediately upstream of Area III between Sta. 44+00 and Sta. 45+00. The beaver dam located near Sta. 53+50 has created a wide ponded area upstream of the dam. In wetter conditions, there is a higher island area near the center of the ponded area. Due to the conditions at the time of sampling in August, this upstream area was primarily dry. Two samples were collected at this station (Sta. 53+50), one from the north and one from the south side of the island within the channel around the island (Sta. 53+50 ISLAND NORTH and Sta. 53+50 ISLAND SOUTH).

Between Sta. 55+00 and Sta. 56+00, a bifurcating channel was observed. The stream bed at the time of sampling was dry. Also between Sta. 55+00 and Sta. 56+00, there is a tributary which enters the eastern side of the UNT. A sample was collected approximately 30 feet upstream from the confluence with the UNT.

No samples were collected from Sta. 72+50 through Sta. 73+50 as these locations were inside the steel culvert which passes below Route 42 and no sediment accumulations were noted inside the culvert.

December 2016

Based on the results of the initial August 2016 round of sampling, a follow-up round of sample collection was proposed to provide additional delineation of PCBs above the cleanup goal. A meeting was held with NYSDEC in Massena, NY on October 25, 2016 to discuss the results of the initial sampling and to develop an approach for follow-up sampling. Following the meeting, NYSDEC and representatives of the Fish and Wildlife Bureau performed a site walk of the UNT to review the both initial and proposed follow-up sampling locations. The proposed approach for follow-up sampling was incorporated into an addendum to the June 2016 work plan. The work plan addendum was submitted to NYSDEC on November 28, 2016 and was approved by NYSDEC in correspondence, dated December 5, 2016. Follow-up sediment samples were collected by CDM Smith personnel between December 12 and December 14, 2016 in accordance with the revised work plan. Lincoln Fancher of NYSDEC accompanied CDM Smith on the first day of sampling to identify specific locations of interest. At the time of sampling, snow cover of 2 to 4 inches was present. Ice cover was present along the majority of Area III of the UNT ranging in thickness from one quarter inch to three inches. Samples were collected using the same methodology used in the initial round - from depth intervals of 0 to 6 inches and from 6 to 12 inches at all locations. Samples collected from 0 to 6 inches were submitted to the laboratory for analysis; the deeper sample was submitted for analysis at locations where the shallow sample yielded a total PCB concentration greater than 0.9 ppm.

All sediment samples collected during the follow-up sampling were analyzed by Pace Analytical in Minneapolis, Minnesota for analysis of PCB Aroclors using United States Environmental Protection Agency (USEPA) Method 8082A.

October-November 2017

Supplemental pre-design sampling was conducted within UNT Area III LPOU2 during field events on October 18-20, 2017 and November 6, 2017. A Technical Memorandum, dated October 17, 2017 describes the sampling methodology and preparation for laboratory analysis. A transect-Triad approach was used to adequately bracket areas where PCB concentrations

exceeded 1 ppm so as to complete the delineation of potential PCB-impacted areas. Additional samples were collected in areas designated as depositional areas based on field inspections of fluvial geomorphological characteristics such as channel geomorphology, presence of floodplains, and point bars. Samples were collected from Sta. 54+00 to Sta. 71+50 along transects bisecting the channel generally along east-west lines. Sediment cores were collected to a depth of 24 inches or to refusal at each site. Cores were divided into 0- to 6-inch, 6- to 12-inch, 12- to 18-inch and 18- to 24-inch interval samples. Samples were described, homogenized, and prepared for laboratory analysis (PCB Aroclors by EPA Method 8082A). An initial set of samples was submitted for laboratory analysis based on proximity to the stream channel and observed low-lying floodplain deposits. Based on initial analytical results, additional samples were submitted for laboratory analysis to bracket the area where PCB concentrations greater than 1 ppm were detected.

December 2017-January 2018

In December 2017, one sediment and one overlying water (aqueous) sample were collected for total cyanide analysis. Samples were collected December 7, 2017 for the analysis of total cyanide at Sta. 52.9, a known depositional area where the highest concentrations of the primary constituent of concern, PCBs, had been observed. The sediment sample collected was from a depth of 0- to 6- inches, and the aqueous sample was collected from the overlying water. However, laboratory hold time was exceeded for December 2017 cyanide soil sample. An additional total cyanide soil sample was collected at Sta. 52.9 at a depth of 0- to 6-inches on January 17, 2018.

3.2.2 Summary of Sampling Results UNT Area III LPOU2

This section discusses the results of the recent sampling activities in the UNT Area III LPOU2 in 2016 and 2017.

August 2016

Sediment samples were analyzed for TOC and for PCBs using USEPA Method 8082A. Seven Aroclors were reported. The majority of detections were for Aroclor 1260, however there was one sample that contained a detection for Aroclor 1248. Additionally, one sample contained a detection for Aroclor 1221, however the laboratory qualified this as an altered Aroclor pattern; actual Aroclor 1221 was not presumed to be present.

The PCB results were compared to the post-remedial soil cleanup goal of 1 ppm. All 2016 and 2017 analytical results are presented in **Table 3-1 through Table 3-3.** The locations where the soil clean up goal was exceeded in UNT Area III LPOU2 are shown on **Figures 3-1, 3-2 and 3-3**.

Six of the 60 samples collected in the downstream portion of Area III between Sta. 54+00 to Sta. 76+00 had total PCB concentrations (Aroclor 1260) above 1.0 ppm. Aroclor 1248 was also detected at Sta. 70+00. The highest total PCB concentration was 3.5 ppm at Sta. 70+00 at a depth interval of 0-6 inches. Other locations with PCB concentrations higher than 1 ppm include Sta. 54+50 (0-4 inches, 2.5 ppm), Sta. 71+00 (0-6 inches, 1.3 ppm), Sta. 58+00 (0-6 inches, 2.3 ppm), Sta. 58+00 (6-12 inches, 1.14 ppm), and Sta. FP2 (0-3 inches, 2.3 ppm).

Table 3-1
Summary of August 2016 Sediment Sampling Results

Sample ID		UNT-A3-SED-54	UNT-A3-SED-54.5	UNT-SED-A3-54.5 4-9.5"
Sample Date		8/4/16	8/3/16	8/3/16
Depth interval (inches)		0-3	0-4	4-9.5
Parameter ID	Unit			
Total Organic Carbon	mg/kg	6300	15000	4100
% solids	%	58.3	68.5	59.5
PCBs				
Aroclor 1016	µg/g	<0.0846 U	<0.072 U	<0.0834 U
Aroclor 1221	µg/g	<0.0846 U	<0.072 U	<0.0834 U
Aroclor 1232	µg/g	<0.0846 U	<0.072 U	<0.0834 U
Aroclor 1242	µg/g	<0.0846 U	<0.072 U	<0.0834 U
Aroclor 1248	µg/g	<0.0846 U	<0.072 U	<0.0834 U
Aroclor 1254	µg/g	<0.0846 U	<0.072 U	<0.0834 U
Aroclor 1260	µg/g	**0.0912**	**2.5**	<0.0834 U
Total PCBs		**0.0912**	**2.5**	<0.0834 U

Sample ID		UNT-A3-SED-55 CHANNEL	UNT-A3-SED-TRIBT55 0-3"	UNT-A3-SED-55 0-4"	UNT-A3-SED-55.5	UNT-A3-SED-56 0-3"
Sample Date		8/4/16	8/8/16	8/8/16	8/3/16	8/3/16
Depth interval (inches)		0-6	0-3	0-4	0-4	0-3
Parameter ID	Unit					
Total Organic Carbon	mg/kg	11000	9000	6400	11000	3100
% solids	%	65.6	61.4	68.2	56.7	54.1
PCBs						
Aroclor 1016	µg/g	<0.0737 U	<0.0814 U	<0.0705 U	<0.0873 U	<0.0912 U
Aroclor 1221	µg/g	<0.0737 U	**0.0883 PB**	<0.0705 U	<0.0873 U	<0.0912 U
Aroclor 1232	µg/g	<0.0737 U	<0.0814 U	<0.0705 U	<0.0873 U	<0.0912 U
Aroclor 1242	µg/g	<0.0737 U	<0.0814 U	<0.0705 U	<0.0873 U	<0.0912 U
Aroclor 1248	µg/g	<0.0737 U	<0.0814 U	<0.0705 U	<0.0873 U	<0.0912 U
Aroclor 1254	µg/g	<0.0737 U	<0.0814 U	<0.0705 U	<0.0873 U	<0.0912 U
Aroclor 1260	µg/g	**0.172**	<0.0814 U	**0.885AG**	**0.443**	<0.0912 U
Total PCBs		**0.172**	**0.0883**	**0.885**	**0.443**	<0.0912 U

Sample ID		UNT-A3-SED-56.5 0-4"	UNT-A3-SED-57	UNT-A3-SED-57.5 0-4"	UNT-A3-SED-58	UNT-A3-SED-BD3 (58)
Sample Date		8/3/16	8/3/16	8/3/16	8/3/16	8/3/16
Depth interval (inches)		0-4	0-5	0-4	0-4	0-4
Parameter ID	Unit					
Total Organic Carbon	mg/kg	13000	9100	16000	1700	2400
% solids	%	63.2	75.1	68.2	74.8	74.9
PCBs						
Aroclor 1016	µg/g	<0.0753 U	<0.0651 U	<0.0713 U	<0.0664 U	<0.0655 U
Aroclor 1221	µg/g	<0.0753 U	<0.0651 U	<0.0713 U	<0.0664 U	<0.0655 U
Aroclor 1232	µg/g	<0.0753 U	<0.0651 U	<0.0713 U	<0.0664 U	<0.0655 U
Aroclor 1242	µg/g	<0.0753 U	<0.0651 U	<0.0713 U	<0.0664 U	<0.0655 U
Aroclor 1248	µg/g	<0.0753 U	<0.0651 U	<0.0713 U	<0.0664 U	<0.0655 U
Aroclor 1254	µg/g	<0.0753 U	<0.0651 U	<0.0713 U	<0.0664 U	<0.0655 U
Aroclor 1260	µg/g	<0.0753 U	**0.0711**	**0.175**	<0.0664 U	<0.0655 U
Total PCBs		<0.0753 U	**0.0711**	**0.175**	<0.0664 U	<0.0655 U

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Table 3-1
Summary of August 2016 Sediment Sampling Results

Sample ID		UNT-A3-SED-58.5 0-4"	UNT-A3-SED-59 0-6"	UNT-A3-SED-59.5 0-4"	UNT-A3-SED-T60	UNT-A3-SED-T60.5 0-6"
Sample Date		**8/3/16**	**8/3/16**	**8/3/16**	**8/2/16**	**8/2/16**
Depth interval (inches)		**0-4**	**0-6**	**0-4**	**0-3**	**0-3**
Parameter ID	**Unit**					
Total Organic Carbon	mg/kg	11000	14000	7900	10000	5300
% solids	%	61.8	64.6	75.9	57.5	62.4
PCBs						
Aroclor 1016	µg/g	<0.0744 U	<0.0725 U	<0.0628 U	<0.0843 U	<0.078 U
Aroclor 1221	µg/g	<0.0744 U	<0.0725 U	<0.0628 U	<0.0843 U	<0.078 U
Aroclor 1232	µg/g	<0.0744 U	<0.0725 U	<0.0628 U	<0.0843 U	<0.078 U
Aroclor 1242	µg/g	<0.0744 U	<0.0725 U	<0.0628 U	<0.0843 U	<0.078 U
Aroclor 1248	µg/g	<0.0744 U	<0.0725 U	<0.0628 U	<0.0843 U	<0.078 U
Aroclor 1254	µg/g	<0.0744 U	<0.0725 U	<0.0628 U	<0.0843 U	<0.078 U
Aroclor 1260	µg/g	**0.0908**	**0.199**	<0.0628 U	<0.0843 U	<0.078 U
Total PCBs		**0.0908**	**0.199**	<0.0628 U	<0.0843 U	<0.078 U

Sample ID		UNT-A3-SED-T61 0-3"	UNT-A3-SED-T61.5 0-4"	UNT-A3-SED-T62 0-6"	UNT-A3-SED-T62.5 0-6"	UNT-A3-SED-T63 0-6"
Sample Date		**8/2/16**	**8/2/16**	**8/2/16**	**8/2/16**	**8/2/16**
Depth interval (inches)		**0-3**	**0-4**	**0-6**	**0-6**	**0-6**
Parameter ID	**Unit**					
Total Organic Carbon	mg/kg	6400	18000	6600	2000	8900
% solids	%	62.6	54.6	70.6	62.2	67.2
PCBs						
Aroclor 1016	µg/g	<0.0793 U	<0.0873 U	<0.07 U	<0.0784 U	<0.0737 U
Aroclor 1221	µg/g	<0.0793 U	<0.0873 U	<0.07 U	<0.0784 U	<0.0737 U
Aroclor 1232	µg/g	<0.0793 U	<0.0873 U	<0.07 U	<0.0784 U	<0.0737 U
Aroclor 1242	µg/g	<0.0793 U	<0.0873 U	<0.07 U	<0.0784 U	<0.0737 U
Aroclor 1248	µg/g	<0.0793 U	<0.0873 U	<0.07 U	<0.0784 U	<0.0737 U
Aroclor 1254	µg/g	<0.0793 U	<0.0873 U	<0.07 U	<0.0784 U	<0.0737 U
Aroclor 1260	µg/g	<0.0793 U	**0.122**	<0.07 U	<0.0784 U	<0.0737 U
Total PCBs		<0.0793 U	**0.122**	<0.07 U	<0.0784 U	<0.0737 U

Sample ID		UNT-A3-SED-T63.5 0-6"	UNT-A3-SED-T64	UNT-A3-SED-BD2 (64)	UNT-A3-SED-T64.5 0-6"	UNT-A3-SED-T65 0-6"
Sample Date		**8/2/16**	**8/2/16**	**8/2/16**	**8/2/16**	**8/2/16**
Depth interval (inches)		**0-6**	**0-4**	**0-4**	**0-6**	**0-6**
Parameter ID	**Unit**					
Total Organic Carbon	mg/kg	8400	17000	18000	2200	12000
% solids	%	65.1	53.1	49.8	59.3	54.7
PCBs						
Aroclor 1016	µg/g	<0.0744 U	<0.0931 U	<0.0986 U	<0.0825 U	<0.0891 U
Aroclor 1221	µg/g	<0.0744 U	<0.0931 U	<0.0986 U	<0.0825 U	<0.0891 U
Aroclor 1232	µg/g	<0.0744 U	<0.0931 U	<0.0986 U	<0.0825 U	<0.0891 U
Aroclor 1242	µg/g	<0.0744 U	<0.0931 U	<0.0986 U	<0.0825 U	<0.0891 U
Aroclor 1248	µg/g	<0.0744 U	<0.0931 U	<0.0986 U	<0.0825 U	<0.0891 U
Aroclor 1254	µg/g	<0.0744 U	<0.0931 U	<0.0986 U	<0.0825 U	<0.0891 U
Aroclor 1260	µg/g	<0.0744 U	<0.0931 U	**0.176**	<0.0825 U	**0.43**
Total PCBs		<0.0744 U	<0.0931 U	**0.176**	<0.0825 U	**0.43**

Table 3-1
Summary of August 2016 Sediment Sampling Results

Sample ID		UNT-A3-SED-T65.5 0-3"	UNT-A3-SED-T66 0-6"	UNT-A3-SED-T66.5 0-3"	UNT-A3-SED-T67 0-4"	UNT-A3-SED-T67.5
Sample Date		**8/2/16**	**8/2/16**	**8/2/16**	**8/1/16**	**8/1/16**
Depth interval (inches)		**0-3**	**0-6**	**0-6**	**0-4**	**0-3**
Parameter ID	**Unit**					
Total Organic Carbon	mg/kg	3100	7900	4100	4600	3700
% solids	%	77.1	77.9	56.4	70.7	65.5
PCBs						
Aroclor 1016	µg/g	<0.0629 U	<0.0626 U	<0.085 U	<0.0679 U	<0.0742 U
Aroclor 1221	µg/g	<0.0629 U	<0.0626 U	<0.085 U	<0.0679 U	<0.0742 U
Aroclor 1232	µg/g	<0.0629 U	<0.0626 U	<0.085 U	<0.0679 U	<0.0742 U
Aroclor 1242	µg/g	<0.0629 U	<0.0626 U	<0.085 U	<0.0679 U	<0.0742 U
Aroclor 1248	µg/g	<0.0629 U	<0.0626 U	<0.085 U	<0.0679 U	<0.0742 U
Aroclor 1254	µg/g	<0.0629 U	<0.0626 U	<0.085 U	<0.0679 U	<0.0742 U
Aroclor 1260	µg/g	**0.284**	**0.218**	<0.085 U	<0.0679 U	<0.0742 U
Total PCBs		**0.284**	**0.218**	<0.085 U	<0.0679 U	<0.0742 U

Sample ID		UNT-A3-SED-T68	UNT-A3-SED-T68.5	UNT-A3-SED-T69	UNT-A3-SED-T69.5	UNT-A3-SED-T69.5
Sample Date		**8/1/16**	**8/1/16**	**8/1/16**	**8/2/16**	**8/2/16**
Depth interval (inches)		**0-3**	**0-3**	**0-6**	**0-6**	**6-12**
Parameter ID	**Unit**					
Total Organic Carbon	mg/kg	3100	2800	11000	6700	6100
% solids	%	74.6	67.7	73	68.8	75.6
PCBs						
Aroclor 1016	µg/g	<0.0653 U	<0.0718 U	<0.0675 U	<0.0724 U	<0.0642 U
Aroclor 1221	µg/g	<0.0653 U	<0.0718 U	<0.0675 U	<0.0724 U	<0.0642 U
Aroclor 1232	µg/g	<0.0653 U	<0.0718 U	<0.0675 U	<0.0724 U	<0.0642 U
Aroclor 1242	µg/g	<0.0653 U	<0.0718 U	<0.0675 U	<0.0724 U	<0.0642 U
Aroclor 1248	µg/g	<0.0653 U	<0.0718 U	<0.0675 U	<0.0724 U	<0.0642 U
Aroclor 1254	µg/g	<0.0653 U	<0.0718 U	<0.0675 U	<0.0724 U	<0.0642 U
Aroclor 1260	µg/g	<0.0653 U	<0.0718 U	**0.177**	**0.645**	**0.141**
Total PCBs		<0.0653 U	<0.0718 U	**0.177**	**0.645**	**0.141**

Sample ID		UNT-A3-SED-T70 0-6"	UNT-A3-SED-T70	UNT-A3-SED-70 12-17"	UNT-A3-SED-T70.5	UNT-A3-SED-T71
Sample Date		**8/1/16**	**8/1/16**	**8/1/16**	**8/1/16**	**8/1/16**
Depth interval (inches)		**0-6**	**6-12**	**12-17**	**0-6**	**0-6**
Parameter ID	**Unit**					
Total Organic Carbon	mg/kg	17000	19000	9800	11000	16000
% solids	%	62.1	58.1	74.7	69	68.6
PCBs						
Aroclor 1016	µg/g	<0.080 U	<0.0825 U	<0.0665 U	<0.0716 U	<0.072 U
Aroclor 1221	µg/g	<0.080 U	<0.0825 U	<0.0665 U	<0.0716 U	<0.072 U
Aroclor 1232	µg/g	<0.080 U	<0.0825 U	<0.0665 U	<0.0716 U	<0.072 U
Aroclor 1242	µg/g	<0.080 U	<0.0825 U	<0.0665 U	<0.0716 U	<0.072 U
Aroclor 1248	µg/g	**0.607**	<0.0825 U	<0.0665 U	<0.0716 U	<0.072 U
Aroclor 1254	µg/g	<0.080 U	<0.0825 U	<0.0665 U	<0.0716 U	<0.072 U
Aroclor 1260	µg/g	**2.94**	**0.964**	**0.461**	**0.364**	**0.314**
Total PCBs		**3.547**	**0.964**	**0.461**	**0.364**	**0.314**

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Table 3-1
Summary of August 2016 Sediment Sampling Results

Sample ID		UNT-A3-SED-BD1 (71)	UNT-A3-SED-T71	UNT-A3-SED-T71.5 0-3"	UNT-A3-SED-T72	UNT-A3-SED-T74
Sample Date		**8/1/16**	**8/1/16**	**8/8/16**	**8/8/16**	**8/8/16**
Depth interval (inches)		**0-6**	**6-12**	**0-3**	**0-1**	**0-1**
Parameter ID	**Unit**					
Total Organic Carbon	mg/kg	12000	6500	23000	6000	5200
% solids	%	68.6	82.3	62.3	80.1	74.3
PCBs						
Aroclor 1016	µg/g	<0.0679 U	<0.0572 U	<0.0788 U	<0.0616 U	<0.0659 U
Aroclor 1221	µg/g	<0.0679 U	<0.0572 U	<0.0788 U	<0.0616 U	<0.0659 U
Aroclor 1232	µg/g	<0.0679 U	<0.0572 U	<0.0788 U	<0.0616 U	<0.0659 U
Aroclor 1242	µg/g	<0.0679 U	<0.0572 U	<0.0788 U	<0.0616 U	<0.0659 U
Aroclor 1248	µg/g	<0.0679 U	<0.0572 U	<0.0788 U	<0.0616 U	<0.0659 U
Aroclor 1254	µg/g	<0.0679 U	<0.0572 U	<0.0788 U	<0.0616 U	<0.0659 U
Aroclor 1260	µg/g	**1.27**	**0.155**	**0.655AG**	**0.2**	**0.275**
Total PCBs		**1.27**	**0.155**	**0.655**	**0.2**	**0.275**

Sample ID		UNT-A3-SED-T74.5	UNT-A3-SED-BD5 (74.5)	UNT-A3-SED-T75	UNT-A3-SED-T75.5	UNT-A3-SED-T76
Sample Date		**8/8/16**	**8/8/16**	**8/8/16**	**8/8/16**	**8/8/16**
Depth interval (inches)		**0-1**	**0-1**	**0-1**	**0-1**	**0-1**
Parameter ID	**Unit**					
Total Organic Carbon	mg/kg	6600	6200	5100	8200	15000
% solids	%	78.1	79.5	81.3	75	66.4
PCBs						
Aroclor 1016	µg/g	<0.0634 U	<0.0606 U	<0.0602 U	<0.0657 U	<0.0752 U
Aroclor 1221	µg/g	<0.0634 U	<0.0606 U	<0.0602 U	<0.0657 U	<0.0752 U
Aroclor 1232	µg/g	<0.0634 U	<0.0606 U	<0.0602 U	<0.0657 U	<0.0752 U
Aroclor 1242	µg/g	<0.0634 U	<0.0606 U	<0.0602 U	<0.0657 U	<0.0752 U
Aroclor 1248	µg/g	<0.0634 U	<0.0606 U	<0.0602 U	<0.0657 U	<0.0752 U
Aroclor 1254	µg/g	<0.0634 U	<0.0606 U	<0.0602 U	<0.0657 U	<0.0752 U
Aroclor 1260	µg/g	**0.229**	**0.581**	**<0.0981**	**0.142**	**0.434**
Total PCBs		**0.229**	**0.581**	**<0.0981**	**0.142**	**0.434**

Table 3-1
Summary of August 2016 Sediment Sampling Results

Floodplain Samples						
Sample ID		**UNT-A3-SED-58-POOL: 0-6"**	**UNT-A3-SED-58-POOL: 6-12"**	**UNT-SED-A3-58POOL 12-18"**	**UNT-A3-SED-FP2 0-3"**	**UNT-A3-SED-FP3 0-6"**
Sample Date		**8/3/16**	**8/3/16**	**8/3/16**	**8/8/16**	**8/8/16**
Depth interval (inches)		**0-6**	**6-12**	**12-18**	**0-3**	**0-6**
Parameter ID	**Unit**					
Total Organic Carbon	mg/kg	41000	14000	3400	40000	43000
% solids	%	42.4	55.6	57.6	57.2	52.7
PCBs						
Aroclor 1016	µg/g	0.112 U	<0.0871 U	<0.0843 U	<0.0816 U	<0.09 U
Aroclor 1221	µg/g	0.112 U	<0.0871 U	<0.0843 U	<0.0816 U	<0.09 U
Aroclor 1232	µg/g	0.112 U	<0.0871 U	<0.0843 U	<0.0816 U	<0.09 U
Aroclor 1242	µg/g	0.112 U	<0.0871 U	<0.0843 U	<0.0816 U	<0.09 U
Aroclor 1248	µg/g	0.112 U	<0.0871 U	<0.0843 U	**0.176AE**	<0.09 U
Aroclor 1254	µg/g	0.112 U	<0.0871 U	<0.0843 U	<0.0816 U	<0.09 U
Aroclor 1260	µg/g	**2.27**	**1.14**	<0.0843 U	**2.16AG**	**0.259AG**
Total PCBs		**2.27**	**1.14**	<0.0843 U	**2.336**	**0.259**

Sample ID		**UNT-A3-SED-FP4 0-3"**	**UNT-A3-SED-FP5 0-6"**
Sample Date		**8/8/16**	**8/8/16**
Depth interval (inches)		**0-4**	**0-6**
Parameter ID	**Unit**		
Total Organic Carbon	mg/kg	34000	28000
% solids	%	80.3	59.5
PCBs			
Aroclor 1016	µg/g	<0.0606 U	<0.0819 U
Aroclor 1221	µg/g	<0.0606 U	<0.0819 U
Aroclor 1232	µg/g	<0.0606 U	<0.0819 U
Aroclor 1242	µg/g	<0.0606 U	<0.0819 U
Aroclor 1248	µg/g	<0.0606 U	<0.0819 U
Aroclor 1254	µg/g	<0.0606 U	<0.0819 U
Aroclor 1260	µg/g	**0.361AG**	**0.534AG**
Total PCBs		**0.361**	**0.534**

Key:
(E) = Sample collected on the east side of UNT
(W) = Sample collected on the west side of UNT
U = Result not detected above reporting limit
J = Laboratory qualifier, estimated value (analyte is below the quantitation limit but above the method detection limit)
AE= Aroclor 1248 concentration flagged to denote that an altered Aroclor pattern was observed.
AG = Aroclor 1260 concentration flagged to denote that an altered Aroclor pattern was observed.
PB = Aroclor 1221 is being used to quantify an altered Aroclor pattern; Aroclor 1221 is not preseumed to be present.
Bold font indicates PCB detection
Blue highlight indicates total PCB concentration greater than cleanup goal of 1 part per million (ppm)
Laboratory reported units (micrograms per kilogram, or ug/kg), have been converted to microgram per gram (ug/g), which is equivalent to milligrams per kilogram (mg/kg) and parts per million (ppm)

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Table 3-2
Summary of December 2016 Sediment Sampling Results

Sample ID		UNT-A3-SED-T55-1	UNT-A3-SED-T55-1	UNT-A3-SED-T55-2	UNT-A3-SED-T55-3	UNT-A3-SED-T55-4
Sample Date		12/13/16	12/14/16	12/13/16	12/13/16	12/13/16
Depth interval (inches)		0-6	6-12	0-6	0-6	0-6
Parameter ID	Unit					
% solids	%	54.6	62.9	66.5	78.2	77.9
PCBs						
Aroclor 1016	µg/g	<0.027 U	<0.023 U	<0.022 U	<0.019 U	<0.019 U
Aroclor 1221	µg/g	<0.024 U	<0.021 U	<0.020 U	<0.017 U	<0.017 U
Aroclor 1232	µg/g	<0.029 U	<0.025 U	<0.024 U	<0.020 U	<0.021 U
Aroclor 1242	µg/g	<0.018 U	<0.016 U	<0.015 U	<0.013 U	<0.013 U
Aroclor 1248	µg/g	**0.11 J**	<0.014 U	**0.12 J**	<0.011 U	<0.011 U
Aroclor 1254	µg/g	<0.016 U	**0.36**	<0.013 U	<0.011 U	<0.011 U
Aroclor 1260	µg/g	**0.83**	**0.57**	**0.71**	**0.31**	**0.12 J**
Total PCBs		**0.94**	**0.92**	**0.83**	**0.59**	**0.12 J**

Sample ID		UNT-A3-SED-T58-1	UNT-A3-SED-T58-2	UNT-A3-SED-T58-4	UNT-A3-SED-T58-5	UNT-A3-SED-T58-5
Sample Date		12/13/16	12/13/16	12/13/16	12/13/16	12/14/16
Depth interval (inches)		0-6	0-6	0-6	0-6	6-12
Parameter ID	Unit					
% solids	%	69.6	67.7	68.9	63.4	68.3
PCBs						
Aroclor 1016	µg/g	<0.021 U	<0.022 U	<0.021 U	<0.023 U	<0.022 U
Aroclor 1221	µg/g	<0.019 U	<0.019 U	<0.019 U	<0.020 U	<0.019 U
Aroclor 1232	µg/g	<0.023 U	<0.024 U	<0.023 U	<0.025 U	<0.023 U
Aroclor 1242	µg/g	<0.014 U	<0.015 U	<0.014 U	<0.016 U	<0.015 U
Aroclor 1248	µg/g	<0.012 U	<0.013 U	<0.012 U	**0.27 J**	<0.013 U
Aroclor 1254	µg/g	<0.013 U	<0.013 U	<0.013 U	<0.014 U	<0.013 U
Aroclor 1260	µg/g	**0.11 J**	**0.090 J**	**0.12 J**	**3.1**	**3.3**
Total PCBs		**0.31**	**0.090 J**	**0.12 J**	**3.4**	**3.3**

Sample ID		UNT-A3-SED-T58-6	UNT-A3-SED-T69-1	UNT-A3-SED-T69-1	UNT-A3-SED-T69-2	UNT-A3-SED-T69-2
Sample Date		12/13/16	12/13/16	12/14/16	12/13/16	12/14/16
Depth interval (inches)		0-6	0-6	6-12	0-6	6-12
Parameter ID	Unit					
% solids	%	68.7	76.6	71.9	68.4	78.6
PCBs						
Aroclor 1016	µg/g	<0.021 U	<0.019 U	<0.020 U	<0.021 U	<0.019 U
Aroclor 1221	µg/g	<0.019 U	<0.017 U	<0.018 U	<0.019 U	<0.017 U
Aroclor 1232	µg/g	<0.023 U	<0.021 U	<0.022 U	<0.023 U	<0.020 U
Aroclor 1242	µg/g	<0.015 U	<0.013 U	<0.014 U	<0.015 U	<0.013 U
Aroclor 1248	µg/g	<0.013 U	**0.15 J**	<0.012 U	**0.13 J**	<0.011 U
Aroclor 1254	µg/g	<0.013 U	<0.012 U	<0.012 U	<0.013 U	<0.011 U
Aroclor 1260	µg/g	**0.066 J**	**2.8**	**3.6**	**5.8**	**1.2**
Total PCBs		**0.066 J**	**3.0**	**3.6**	**5.9**	**1.2**

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Table 3-2
Summary of December 2016 Sediment Sampling Results

Sample ID		UNT-A3-SED-T69-3	UNT-A3-SED-T69-4	UNT-A3-SED-T69-5	UNT-A3-SED-T69-5	UNT-A3-SED-T69-6
Sample Date		12/13/16	12/13/16	12/13/16	12/14/16	12/13/16
Depth interval (inches)		0-6	0-6	0-6	6-12	0-6
Parameter ID	Unit					
% solids	%	57.1	72.3	76.2	69.5	71.8
PCBs						
Aroclor 1016	µg/g	<0.026 U	<0.020 U	<0.019 U	<0.021 U	<0.020 U
Aroclor 1221	µg/g	<0.023 U	<0.018 U	<0.017 U	<0.019 U	<0.018 U
Aroclor 1232	µg/g	<0.028 U	<0.022 U	<0.021 U	<0.023 U	<0.022 U
Aroclor 1242	µg/g	<0.017 U	<0.014 U	<0.013 U	<0.014 U	<0.014 U
Aroclor 1248	µg/g	**0.018 J**	<0.012 U	**0.091 J**	<0.012 U	**0.15 J**
Aroclor 1254	µg/g	<0.016 U	<0.012 U	<0.012 U	<0.013 U	<0.012 U
Aroclor 1260	µg/g	**0.55**	**0.028 J**	**1.28**	**3.6**	**2.5**
Total PCBs		**0.57**	**0.028 J**	**1.28**	**3.6**	**2.6**

Sample ID		UNT-A3-SED-T69-6	UNT-A3-SED-T69-7	UNT-A3-SED-T70-1	UNT-A3-SED-T70-2	UNT-A3-SED-T70-3
Sample Date		12/14/16	12/13/16	12/13/16	12/13/16	12/13/16
Depth interval (inches)		6-12	0-6	0-6	0-6	0-6
Parameter ID	Unit					
% solids	%	77.7	71.8	62.9	73.9	69.2
PCBs						
Aroclor 1016	µg/g	<0.019 U	<0.020 U	<0.023 U	<0.020 U	<0.021 U
Aroclor 1221	µg/g	<0.017 U	<0.018 U	<0.021 U	<0.018 U	<0.019 U
Aroclor 1232	µg/g	<0.021 U	<0.022 U	<0.025 U	<0.022 U	<0.023 U
Aroclor 1242	µg/g	<0.013 U	<0.014 U	<0.016 U	<0.014 U	<0.014 U
Aroclor 1248	µg/g	<0.011 U	<0.012 U	<0.014 U	**0.043 J**	**0.036 J**
Aroclor 1254	µg/g	**11.3**	<0.012 U	<0.014 U	<0.012 U	<0.013 U
Aroclor 1260	µg/g	<0.0094 U	**0.046 J**	**0.18 J**	**0.63**	**0.43**
Total PCBs		**11.3**	**0.046 J**	**0.18 J**	**0.67**	**0.47**

Sample ID		UNT-A3-SED-T70-4	UNT-A3-SED-T70-5	UNT-A3-SED-T71-1	UNT-A3-SED-T71-2	UNT-A3-SED-T71-3
Sample Date		12/13/16	12/13/16	12/13/16	12/13/16	12/13/16
Depth interval (inches)		0-6	0-6	0-6	0-6	0-6
Parameter ID	Unit					
% solids	%	76.6	79.7	73.9	72.2	69.1
PCBs						
Aroclor 1016	µg/g	<0.019 U	<0.018 U	<0.020 U	<0.020 U	<0.021 U
Aroclor 1221	µg/g	<0.017 U	<0.016 U	<0.018 U	<0.018 U	<0.019 U
Aroclor 1232	µg/g	<0.021 U	<0.020 U	<0.022 U	<0.022 U	<0.023 U
Aroclor 1242	µg/g	<0.013 U	<0.013 U	<0.014 U	<0.014 U	<0.014 U
Aroclor 1248	µg/g	<0.011 U	<0.011 U	**0.040 J**	**0.012 J**	<0.012 U
Aroclor 1254	µg/g	<0.012 U	<0.011 U	<0.012 U	<0.012 U	<0.013 U
Aroclor 1260	µg/g	**0.037 J**	**0.015 J**	**0.42**	**0.27 J**	**0.014 J**
Total PCBs		**0.037 J**	<0.021	**0.46**	**0.28**	<0.024 U

Table 3-2
Summary of December 2016 Sediment Sampling Results

Sample ID		UNT-A3-SED-T71-4	UNT-A3-SED-T71-5	UNT-A3-SED-T71-5	UNT-A3-SED-T71-6	UNT-A3-SED-BD6 (71-6)
Sample Date		**12/13/16**	**12/13/16**	**12/14/16**	**12/13/16**	**12/13/16**
Depth interval (inches)		**0-6**	**0-6**	**6-12**	**0-6**	**0-6**
Parameter ID	**Unit**					
% solids	%	69.1	74.1	70.7	70.1	71.2
PCBs						
Aroclor 1016	µg/g	<0.021 U	<0.020 U	<0.021 U	<0.021 U	<0.021 U
Aroclor 1221	µg/g	<0.019 U	<0.017 U	<0.018 U	<0.018 U	<0.018 U
Aroclor 1232	µg/g	<0.023 U	<0.021 U	<0.023 U	<0.023 U	<0.022 U
Aroclor 1242	µg/g	<0.014 U	<0.013 U	<0.014 U	<0.014 U	<0.014 U
Aroclor 1248	µg/g	<0.012 U	**0.49**	<0.012 U	**0.032 J**	0.026 J
Aroclor 1254	µg/g	<0.013 U	<0.012 U	**15.1**	<0.013 U	<0.013 U
Aroclor 1260	µg/g	**0.020 J**	**5.7**	<0.010 U	**1.1**	**1.2**
Total PCBs		<0.024	**6.2**	**15.1**	**1.2**	**1.2**

Sample ID		UNT-A3-SED-T71-6	UNT-A3-SED-T71-7	UNT-A3-SED-END
Sample Date		**12/14/16**	**12/13/16**	**12/14/16**
Depth interval (inches)		**6-12**	**0-6**	**0-6**
Parameter ID	**Unit**			
% solids	%	79.6	68.7	60.6
PCBs				
Aroclor 1016	µg/g	<0.018 U	<0.021 U	<0.024 U
Aroclor 1221	µg/g	<0.016 U	<0.019 U	<0.021 U
Aroclor 1232	µg/g	<0.020 U	<0.023 U	<0.026 U
Aroclor 1242	µg/g	<0.013 U	<0.014 U	<0.016 U
Aroclor 1248	µg/g	<0.011 U	<0.012 U	**0.035 J**
Aroclor 1254	µg/g	**0.11 J**	<0.013 U	<0.015 U
Aroclor 1260	µg/g	**0.31**	**0.025 J**	**0.28 J**
Total PCBs		**0.42**	**0.025 J**	**0.31 J**

Table 3-2
Summary of December 2016 Sediment Sampling Results

Floodplain Samples						
Sample ID		**UNT-A3-SED-FP6**	**UNT-A3-SED-FP7**	**UNT-A3-SED-FP7**	**UNT-A3-SED-BD10 (FP-7)**	**UNT-A3-SED-FP8**
Sample Date		**12/12/16**	**12/12/16**	**12/14/16**	**12/14/16**	**12/12/16**
Depth interval (inches)		**0-6**	**0-6**	**6-12**	**6-12**	**0-6**
Parameter ID	**Unit**					
% solids	%	67.1	63.9	71.3	71.4	53
PCBs						
Aroclor 1016	µg/g	<0.022 U	<0.092 U	<0.021 U	<0.020 U	<0.028
Aroclor 1221	µg/g	<0.019 U	<0.081 U	<0.018 U	<0.018 U	<0.025
Aroclor 1232	µg/g	<0.024 U	<0.10 U	<0.022 U	<0.022 U	<0.030
Aroclor 1242	µg/g	<0.015 U	<0.063 U	<0.014 U	<0.014 U	<0.019
Aroclor 1248	µg/g	<0.013 U	**0.22 J**	<0.012 U	<0.012 U	**0.089 J**
Aroclor 1254	µg/g	<0.013 U	<0.056 U	<0.013 U	<0.012	<0.017
Aroclor 1260	µg/g	**0.22 J**	**4.2**	**7.2**	**10.9**	**0.88**
Total PCBs		**0.22 J**	**4.4**	**7.2**	**10.9**	**0.96**

Sample ID		**UNT-A3-SED-FP8**	**UNT-A3-SED-FP9**	**UNT-A3-SED-FP10**	**UNT-A3-SED-FP10**	**UNT-A3-SED-FP11**
Sample Date		**12/14/16**	**12/12/16**	**12/12/16**	**12/14/16**	**12/12/16**
Depth interval (inches)		**6-12**	**0-6**	**0-6**	**6-12**	**0-6**
Parameter ID	**Unit**					
% solids	%	60.2	50.8	56.6	58.9	67.4
PCBs						
Aroclor 1016	µg/g	<0.024 U	<0.029 U	<0.052 U	<0.025 U	<0.022 U
Aroclor 1221	µg/g	<0.022 U	<0.026 U	<0.046 U	<0.022 U	<0.019 U
Aroclor 1232	µg/g	<0.027 U	<0.032 U	<0.056 U	<0.027 U	<0.024 U
Aroclor 1242	µg/g	<0.017 U	<0.020 U	<0.035 U	<0.017 U	<0.015 U
Aroclor 1248	µg/g	<0.014 U	**0.023 J**	0.57 J	<0.015 U	**0.060 J**
Aroclor 1254	µg/g	**0.14 J**	<0.018 U	<0.031 U	<0.015 U	<0.013 U
Aroclor 1260	µg/g	**0.36**	**0.16 J**	**3.5**	**4.1**	**0.29 J**
Total PCBs		**0.5**	**0.19 J**	**4.1**	**4.1**	**0.35**

Sample ID		**UNT-A3-SED-FP12**	**UNT-A3-SED-FP13**	**UNT-A3-SED-FP14**	**UNT-A3-SED-FP15**	**UNT-A3-SED-BD9 (FP15)**
Sample Date		**12/12/16**	**12/12/16**	**12/12/16**	**12/14/16**	**12/14/16**
Depth interval (inches)		**0-6**	**0-6**	**0-6**	**0-6**	**0-6**
Parameter ID	**Unit**					
% solids	%	73.4	76.2	66.3	78.3	75.8
PCBs						
Aroclor 1016	µg/g	<0.020 U	<0.019 U	<0.022 U	<0.019 U	<0.019 U
Aroclor 1221	µg/g	<0.018 U	<0.017 U	<0.020 U	<0.017 U	<0.017 U
Aroclor 1232	µg/g	<0.022 U	<0.021 U	<0.024 U	<0.020 U	<0.021 U
Aroclor 1242	µg/g	<0.014 U	<0.013 U	<0.015 U	<0.013 U	<0.013 U
Aroclor 1248	µg/g	**0.024 J**	**0.11 J**	**0.014 J**	**0.033 J**	**0.039 J**
Aroclor 1254	µg/g	<0.012 U	<0.012 U	<0.013 U	<0.011 U	<0.012 U
Aroclor 1260	µg/g	**0.59**	**0.41**	**0.11 J**	**0.41**	**0.15 J**
Total PCBs		**0.61**	**0.52**	**0.13 J**	**0.45**	**0.19 J**

Table 3-2
Summary of December 2016 Sediment Sampling Results

Sample ID		UNT-A3-SED-FP16	UNT-A3-SED-FP16
Sample Date		12/14/16	12/14/16
Depth interval (inches)		0-6	6-12
Parameter ID	Unit		
% solids	%	63.7	63.8
PCBs			
Aroclor 1016	µg/g	<0.092 U	<0.023 U
Aroclor 1221	µg/g	<0.082 U	<0.020 U
Aroclor 1232	µg/g	<0.10 U	<0.025 U
Aroclor 1242	µg/g	<0.063 U	<0.016 U
Aroclor 1248	µg/g	**0.22 J**	<0.013 U
Aroclor 1254	µg/g	<0.056 U	<0.014 U
Aroclor 1260	µg/g	**3.6**	**3.7**
Total PCBs		**3.9**	**3.7**

Key:
(E) = Sample collected on the east side of UNT
(W) = Sample collected on the west side of UNT
U = Result not detected above reporting limit
J = Laboratory qualifier, estimated value (analyte is below the quantitation limit but above the method detection limit)
AE= Aroclor 1248 concentration flagged to denote that an altered Aroclor pattern was observed.
AG = Aroclor 1260 concentration flagged to denote that an altered Aroclor pattern was observed.
PB = Aroclor 1221 is being used to quantify an altered Aroclor pattern; Aroclor 1221 is not preseumed to be present.
Bold font indicates PCB detection
Blue highlight indicates total PCB concentration greater than cleanup goal of 1 part per million (ppm)
Laboratory reported units (micrograms per kilogram, or ug/kg), have been converted to microgram per gram (ug/g), which is equivalent to milligrams per kilogram (mg/kg) and parts per million (ppm)

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Table 3-3
Summary of October - November 2017 Sediment Sampling Results

Sample ID		UNT-A3-SED-T54-E-1	UNT-A3-SED-T54-E-1	UNT-A3-SED-T54-E-1	UNT-A3-SED-T54-E-2	UNT-A3-SED-T54-E-2
Sample Date		10/20/17	10/20/17	10/19/17	10/20/17	10/20/17
Depth interval (inches)		0-6	6-12	12-18	0-6	6-12
Parameter ID	Unit					
% solids	%	84.8	59.3	58	71.9	67.6
PCBs						
Aroclor 1016	µg/g	<0.0387 U	0.107 U	<0.0568 U	<0.0446 U	<0.491 U
Aroclor 1221	µg/g	<0.0387 U	0.107 U	<0.0568 U	<0.0446 U	<0.491 U
Aroclor 1232	µg/g	<0.0387 U	0.107 U	<0.0568 U	<0.0446 U	<0.491 U
Aroclor 1242	µg/g	<0.0387 U	0.107 U	<0.0568 U	<0.0446 U	<0.491 U
Aroclor 1248	µg/g	<0.0387 U	0.107 U	<0.0568 U	<0.0446 U	<0.491 U
Aroclor 1254	µg/g	<0.0387 U	0.107 U	<0.0568 U	<0.0446 U	<0.491 U
Aroclor 1260	µg/g	<0.0387 U	**1.02**	<0.0568 U	<0.0446 U	**7.32**
Aroclor 1262	µg/g	**0.00639 J**	0.107 U	<0.0568 U	**0.0391 J**	<0.491 U
Aroclor 1268	µg/g	<0.0387 U	0.107 U	<0.0568 U	<0.0446 U	<0.491 U
Total PCBs		**0.00639 J**	**1.02**	<0.0568 U	**0.0391 J**	**7.32**

Sample ID		UNT-A3-SED-T54-E-2	UNT-A3-SED-T54-E-2-B	UNT-A3-SED-T54-E-2-B	UNT-A3-SED-T54-E-3	UNT-A3-SED-T54-E-3
Sample Date		10/19/17	11/6/17	11/6/17	11/6/17	11/6/17
Depth interval (inches)		12-18	0-6	6-12	0-6	6-12
Parameter ID	Unit					
% solids	%	78.2	70.9	84.1	71.5	77.1
PCBs						
Aroclor 1016	µg/g	<0.0407 U	<0.0442 U	<0.0388 U	<0.0459 U	<0.0415 U
Aroclor 1221	µg/g	<0.0407 U	<0.0442 U	<0.0388 U	<0.0459 U	<0.0415 U
Aroclor 1232	µg/g	<0.0407 U	<0.0442 U	<0.0388 U	<0.0459 U	<0.0415 U
Aroclor 1242	µg/g	<0.0407 U	<0.0442 U	<0.0388 U	<0.0459 U	<0.0415 U
Aroclor 1248	µg/g	<0.0407 U	<0.0442 U	<0.0388 U	<0.0459 U	<0.0415 U
Aroclor 1254	µg/g	<0.0407 U	<0.0442 U	<0.0388 U	<0.0459 U	<0.0415 U
Aroclor 1260	µg/g	<0.0407 U	<0.0442 U	<0.0388 U	<0.0459 U	<0.0415 U
Aroclor 1262	µg/g	<0.0407 U	**0.0278 J**	**0.0134 J**	<0.0459 U	<0.0415 U
Aroclor 1268	µg/g	<0.0407 U	<0.0442 U	<0.0388 U	<0.0459 U	<0.0415 U
Total PCBs		<0.0407 U	**0.0278 J**	**0.0134 J**	<0.0459 U	<0.0415 U

Sample ID		DUP UNT-A3-SED-T54-E-3	UNT-A3-SED-T54-W-1	UNT-A3-SED-T54-W-1	UNT-A3-SED-T54-W-2	UNT-A3-SED-T54-W-2
Sample Date		11/6/17	10/20/17	10/20/17	10/20/17	10/20/17
Depth interval (inches)		6-12	0-6	6-12	0-6	6-12
Parameter ID	Unit					
% solids	%	78.3	76.8	81.4	73.5	80.9
PCBs						
Aroclor 1016	µg/g	<0.0411 U	<0.042 U	<0.0392 U	<0.0434 U	<0.0399 U
Aroclor 1221	µg/g	<0.0411 U	<0.042 U	<0.0392 U	<0.0434 U	<0.0399 U
Aroclor 1232	µg/g	<0.0411 U	<0.042 U	<0.0392 U	<0.0434 U	<0.0399 U
Aroclor 1242	µg/g	<0.0411 U	<0.042 U	<0.0392 U	<0.0434 U	<0.0399 U
Aroclor 1248	µg/g	<0.0411 U	<0.042 U	<0.0392 U	<0.0434 U	<0.0399 U
Aroclor 1254	µg/g	<0.0411 U	<0.042 U	<0.0392 U	<0.0434 U	<0.0399 U
Aroclor 1260	µg/g	<0.0411 U	<0.042 U	<0.0392 U	**0.0243 J**	<0.0399 U
Aroclor 1262	µg/g	<0.0411 U	**0.0152 J**	<0.0392 U	<0.0434 U	<0.0399 U
Aroclor 1268	µg/g	<0.0411 U	<0.042 U	<0.0392 U	<0.0434 U	<0.0399 U
Total PCBs		<0.0411 U	**0.0152 J**	<0.0392 U	**0.0243 J**	<0.0399 U

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Table 3-3
Summary of October - November 2017 Sediment Sampling Results

Sample ID		UNT-A3-SED-T56-W-1	UNT-A3-SED-T56-W-1	UNT-A3-SED-T56-W-2	UNT-A3-SED-T56-W-2	UNT-A3-SED-T56.5-E-1
Sample Date		10/20/17	10/20/17	10/20/17	10/20/17	10/18/17
Depth interval (inches)		0-6	6-12	0-6	6-12	0-6
Parameter ID	Unit					
% solids	%	58.7	63.9	73.3	72.8	74.2
PCBs						
Aroclor 1016	µg/g	<0.0545 U	<0.0512 U	<0.0437 U	<0.0446 U	<0.0431 U
Aroclor 1221	µg/g	<0.0545 U	<0.0512 U	<0.0437 U	<0.0446 U	<0.0431 U
Aroclor 1232	µg/g	<0.0545 U	<0.0512 U	<0.0437 U	<0.0446 U	<0.0431 U
Aroclor 1242	µg/g	<0.0545 U	<0.0512 U	<0.0437 U	<0.0446 U	<0.0431 U
Aroclor 1248	µg/g	<0.0545 U	<0.0512 U	<0.0437 U	<0.0446 U	<0.0431 U
Aroclor 1254	µg/g	<0.0545 U	<0.0512 U	<0.0437 U	<0.0446 U	<0.0431 U
Aroclor 1260	µg/g	**0.332**	**0.431**	<0.0437 U	<0.0446 U	**0.182**
Aroclor 1262	µg/g	<0.0545 U	<0.0512 U	**0.406**	**0.137**	<0.0431 U
Aroclor 1268	µg/g	<0.0545 U	<0.0512 U	<0.0437 U	<0.0446 U	<0.0431 U
Total PCBs		**0.332**	**0.431**	**0.406**	**0.137**	**0.182**

Sample ID		UNT-A3-SED-T56.5-E-1	UNT-A3-SED-T57-E-1	DUP UNT-A3-SED-T57-E-1	UNT-A3-SED-T57-E-1	UNT-A3-SED-T57-E-2
Sample Date		10/18/17	10/18/17	10/18/17	10/18/17	10/18/17
Depth interval (inches)		6-12	0-6	0-6	6-12	0-6
Parameter ID	Unit					
% solids	%	71.6	62.6	57.8	66.8	59.1
PCBs						
Aroclor 1016	µg/g	<0.0452 U	<0.0521 U	0.545 U	<0.0484 U	<0.0549 U
Aroclor 1221	µg/g	<0.0452 U	<0.0521 U	0.545 U	<0.0484 U	<0.0549 U
Aroclor 1232	µg/g	<0.0452 U	<0.0521 U	0.545 U	<0.0484 U	<0.0549 U
Aroclor 1242	µg/g	<0.0452 U	<0.0521 U	0.545 U	<0.0484 U	<0.0549 U
Aroclor 1248	µg/g	<0.0452 U	<0.0521 U	0.545 U	<0.0484 U	<0.0549 U
Aroclor 1254	µg/g	<0.0452 U	<0.0521 U	0.545 U	<0.0484 U	<0.0549 U
Aroclor 1260	µg/g	**0.501**	**0.107**	**3.39**	**0.574**	<0.0549 U
Aroclor 1262	µg/g	<0.0452 U	<0.0521 U	0.545 U	<0.0484 U	<0.0549 U
Aroclor 1268	µg/g	<0.0452 U	<0.0521 U	0.545 U	<0.0484 U	**0.0881**
Total PCBs		**0.501**	**0.107**	**3.39**	**0.574**	**0.0881**

Sample ID		UNT-A3-SED-T57-E-2	UNT-A3-SED-T58-W-1	UNT-A3-SED-T58 W-1	UNT-A3-SED-T58-W-2	UNT-A3-SED-T58-W-2
Sample Date		10/18/17	10/19/17	10/19/17	10/19/17	10/19/17
Depth interval (inches)		6-12	0-6	6-12	0-6	6-12
Parameter ID	Unit					
% solids	%	83.1	63.4	63.7	71.5	82.1
PCBs						
Aroclor 1016	µg/g	<0.0388 U	<0.0496 U	<0.0502 U	<0.0465 U	<0.0393 U
Aroclor 1221	µg/g	<0.0388 U	<0.0496 U	<0.0502 U	<0.0465 U	<0.0393 U
Aroclor 1232	µg/g	<0.0388 U	<0.0496 U	<0.0502 U	<0.0465 U	<0.0393 U
Aroclor 1242	µg/g	<0.0388 U	<0.0496 U	<0.0502 U	<0.0465 U	<0.0393 U
Aroclor 1248	µg/g	<0.0388 U	<0.0496 U	<0.0502 U	<0.0465 U	<0.0393 U
Aroclor 1254	µg/g	<0.0388 U	<0.0496 U	<0.0502 U	<0.0465 U	<0.0393 U
Aroclor 1260	µg/g	<0.0388 U	**0.517**	**0.147**	<0.0465 U	<0.0393 U
Aroclor 1262	µg/g	<0.0388 U	<0.0496 U	<0.0502 U	<0.0465 U	<0.0393 U
Aroclor 1268	µg/g	**0.0115 J**	<0.0496 U	<0.0502 U	**0.142**	**0.0253 J**
Total PCBs		**0.0115 J**	**0.517**	**0.147**	**0.142**	**0.0253 J**

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Table 3-3
Summary of October - November 2017 Sediment Sampling Results

Sample ID		UNT-A3-SED-T58.5 E-1	UNT-A3-SED-T58.5 E-1	UNT-A3-SED-58.5-E-2	UNT-A3-SED-58.5-E-2	UNT-A3-SED-T58.5-W-1
Sample Date		**10/18/17**	**10/18/17**	**10/18/17**	**10/18/17**	**10/18/17**
Depth interval (inches)		**0-6**	**6-12**	**0-6**	**6-12**	**0-6**
Parameter ID	**Unit**					
% solids	%	68.3	56.8	58.6	77.7	67.4
PCBs						
Aroclor 1016	µg/g	<0.0481 U	<0.0581 U	<0.0541 U	<0.0422 U	<0.0487 U
Aroclor 1221	µg/g	<0.0481 U	<0.0581 U	<0.0541 U	<0.0422 U	<0.0487 U
Aroclor 1232	µg/g	<0.0481 U	<0.0581 U	<0.0541 U	<0.0422 U	<0.0487 U
Aroclor 1242	µg/g	<0.0481 U	<0.0581 U	<0.0541 U	<0.0422 U	<0.0487 U
Aroclor 1248	µg/g	<0.0481 U	<0.0581 U	<0.0541 U	<0.0422 U	<0.0487 U
Aroclor 1254	µg/g	<0.0481 U	<0.0581 U	<0.0541 U	<0.0422 U	<0.0487 U
Aroclor 1260	µg/g	**0.183**	**0.217**	**0.0747**	**0.013 J**	**0.277**
Aroclor 1262	µg/g	<0.0481 U	<0.0581 U	<0.0541 U	<0.0422 U	<0.0487 U
Aroclor 1268	µg/g	<0.0481 U	<0.0581 U	<0.0541 U	**0.00994 J**	<0.0487 U
Total PCBs		**0.183**	**0.217**	**0.0747**	**0.02294 J**	**0.277**

Sample ID		UNT-A3-SED-T58.5-W-1	UNT-A3-SED-T58.5-W-1	UNT-A3-SED-T58.5-W-2	UNT-A3-SED-T58.5-W-2	UNT-A3-SED-T60-E-1
Sample Date		**10/18/17**	**10/18/17**	**10/18/17**	**10/18/17**	**10/19/17**
Depth interval (inches)		**6-12**	**12-18**	**0-6**	**6-12**	**0-6**
Parameter ID	**Unit**					
% solids	%	68.7	58.8	63	67.2	62.1
PCBs						
Aroclor 1016	µg/g	<0.0687 U	<0.0564 U	<0.0509 U	<0.0478 U	<0.0523 U
Aroclor 1221	µg/g	<0.0687 U	<0.0564 U	<0.0509 U	<0.0478 U	<0.0523 U
Aroclor 1232	µg/g	<0.0687 U	<0.0564 U	<0.0509 U	<0.0478 U	<0.0523 U
Aroclor 1242	µg/g	<0.0687 U	<0.0564 U	<0.0509 U	<0.0478 U	<0.0523 U
Aroclor 1248	µg/g	<0.0687 U	<0.0564 U	<0.0509 U	<0.0478 U	<0.0523 U
Aroclor 1254	µg/g	<0.0687 U	<0.0564 U	<0.0509 U	<0.0478 U	<0.0523 U
Aroclor 1260	µg/g	**1.05**	**0.165**	**0.00575 J**	<0.0478 U	**0.909**
Aroclor 1262	µg/g	<0.0687 U	<0.0564 U	<0.0509 U	<0.0478 U	<0.0523 U
Aroclor 1268	µg/g	<0.0687 U	<0.0564 U	<0.0509 U	<0.0478 U	<0.0523 U
Total PCBs		**1.05**	**0.165**	**0.00575 J**	<0.0478 U	**0.909**

Sample ID		UNT-A3-SED-T60-E-1	UNT-A3-SED-T60-E-1	UNT-A3-SED-T60-E-2	UNT-A3-SED-T60-E-2	UNT-A3-SED-T60-E-3
Sample Date		**10/19/17**	**10/19/17**	**10/19/17**	**10/19/17**	**11/6/17**
Depth interval (inches)		**6-12**	**12-18**	**0-6**	**6-12**	**0-6**
Parameter ID	**Unit**					
% solids	%	69.3	72.3	64.6	63.8	56.8
PCBs						
Aroclor 1016	µg/g	<0.093 U	<0.0447 U	<0.0506 U	<0.0508 U	<0.0582 U
Aroclor 1221	µg/g	<0.093 U	<0.0447 U	<0.0506 U	<0.0508 U	<0.0582 U
Aroclor 1232	µg/g	<0.093 U	<0.0447 U	<0.0506 U	<0.0508 U	<0.0582 U
Aroclor 1242	µg/g	<0.093 U	<0.0447 U	<0.0506 U	<0.0508 U	<0.0582 U
Aroclor 1248	µg/g	<0.093 U	<0.0447 U	<0.0506 U	<0.0508 U	<0.0582 U
Aroclor 1254	µg/g	<0.093 U	<0.0447 U	<0.0506 U	<0.0508 U	<0.0582 U
Aroclor 1260	µg/g	**1.01**	**0.258**	<0.0506 U	**0.877**	<0.0582 U
Aroclor 1262	µg/g	<0.093 U	<0.0447 U	**0.101**	<0.0508 U	**0.09**
Aroclor 1268	µg/g	<0.093 U	<0.0447 U	<0.0506 U	<0.0508 U	<0.0582 U
Total PCBs		**1.01**	**0.258**	**0.101**	**0.877**	**0.09**

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Table 3-3
Summary of October - November 2017 Sediment Sampling Results

Sample ID		UNT-A3-SED-T60-E-3	DUP UNT-A3-SED-T60-E-3	UNT-A3-SED-T60-E-4	UNT-A3-SED-T60-E-4	UNT-A3-SED-T60.5-E-1
Sample Date		**11/6/17**	**11/6/17**	**11/6/17**	**11/6/17**	**10/18/17**
Depth interval (inches)		**6-12**	**6-12**	**0-6**	**6-12**	**0-6**
Parameter ID	**Unit**					
% solids	%	69.3	66.8	69.6	77.2	62.2
PCBs						
Aroclor 1016	µg/g	<0.0465 U	<0.0484 U	<0.0455 U	<0.043 U	<0.0515 U
Aroclor 1221	µg/g	<0.0465 U	<0.0484 U	<0.0455 U	<0.043 U	<0.0515 U
Aroclor 1232	µg/g	<0.0465 U	<0.0484 U	<0.0455 U	<0.043 U	<0.0515 U
Aroclor 1242	µg/g	<0.0465 U	<0.0484 U	<0.0455 U	<0.043 U	<0.0515 U
Aroclor 1248	µg/g	<0.0465 U	<0.0484 U	<0.0455 U	<0.043 U	<0.0515 U
Aroclor 1254	µg/g	<0.0465 U	<0.0484 U	<0.0455 U	<0.043 U	<0.0515 U
Aroclor 1260	µg/g	**0.113**	**0.0587**	<0.0455 U	<0.043 U	**0.173**
Aroclor 1262	µg/g	<0.0465 U	<0.0484 U	**0.0278 J**	**0.0107 J**	<0.0515 U
Aroclor 1268	µg/g	<0.0465 U	<0.0484 U	<0.0455 U	<0.043 U	<0.0515 U
Total PCBs		**0.113**	**0.0587**	**0.0278 J**	**0.0107 J**	**0.173**

Sample ID		UNT-A3-SED-T60.5-E-1	UNT-A3-SED-T60.5-E-2	UNT-A3-SED-T60.5-E-2	UNT-A3-SED-T61.5 E-1	UNT-A3-SED-T61.5 E-1
Sample Date		**10/18/17**	**10/18/17**	**10/18/17**	**10/19/17**	**10/19/17**
Depth interval (inches)		**6-12**	**0-6**	**6-12**	**0-6**	**6-12**
Parameter ID	**Unit**					
% solids	%	60.5	70.1	71.5	64.6	58.9
PCBs						
Aroclor 1016	µg/g	<0.0537 U	<0.0462 U	<0.0443 U	<0.0506 U	<0.0554 U
Aroclor 1221	µg/g	<0.0537 U	<0.0462 U	<0.0443 U	<0.0506 U	<0.0554 U
Aroclor 1232	µg/g	<0.0537 U	<0.0462 U	<0.0443 U	<0.0506 U	<0.0554 U
Aroclor 1242	µg/g	<0.0537 U	<0.0462 U	<0.0443 U	<0.0506 U	<0.0554 U
Aroclor 1248	µg/g	<0.0537 U	<0.0462 U	<0.0443 U	<0.0506 U	<0.0554 U
Aroclor 1254	µg/g	<0.0537 U	<0.0462 U	<0.0443 U	<0.0506 U	<0.0554 U
Aroclor 1260	µg/g	**0.0152 J**	**0.360**	**0.531**	**0.0939**	<0.0554 U
Aroclor 1262	µg/g	<0.0537 U	<0.0462 U	<0.0443 U	<0.0506 U	<0.0554 U
Aroclor 1268	µg/g	<0.0537 U	<0.0462 U	<0.0443 U	<0.0506 U	<0.0554 U
Total PCBs		**0.0152 J**	**0.360**	**0.531**	**0.0939**	<0.0554 U

Sample ID		UNT-A3-SED-T61.5-W-1	DUP UNT-A3-SED-T61.5-W-1	UNT-A3-SED-T61.5-W-1	UNT-A3-SED-T61.5-W-2	UNT-A3-SED-T61.5-W-2
Sample Date		**10/18/17**	**10/18/17**	**10/18/17**	**10/18/17**	**10/18/17**
Depth interval (inches)		**0-6**	**0-6**	**6-12**	**0-6**	**6-12**
Parameter ID	**Unit**					
% solids	%	61.5	61.3	61.1	76.5	78.4
PCBs						
Aroclor 1016	µg/g	<0.0509 U	<0.053 U	<0.0526 U	<0.0424 U	<0.0412 U
Aroclor 1221	µg/g	<0.0509 U	<0.053 U	<0.0526 U	<0.0424 U	<0.0412 U
Aroclor 1232	µg/g	<0.0509 U	<0.053 U	<0.0526 U	<0.0424 U	<0.0412 U
Aroclor 1242	µg/g	<0.0509 U	<0.053 U	<0.0526 U	<0.0424 U	<0.0412 U
Aroclor 1248	µg/g	<0.0509 U	<0.053 U	<0.0526 U	<0.0424 U	<0.0412 U
Aroclor 1254	µg/g	<0.0509 U	<0.053 U	<0.0526 U	<0.0424 U	<0.0412 U
Aroclor 1260	µg/g	**0.296**	**0.336**	**0.523**	**0.0254 J**	**0.00661 J**
Aroclor 1262	µg/g	<0.0509 U	<0.053 U	<0.0526 U	<0.0424 U	<0.0412 U
Aroclor 1268	µg/g	<0.0509 U	<0.053 U	<0.0526 U	<0.0424 U	<0.0412 U
Total PCBs		**0.296**	**0.336**	**0.523**	**0.0254 J**	**0.00661 J**

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Table 3-3
Summary of October - November 2017 Sediment Sampling Results

Sample ID		UNT-A3-SED-T64.5-E-1	UNT-A3-SED-T64.5-E-1	UNT-A3-SED-T66.5-W-1	UNT-A3-SED-T66.5-W-1
Sample Date		10/18/17	10/18/17	10/19/17	10/19/17
Depth interval (inches)		0-6	6-12	0-6	6-12
Parameter ID	Unit				
% solids	%	72.5	69.9	75.3	76.6
PCBs					
Aroclor 1016	µg/g	<0.0438 U	<0.0458 U	<0.0437 U	<0.043 U
Aroclor 1221	µg/g	<0.0438 U	<0.0458 U	<0.0437 U	<0.043 U
Aroclor 1232	µg/g	<0.0438 U	<0.0458 U	<0.0437 U	<0.043 U
Aroclor 1242	µg/g	<0.0438 U	**0.136**	<0.0437 U	<0.043 U
Aroclor 1248	µg/g	<0.0438 U	<0.0458 U	<0.0437 U	<0.043 U
Aroclor 1254	µg/g	<0.0438 U	<0.0458 U	<0.0437 U	<0.043 U
Aroclor 1260	µg/g	**0.612**	**0.145**	**0.589**	**0.403**
Aroclor 1262	µg/g	<0.0438 U	<0.0458 U	<0.0437 U	<0.043 U
Aroclor 1268	µg/g	<0.0438 U	<0.0458 U	<0.0437 U	<0.043 U
Total PCBs		**0.612**	**0.281**	**0.589**	**0.403**

Sample ID		UNT-A3-SED-T67.5-E-1	UNT-A3-SED-T67.5-E-1	UNT-A3-SED-T67.5-E-2	UNT-A3-SED-T67.5-E-2	UNT-A3-SED-T67.5-W-1
Sample Date		10/19/17	10/19/17	10/19/17	10/19/17	10/19/17
Depth interval (inches)		0-6	6-12	0-6	6-12	0-6
Parameter ID	Unit					
% solids	%	71.2	72.8	71.8	75.9	66.1
PCBs						
Aroclor 1016	µg/g	<0.0466 U	<0.0434 U	<0.0445 U	<0.0425 U	0.246 U
Aroclor 1221	µg/g	<0.0466 U	<0.0434 U	<0.0445 U	<0.0425 U	0.246 U
Aroclor 1232	µg/g	<0.0466 U	<0.0434 U	<0.0445 U	<0.0425 U	0.246 U
Aroclor 1242	µg/g	<0.0466 U	<0.0434 U	<0.0445 U	<0.0425 U	0.246 U
Aroclor 1248	µg/g	<0.0466 U	<0.0434 U	<0.0445 U	<0.0425 U	0.246 U
Aroclor 1254	µg/g	<0.0466 U	<0.0434 U	<0.0445 U	<0.0425 U	0.246 U
Aroclor 1260	µg/g	**0.412**	**0.711**	**0.166**	**0.0163 J**	**2.44**
Aroclor 1262	µg/g	<0.0466 U	<0.0434 U	<0.0445 U	<0.0425 U	0.246 U
Aroclor 1268	µg/g	<0.0466 U	<0.0434 U	<0.0445 U	<0.0425 U	0.246 U
Total PCBs		**0.412**	**0.711**	**0.166**	**0.0163 J**	**2.44**

Table 3-3
Summary of October - November 2017 Sediment Sampling Results

Sample ID		UNT-A3-SED-T67.5-W-1	UNT-A3-SED-T67.5-W-2	UNT-A3-SED-T67.5-W-2	UNT-A3-SED-T69-E-1	UNT-A3-SED-T69-E-1
Sample Date		**10/19/17**	**10/19/17**	**10/19/17**	**10/19/17**	**10/19/17**
Depth interval (inches)		**6-12**	**0-6**	**6-12**	**0-6**	**6-12**
Parameter ID	**Unit**					
% solids	%	63.5	62.2	64.3	74.8	81.2
PCBs						
Aroclor 1016	µg/g	<0.0504 U	<0.0527 U	<0.0516 U	0.889 U	<0.0388 U
Aroclor 1221	µg/g	<0.0504 U	<0.0527 U	<0.0516 U	0.889 U	<0.0388 U
Aroclor 1232	µg/g	<0.0504 U	<0.0527 U	<0.0516 U	0.889 U	<0.0388 U
Aroclor 1242	µg/g	<0.0504 U	<0.0527 U	<0.0516 U	0.889 U	<0.0388 U
Aroclor 1248	µg/g	<0.0504 U	<0.0527 U	<0.0516 U	0.889 U	<0.0388 U
Aroclor 1254	µg/g	<0.0504 U	<0.0527 U	<0.0516 U	0.889 U	<0.0388 U
Aroclor 1260	µg/g	**0.0191 J**	**0.0169 J**	<0.0516 U	**4.0**	**0.193**
Aroclor 1262	µg/g	<0.0504 U	<0.0527 U	<0.0516 U	0.889 U	<0.0388 U
Aroclor 1268	µg/g	<0.0504 U	<0.0527 U	<0.0516 U	0.889 U	<0.0388 U
Total PCBs		**0.0191 J**	**0.0169 J**	<0.0516 U	**4.0**	**0.193**

Sample ID		UNT-A3-SED-T69-E-2	UNT-A3-SED-T69-E-2	UNT-A3-SED-T69-W-1	UNT-A3-SED-T69-W-1	UNT-A3-SED-T69-W-1
Sample Date		**10/19/17**	**10/19/17**	**10/19/17**	**10/19/17**	**10/19/17**
Depth interval (inches)		**0-6**	**6-12**	**0-6**	**6-12**	**12-18**
Parameter ID	**Unit**					
% solids	%	70.6	82.5	74.2	77.8	74.4
PCBs						
Aroclor 1016	µg/g	<0.0458 U	<0.0381 U	0.872 U	0.212 U	<0.043 U
Aroclor 1221	µg/g	<0.0458 U	<0.0381 U	0.872 U	0.212 U	<0.043 U
Aroclor 1232	µg/g	<0.0458 U	<0.0381 U	0.872 U	0.212 U	<0.043 U
Aroclor 1242	µg/g	<0.0458 U	<0.0381 U	0.872 U	0.212 U	<0.043 U
Aroclor 1248	µg/g	<0.0458 U	<0.0381 U	0.872 U	0.212 U	<0.043 U
Aroclor 1254	µg/g	<0.0458 U	<0.0381 U	0.872 U	0.212 U	<0.043 U
Aroclor 1260	µg/g	**0.518**	**0.0178 J**	**16.3**	**1.28**	**0.0662**
Aroclor 1262	µg/g	<0.0458 U	<0.0381 U	0.872 U	0.212 U	<0.043 U
Aroclor 1268	µg/g	<0.0458 U	<0.0381 U	0.872 U	0.212 U	<0.043 U
Total PCBs		**0.518**	**0.0178 J**	**16.3**	**1.28**	**0.0662**

CDM Smith

Table 3-3
Summary of October - November 2017 Sediment Sampling Results

Sample ID		UNT-A3-SED-T69-W-2	UNT-A3-SED-T69-W-2	UNT-A3-SED-T71.5-E-1	UNT-A3-SED-T71.5-E-1	UNT-A3-SED-T71.5-W-1
Sample Date		**10/19/17**	**10/19/17**	**10/19/17**	**10/19/17**	**10/19/17**
Depth interval (inches)		**0-6**	**6-12**	**0-6**	**6-12**	**0-6**
Parameter ID	**Unit**					
% solids	%	71.9	84.4	73.4	72.8	46.1
PCBs						
Aroclor 1016	µg/g	<0.0443 U	<0.0373 U	0.224 U	0.226 U	0.35 U
Aroclor 1221	µg/g	<0.0443 U	<0.0373 U	0.224 U	0.226 U	0.35 U
Aroclor 1232	µg/g	<0.0443 U	<0.0373 U	0.224 U	0.226 U	0.35 U
Aroclor 1242	µg/g	<0.0443 U	<0.0373 U	0.224 U	0.226 U	0.35 U
Aroclor 1248	µg/g	<0.0443 U	<0.0373 U	0.224 U	0.226 U	0.35 U
Aroclor 1254	µg/g	<0.0443 U	<0.0373 U	0.224 U	0.226 U	0.35 U
Aroclor 1260	µg/g	**0.489**	**0.0315 J**	**0.868**	**0.855**	**2.77**
Aroclor 1262	µg/g	<0.0443 U	<0.0373 U	0.224 U	0.226 U	0.35 U
Aroclor 1268	µg/g	<0.0443 U	<0.0373 U	0.224 U	0.226 U	0.35 U
Total PCBs		**0.489**	**0.0315 J**	**0.868**	**0.855**	**2.77**

Sample ID		DUP UNT-A3-SED-T71.5-W-1	UNT-A3-SED-T71.5-W-1	UNT-A3-SED-T71.5 W-2	UNT-A3-SED-T71.5 W-2
Sample Date		**10/19/17**	**10/19/17**	**10/19/17**	**10/19/17**
Depth interval (inches)			**6-12**	**0-6**	**6-12**
Parameter ID	**Unit**				
% solids	%	53.4	66.3	65.6	75.3
PCBs					
Aroclor 1016	µg/g	0.301 U	<0.0493 U	<0.0504 U	<0.0433 U
Aroclor 1221	µg/g	0.301 U	<0.0493 U	<0.0504 U	<0.0433 U
Aroclor 1232	µg/g	0.301 U	<0.0493 U	<0.0504 U	<0.0433 U
Aroclor 1242	µg/g	0.301 U	<0.0493 U	<0.0504 U	<0.0433 U
Aroclor 1248	µg/g	0.301 U	<0.0493 U	<0.0504 U	<0.0433 U
Aroclor 1254	µg/g	0.301 U	<0.0493 U	<0.0504 U	<0.0433 U
Aroclor 1260	µg/g	**3.11**	**0.138**	**0.0164 J**	<0.0433 U
Aroclor 1262	µg/g	0.301 U	<0.0493 U	<0.0504 U	<0.0433 U
Aroclor 1268	µg/g	0.301 U	<0.0493 U	<0.0504 U	<0.0433 U
Total PCBs		**3.11**	**0.138**	**0.0164 J**	<0.0433 U

Key:
(E) = Sample collected on the east side of UNT
(W) = Sample collected on the west side of UNT
U = Result not detected above reporting limit
J = Laboratory qualifier, estimated value (analyte is below the quantitation limit but above the method detection limit)
AE= Aroclor 1248 concentration flagged to denote that an altered Aroclor pattern was observed.
AG = Aroclor 1260 concentration flagged to denote that an altered Aroclor pattern was observed.
PB = Aroclor 1221 is being used to quantify an altered Aroclor pattern; Aroclor 1221 is not preseumed to be present.
Bold font indicates PCB detection
Blue highlight indicates total PCB concentration greater than cleanup goal of 1 part per million (ppm)
Laboratory reported units (micrograms per kilogram, or ug/kg), have been converted to microgram per gram (ug/g), which is equivalent to milligrams per kilogram (mg/kg) and parts per million (ppm)

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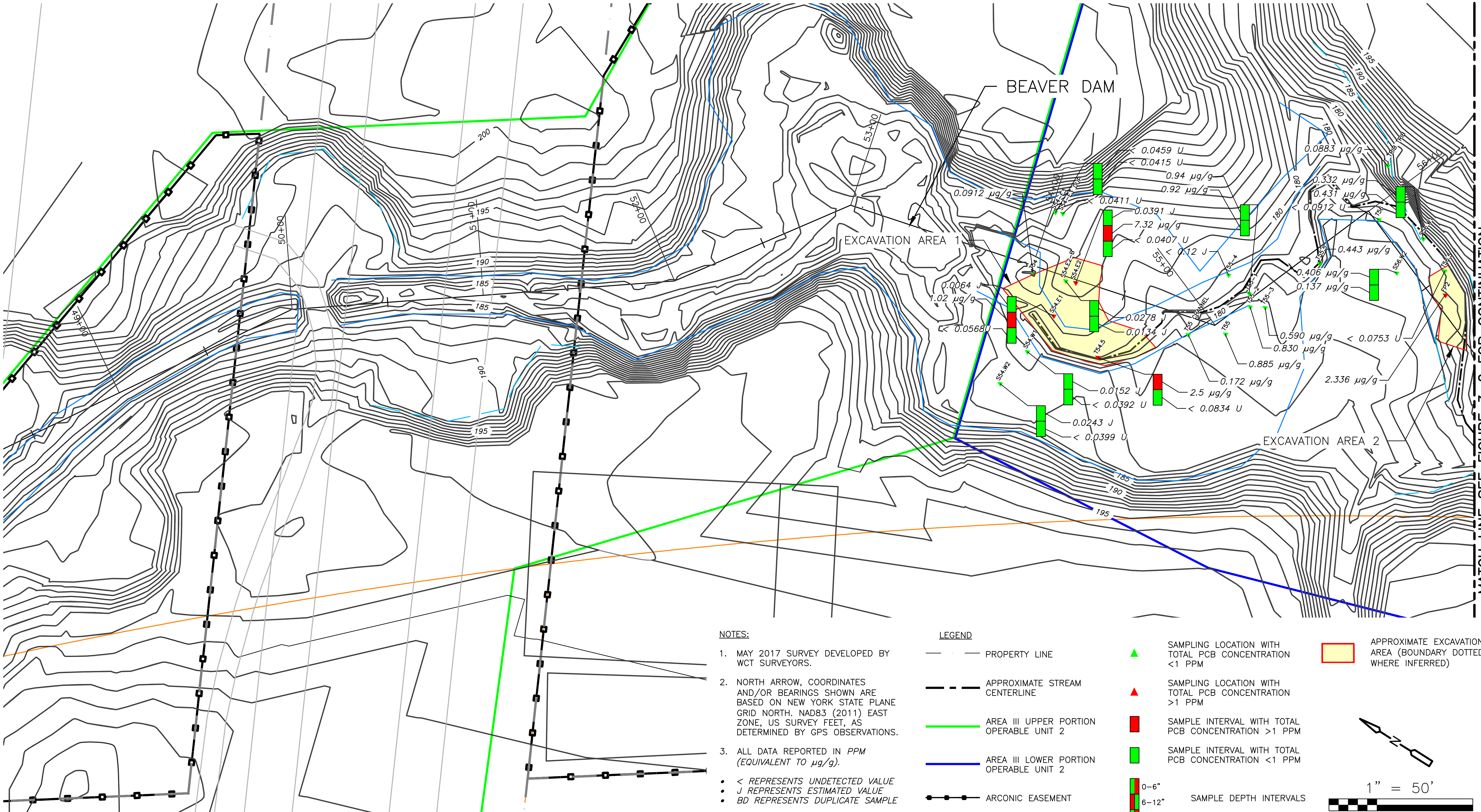

NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.
3. ALL DATA REPORTED IN *PPM* (*EQUIVALENT TO μg/g*).
   - *< REPRESENTS UNDETECTED VALUE*
   - *J REPRESENTS ESTIMATED VALUE*
   - *BD REPRESENTS DUPLICATE SAMPLE*
4. SAMPLE VALUES WITHOUT DEPTH INTERVALS WERE TAKEN FROM 0–6"

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION <1 PPM
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION >1 PPM
- SAMPLE INTERVAL WITH TOTAL PCB CONCENTRATION >1 PPM
- SAMPLE INTERVAL WITH TOTAL PCB CONCENTRATION <1 PPM
- SAMPLE DEPTH INTERVALS: 0–6", 6–12", 12–18"
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)

N

1" = 50'

25 0 50

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UNNAMED TRIBUTARY (UNT) AREA III

PCB CONCENTRATIONS - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 53□50 TO 5□□90

FIGURE 3-1

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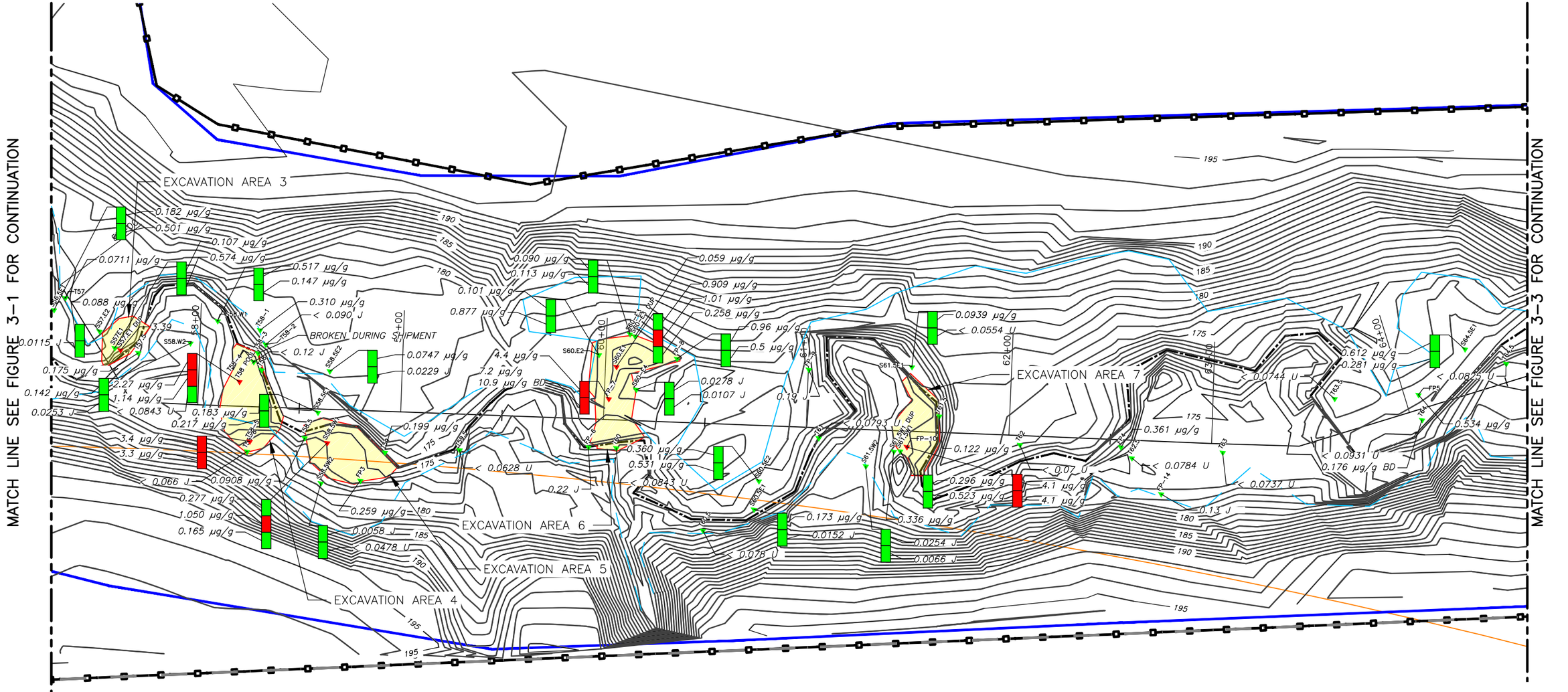
pw:\\pw.cdmsmit□.com:PW_PL1\1902\217949\04 Design Services NM_30□\02 Civil\UNT Area III Operable Unit 1\Figure 3-1, 3-2, 3-3.dwg



NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.
3. ALL DATA REPORTED IN *PPM (EQUIVALENT TO µg/g).*
   - *< REPRESENTS UNDETECTED VALUE*
   - *J REPRESENTS ESTIMATED VALUE*
   - *BD REPRESENTS DUPLICATE SAMPLE*
4. SAMPLE VALUES WITHOUT DEPTH INTERVALS WERE TAKEN FROM 0–6"

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION <1 PPM
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION >1 PPM
- SAMPLE INTERVAL WITH TOTAL PCB CONCENTRATION >1 PPM
- SAMPLE INTERVAL WITH TOTAL PCB CONCENTRATION <1 PPM
- SAMPLE DEPTH INTERVALS: 0–6", 6–12", 12–18"
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)

N

1" = 50'
25 0 50

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UNNAMED TRIBUTARY (UNT) AREA III
PCB CONCENTRATIONS - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 5□□90 TO □4□90
FIGURE 3-2

MATCH LINE SEE FIGURE 3-2 FOR CONTINUATION

EXCAVATION AREA 8

EXCAVATION AREA 9

NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.
3. ALL DATA REPORTED IN *PPM (EQUIVALENT TO µg/g).*
   - *< REPRESENTS UNDETECTED VALUE*
   - *J REPRESENTS ESTIMATED VALUE*
   - *BD REPRESENTS DUPLICATE SAMPLE*
4. SAMPLE VALUES WITHOUT DEPTH INTERVALS WERE TAKEN FROM 0–6"

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION <1 PPM
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION >1 PPM
- SAMPLE INTERVAL WITH TOTAL PCB CONCENTRATION >1 PPM
- SAMPLE INTERVAL WITH TOTAL PCB CONCENTRATION <1 PPM
- SAMPLE DEPTH INTERVALS: 0–6", 6–12", 12–18"
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- TREE

1" = 50'

25 0 50

CDM Smith

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UNNAMED TRIBUTARY (UNT) AREA III
PCB CONCENTRATIONS - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 4+90 TO 72+50
FIGURE 3-3

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pw:\\pw.cdmsmith.com:PW_PL1\1902\21794\04 Design Services NM_30\02 Civil\UNT Area III Operable Unit 1\Figure 3-1, 3-2, 3-3.dwg

December 2016

Fifty-five follow-up sediment samples were also analyzed for PCBs using USEPA Method 8082A. The majority of detections were for Aroclor 1260, however there were three samples that contained detections for Aroclor 1254. Additionally, there were several samples that had estimated detections for Aroclor 1248 or Aroclor 1254; these results were qualified with a "J" as they were detected above the method detection limit (MDL), but below the laboratory's Practical Quantitation Limit (PQL). Analytical results from the follow-up sampling are presented in Table 3-2 and these UNT Area III UPOU2 locations are shown on Figures 3-1, 3-2 and 3-3.

The PCB results were compared to the post-remedial soil cleanup goal of 1 ppm. All analytical results are presented in Table 3-2. The locations where the soil clean up goal was exceeded in UNT Area III LPOU2, are shown on Figures 3-1, 3-2 and 3-3**.** PCB concentrations in analyzed samples range from non-detect to 15.1 ppm. Twenty-one (21) of the 55 samples collected in UNT Area III LPOU2 between Sta. 54+50 to Sta. 71+50 had total PCB concentrations above 1.0 ppm. The highest total PCB concentration was 15.1 ppm at Sta. 71+00 (T71-5) at a depth interval of 6-12 inches.

October-November 2017

During October and November 2017, sediment samples were analyzed for PCBs using USEPA Method 8082A. Analytical results from the 2017 follow-up sampling are presented in Table 3-3 and the sample locations are shown on Figures 3-1, 3-2 and 3-3.

The PCB results were compared to the post-remedial soil cleanup goal of 1 ppm. All analytical results are presented in Table 3-3**.** The locations where the soil clean up goal was exceeded in UNT Area III LPOU2, are shown on Figures 3-1, 3-2 and 3-3**.** PCB concentrations in analyzed samples range from non-detect to 16.3 ppm. Eleven of the 88 locations sampled in the downstream portion of Area III between Sta. 53+50 to Sta. 72+00 had total PCB concentrations above 1.0 ppm. The highest total PCB concentration was 16.3 ppm at Sta. 69+00 (W-1) at a depth interval of 0-6 inches.

December 2017-January 2018

The December 2017 total cyanide samples collected were done so in order to document that cyanide is not a concern for water treatment during the upcoming remediation of UNT Area III LPOU2. **Table 3-4** presents the results of this total cyanide sampling. December 2017 sediment and surface water samples were non-detect, with concentrations below the laboratory method reporting limit. The sediment sample was < 0.005 mg/L and the surface water sample was < 1.6 mg/kg. As mentioned, the sediment sample exceeded laboratory hold time, requiring resampling at the same location on January 17, 2018. The sediment sample collected in January 2018 was non-detect, below the laboratory reporting limit of 2.0 mg/kg. These results indicate consistency between December 2017 and January 2018 results. Further, results indicate that the solid and aqueous samples collected from the depositional area with the highest concentrations of PCBs detected adequately document that cyanide is not a contaminate of concern.

Table 3-4
Summary of 2017-2018 Cyanide Results

UNT Water Sample		
Sample ID		**UNT-52.9 W1**
Sample Date		**12/7/17**
Parameter ID	**Unit**	
Total Cyanide	mg/L	**< 0.005U**

UNT Sediment Sample		
Sample ID		**UNT-52.9 W1 (0-6)**
Sample Date		**12/7/17**
Depth interval (inches)		**0-6**
Parameter ID	**Unit**	
% solids	%	59.8
Total Cyanide	mg/kg	< 1.6 U

UNT Sediment Sample		
Sample ID		**UNT-52.9 W1 (0-6)**
Sample Date		**1/17/18**
Depth interval (inches)		**0-6**
Parameter ID	**Unit**	
% solids	%	48.5
Total Cyanide	mg/kg	< 2.0 U

Notes:
(W) = Sample collected on the west side of UNT
U = Result not detected above reporting limit

3.3 Conceptual Site Model

This section details a Conceptual Site Model based on the understanding of key observations during sampling events, field assessment noting fluvial geomorphological processes, and an understanding of past operational activities that have influenced the UNT depositional environment:

- Discharge to the UNT occurred from the 1950s until the Primary Lagoon was operational in 1993. Subsequently, only occasional stormwater overflow discharged to the UNT until all stormwater discharge ceased in 1999 when the Plant Area III Impoundment was operational.
- Current Arconic Massena Operations Plant Area III storm water is collected and discharged to the Plant Area III Impoundment.
- Remediation of the 60-inch RCP and Areas I & II was completed in 1998 removing upstream sources of PCBs to Area III of the UNT.
- There were no detections of PCBs in the three Area II samples collected in 2016.
- An area of relatively continuous PCB concentrations greater than 1 ppm are present in the general area from Sta. 46+00 to a beaver dam at Sta. 53+50. This area has been designated as Area III UPOU2. The RAWP for this upper portion of the UNT Area III was approved by NYSDEC on August 14, 2017.
- Review of historical aerial photographs from 1997, 2005 and 2015 indicate the beaver dam and resulting upstream pond have been present for over 20 years and the UNT stream channel downstream of the beaver dam appears to have been stable.
- The highest concentrations of PCBs in Area III (38.3 ppm at ~ Sta. 52+80) were identified in samples collected from the upstream entrance to the pond above the beaver dam (Sta. 53.50). This indicates that the beaver dam has functioned to limit PCB transport to and deposition in the lower portion of the UNT.
- Below the beaver dam, PCBs greater than 1 ppm were detected in sporadic, isolated low-lying depositional areas between Sta. 54+50 and Sta. 61+50, a reach where the channel meanders.
- Between approximately Sta. 61.50+00 to Sta. 67+50, total PCB concentrations ranged from non-detect to less than 1 ppm.
- Total PCB concentrations greater than 1 ppm were consistently observed from Sta. 69+00 to Station 72+00 (Route 42 culvert).
- There were no detections greater than 1 ppm in samples from the underlying clay.

In the reach below the beaver dam to Sta. 61.50, the distribution of PCBs is sporadic and concentrations of greater than 1 ppm appear to be limited to low-lying overbank and flood plain deposits. In addition, depositional areas and PCBs greater that 1 ppm were typically observed in

the downstream point bar deposits as would be expected from fluvial and geomorphological processes. Sampling locations at higher elevations (~2 feet) above the active stream channel have documented the absence of PCBs greater than 1 ppm. In the reach between Sta. 61+50 and Sta. 67+50, the UNT channel is more incised and no concentrations greater than 1 ppm were detected. This area also has a slightly steeper gradient which likely limited deposition. The reach between Sta. 69+00 and the culvert at Sta. 72.00 has a flatter gradient, a straighter channel and appears more depositional. This observation is supported by relatively consistent concentrations of PCBs greater than 1 ppm.

Historic site information, current analytical data and geomorphological stream observations have all lead to the development of an overall remedial approach for the UNT Area III that fits with the site conceptual model. The remedial approach is for comprehensive removal from Sta. 46+00 to Sta. 53+50, targeted removals from approximately Sta. 54+00 to Sta. 61+50, no removals from Sta. 61+50 to Sta. 67+00 and an area of comprehensive removal from Sta. 68+00 to Sta. 72+00. The adequacy of removal will be documented with verification sampling.

Section 4
Selected Remedy

This section provides a description of the rationale and justification for the selected remedial approach.

4.1 Remediation Requirements

The UNT is subject to the conditions of the March 1991 ROD between Alcoa and NYSDEC.

Remediation requirements include those listed in the March 1991 ROD. Removal activities will be complete when verification sampling indicates remaining PCB concentrations in sediments are less than 1 ppm. In addition, the ROD stated that "the original grades of the tributary will be re-established using clean fill and riprap as needed, to control erosion". In discussions with NYSDEC's Division of Fish and Wildlife regarding remediation and restoration of the UNT, the use of riprap has been discouraged.

4.2 Removal Remedy Rationale

The removal remedy was selected based on the requirements of the ROD, limitations and implications of working on properties not owned by Arconic, previous experience with the remediation activities of Area I and II, and the requirements of NYSDEC. In addition, Institutional Controls (ICs) are generally not applicable components of a remedy for properties not under the direct ownership/control of the remedial party. Based on accessibility, the need to execute a remedy without further detriment to the surroundings, and the desire to achieve a permanent solution and ultimately eliminate the need for continued biological monitoring, excavation and removal of the impacted sediment was identified as the best choice.

Successful execution of similar activities in Area I and Area II of the UNT were significant considerations considered when determining the best approach for Area III. Consistency between the areas ensures a more stable environmental once all actions are completed, and the proximity to the disposal facility for the excavated soil (the Arconic Secured Landfill located approximately 2.5 miles away) contribute to the rationale for this remedy. Additionally, fully removing all impacted sediment with confirmation via verification sampling, eliminates the need for institutional controls.

4.3 Remedy Components

The selected remedy includes removal of PCB-impacted sediment and streambank soils, backfilling to pre-excavation grades and site restoration. The removal of PCB impacted sediment from Area III of the UNT will be conducted in phases, the first of which is addressed in the RAWP for UNT Area III UPOU2 (Sta. 46+00 to a beaver dam at approximately Sta. 53+50) (CDM Smith August 1, 2017, NYSDEC approved August 14, 2017). The second phase will address the removal of sediment in UNT Area III LPOU2, which is described in this Work Plan.

The remedy consists of the following components:

- Installation of temporary erosion and sediment controls
- Site access road
- Temporary storm water diversion features
- Clearing of brush for access to removal areas
- Dewatering and treatment of water as needed, within the removal areas
- Excavation of impacted sediments and streambank soils
- Solidification of excavated materials, as needed
- Verification sampling
- Removal of additional material if necessary and additional confirmatory sampling
- Transportation and disposal
- Backfill of the excavated areas and site restoration. Adequate soils will be returned to restore the functions and values, but not the sediments upstream of the beaver dam or the beaver dam itself.

A more detailed discussion of the remedial activities and construction, and remedy components is included in Section 5.

4.4 Institutional Controls

Arconic has negotiated and been granted an easement for the remediation work, the boundaries of which are shown on the figures included herein. The footprint for activity proposed for UNT Area III LPOU2 includes parcels, easements and Right-of-Ways as shown on Figure 2-1.

Access will be maintained with property owners throughout the remediation and monitoring periods. NYSDEC and NYSDOH will also have access to the impacted areas of the UNT. Institutional controls within the UNT subsequent to remediation, including parcels owned by others will not be required.

Section 5
Remedial Construction

Details regarding implementation of the selected remedy, which includes removal of PCB impacted sediment and streambank soils, backfilling and site restoration are presented in this section.

5.1 Removal Areas

The removal of PCB-impacted sediment from Area III, both upper and lower portions, of the UNT will be conducted in phases proceeding from upstream to downstream. Removal and restoration of the UNT Area III UPOU2, which includes removal of sediment extending from the terminus of Area II at Sta. 46+00 to a beaver dam at approximately Sta. 53+50 is covered by the RAWP for the upper reach of UNT Area III UPOU2 (CDM Smith August 1, 2017, NYSDEC approved August 4, 2017).

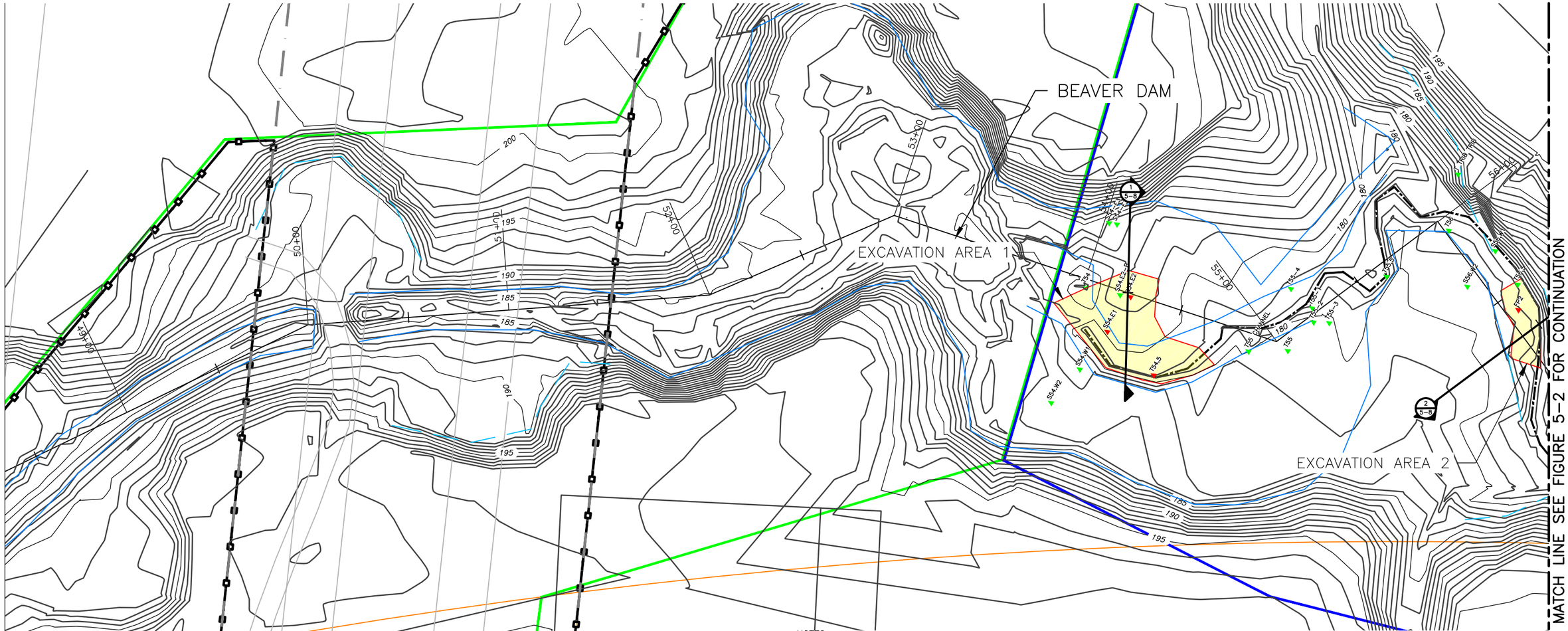
This RAWP addresses the remedial action of sediment from the lower portion of the UNT Area III LPOU2, which extends downstream from Sta. 53+50 to Sta. 72+00.

As discussed in Section 3.3, total PCB concentrations exceeding the ROD cleanup goal of 1 ppm have been detected in the UNT Area III LPOU2 at depths of up to 12 inches. Some areas may be over-excavated to up to 18 inches to account for the observed concentrations greater than 1 ppm in the samples extending to 12-inch below ground surface (bgs). The currently estimated excavation limits within UNT Area III LPOU2 encompass an area of approximately 30,146 square feet. Approximately 1,115 cubic yards (in place volume) of sediment and streambank soils will be excavated from UNT Area III LPOU2 as shown on **Figures 5-1** through **5-3**. The lower reach is divided into a total of nine areas. The approximate square footage and cubic yards of sediment and soil to be removed is summarized in **Table 5-1** below:

Table 5-1 Excavation Areas

Excavation Area	Location	Area (sf)	Assumed Depth (ft)	Volume (cf)	Volume (cy)
1	54+25	2292	1.5	3438	127
2	57+00	574	1	574	21
3	57+50	357	1	357	13
4	58+25	1088	1.5	1631	60
5	58+75	971	1.5	1456	54
6	60+00	1388	1.5	2082	77
7	61+50	753	1.5	1130	42
8	67+10	1224	1	1224	45
9	70+00	12,169	1.5	18,254	676

The excavated sediments and streambank soils from the UNT will be hauled to Cell 3 of the Secure Landfill for disposal.



NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.
3. TERRAIN MODEL ACCURACY IS A DIRECT FUNCTION OF SPOT ELEVATION DENSITY. THE CURRENT MODEL ACCURACY IS SUFFICIENT FOR ENGINEERING DESIGN, HOWEVER ADDITIONAL SPOT ELEVATIONS WOULD BE NEEDED TO COMPUTE QUANTITIES FOR PAYMENT VALIDATION. THEREFORE QUANTITIES ARE ESTIMATED.

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION <1 PPM
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION >1 PPM

1" = 50'
25 0 50

MATCH LINE SEE FIGURE 5-2 FOR CONTINUATION

CDM Smith

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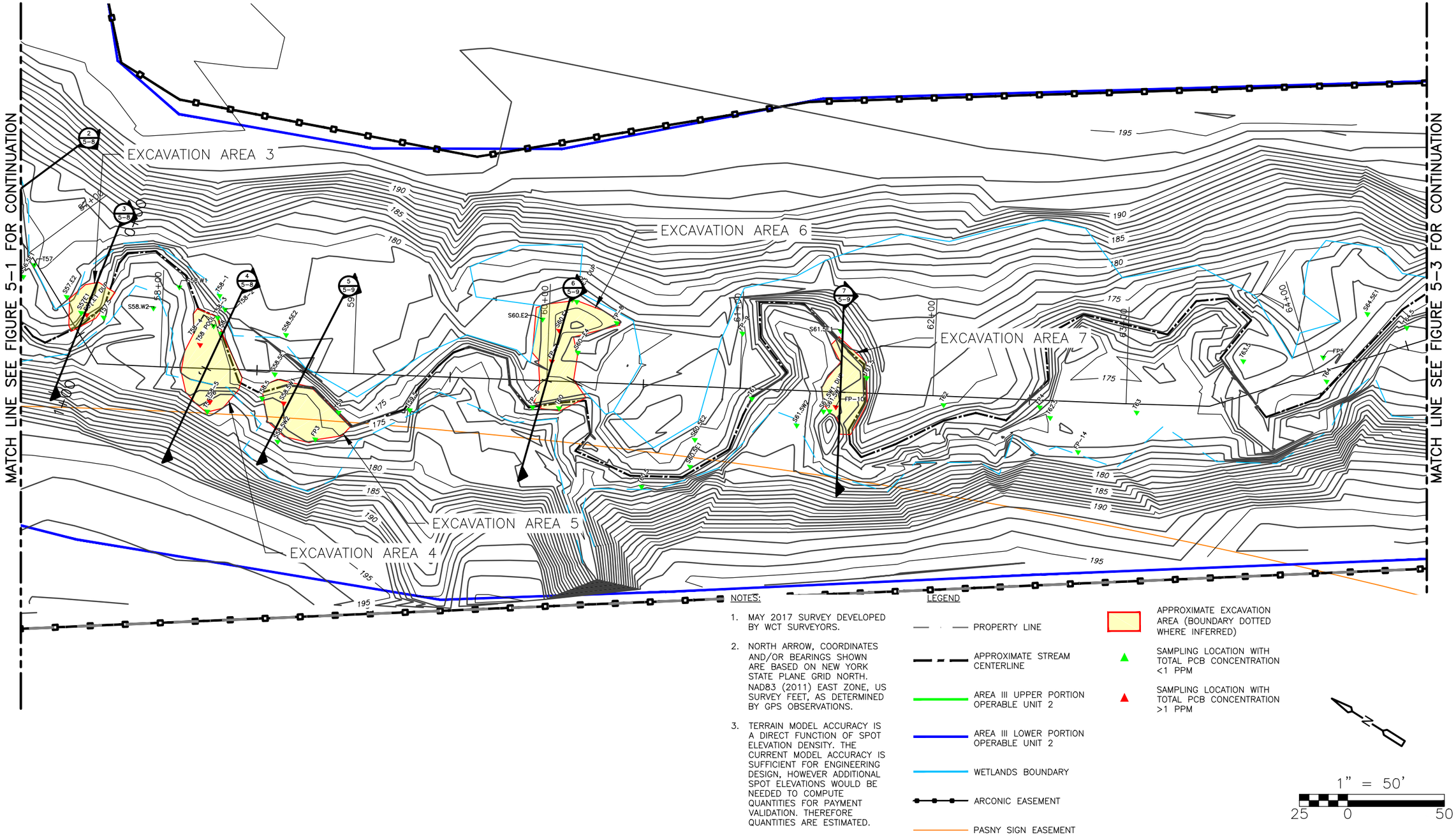
UNNAMED TRIBUTARY (UNT) AREA III

EXCA□ATION AND CROSS SECTION LOCATION PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 53□50 TO 5□□90

FIGURE 5-1



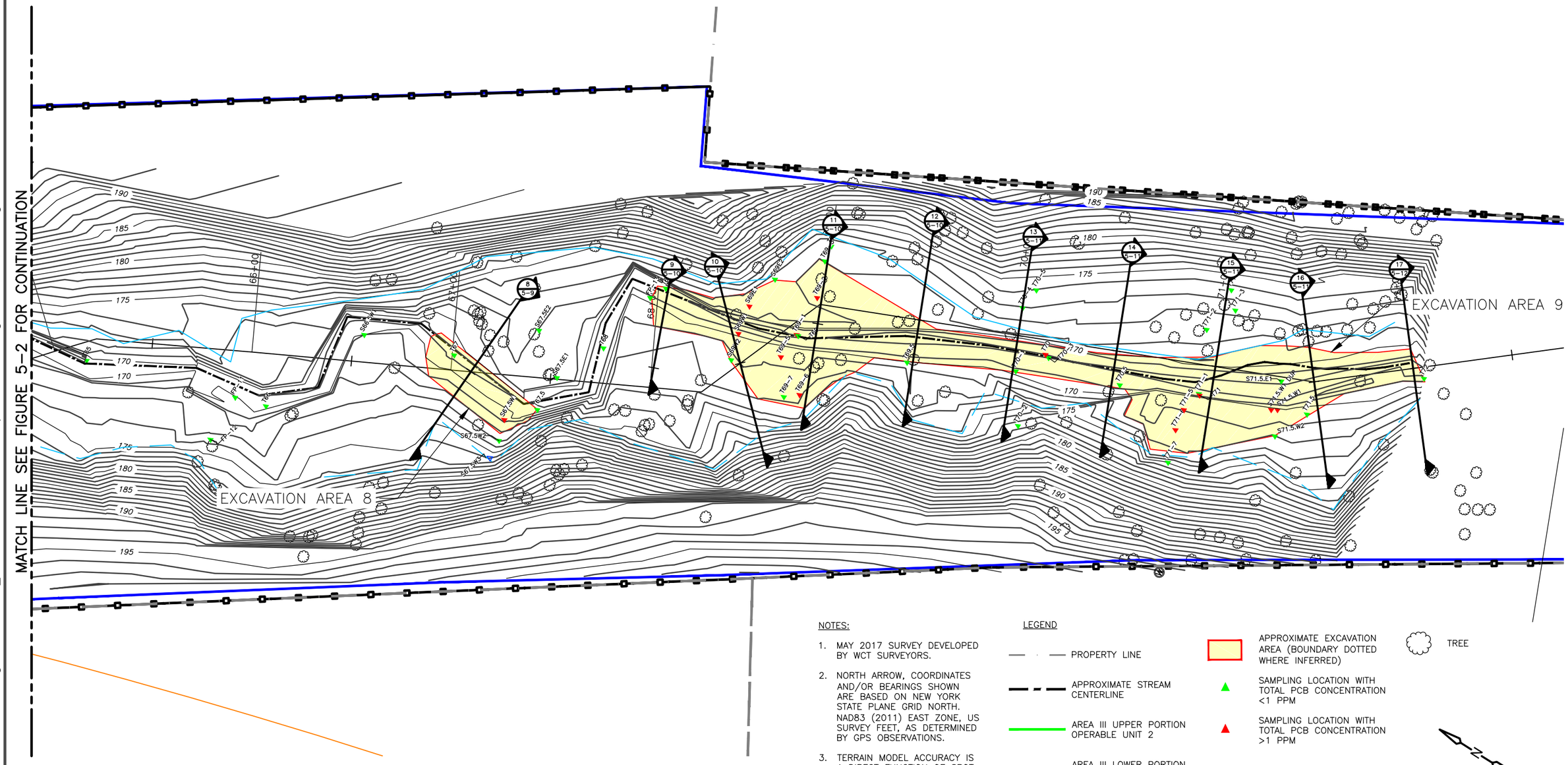
CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III

EXCA□ATION AND CROSS SECTION LOCATION PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 5□□90 TO □4□90

FIGURE 5-2



NOTES:

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3. TERRAIN MODEL ACCURACY IS A DIRECT FUNCTION OF SPOT ELEVATION DENSITY. THE CURRENT MODEL ACCURACY IS SUFFICIENT FOR ENGINEERING DESIGN, HOWEVER ADDITIONAL SPOT ELEVATIONS WOULD BE NEEDED TO COMPUTE QUANTITIES FOR PAYMENT VALIDATION. THEREFORE QUANTITIES ARE ESTIMATED.

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION <1 PPM
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION >1 PPM
- TREE

N

1" = 50'
25 0 50

CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III

EXCA□ATION AND CROSS SECTION LOCATION PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA □4□90 TO 72□50

FIGURE 5-3

5.2 Remedial Action Activities

5.2.1 Pre-Remediation Activities

Pre-remediation activities that have been or will be performed include the following sequential tasks:

1. Perform topographic survey of Area III and adjacent overhead transmission lines
2. Wetland function and value assessment and delineation
3. Perform utility clearance within the excavation limits
4. Perform Cultural Resource Assessment
5. Notify NYSDEC of borrow area confirmation sampling results and planned commencement

A survey of Area III was completed by WCT Surveyors between April to October 2017 to establish current topography within UNT Area III UPOU2 and UNT Area III LPOU2. Minimum clearances below overhead transmission cables that need to be traveled under for work associated with Area III LPOU2 were previously surveyed during UPOU2 preparation. The current topography within the UNT is shown on Figure 2-1 depicting the existing site conditions in Area III. Contractor shall be responsible to verify and survey to account for any temperature influences.

A wetland function and value assessment as well as a wetland delineation survey were conducted by CDM Smith in April 2017; results are shown on Figure 2-1.

Underground utility clearance was performed within the excavation limits prior to commencement of excavation activities by calling Dig Safely New York and by referring to internal facility records.

A cultural resource assessment survey was performed and submitted to the NYSDEC for review prior to initiation of remedial activities.

Particle size analysis (ASTM D7928) of proposed borrow soils to be used for backfilling of excavated areas will be performed to confirm that the borrow soils meet the gradation-requirements discussed for backfill soils in Section 7.2. Testing of borrow materials will be performed to demonstrate meeting NYSDEC Class A sediment screening criteria for VOCs, SVOCs, PCBs/Pesticides, and TAL inorganic parameters/ metals. Testing will be performed at frequencies commensurate with NYSDEC's DER-10 regulations. The Department acknowledges that not all analytes listed in the NYSDEC sediment screening guidance are covered by the standard EPA test methods corresponding to the ELAP certifications, and therefore will not be covered by the testing. However, this testing will provide adequate basis for judging whether there is a potential for contaminants to be present in the borrow materials.

NYSDEC will be informed in writing of planned commencement of remediation activities at least five business days in advance and of progress throughout the work so that excavation, confirmatory sampling, backfilling and site restoration can be performed under the oversight of NYSDEC field personnel. Results of post-excavation confirmatory sampling will be provided to NYSDEC upon receipt from the analytical laboratory.

5.2.2 Remediation Activities

Construction activities that will be performed as part of remedial action include the following sequential tasks:

1. Equipment and personnel mobilization
2. Install temporary erosion and sediment control features
3. Upgrade site access road
4. Clear brush to provide access to removal areas
5. Delineate exclusion zone
6. Install water treatment equipment
7. Install temporary bypass
8. Excavate impacted sediment and streambank soils
9. Solidify excavated sediment and soils, as needed
10. Collect, pretreat, and haul Unnamed Tributary contact waters to the Arconic 004 Impoundment
11. Perform post-excavation (verification) sampling and testing
12. Decontaminate vehicles and equipment
13. Haul and dispose of solidified sediment and soils at the Secure Landfill, located at the Massena-West facility
14. Backfill excavated areas
15. Perform site restoration
16. Demobilize equipment and personnel

5.2.2.1 Mobilization

Construction equipment and personnel will mobilize to the site after notifying NYSDEC of planned commencement of remedial construction. Construction equipment may include typical earthmoving equipment such as hydraulic excavator(s), front-end loaders, dump trucks, roll offs, track mounted crane(s), temporary wastewater storage and treatment tanks and bulk material

silos. The access road from State Route 131 has been upgraded by widening and installing additional layers of crusher-run gravel as needed for safe access to the Site. Prior to starting work, access roads will be built for the remedial areas of the lower portion. The likely locations of these access roads are identified on **Figures 5-4** through **5-6**. Crane mats may also be required along portions of the access roads to support construction equipment traffic in soft soil/subgrade conditions.

Site clearing will be performed by clearing existing brush and vegetation from the limits of construction. Trees larger than 3 inches at breast height will not be cut after March 31 to avoid impacts to (northern long eared) bat habitats. The removed brush and vegetation will be re-used on site during restoration as deemed suitable. Temporary erosion and sediment control features will be installed as discussed in Section 5.3 prior to commencing remedial construction.

5.2.2.2 Temporary Construction Facilities and Signage

Temporary construction facilities will be used, and in general will be equipped with office supplies, storage for monitoring/sampling equipment, first aid equipment, records storage and personal protective equipment storage. Porta-john facilities will be provided by the Contractor in a number appropriate to meet the needs of Arconic, the contractor and regulatory oversight personnel. An equipment/vehicle decontamination pad will be installed for cleaning of equipment and vehicles that come in contact with impacted material prior to leaving the site, shown on Figure 5-4. The decontamination pad will consist of a containment system to control water prior to treatment.

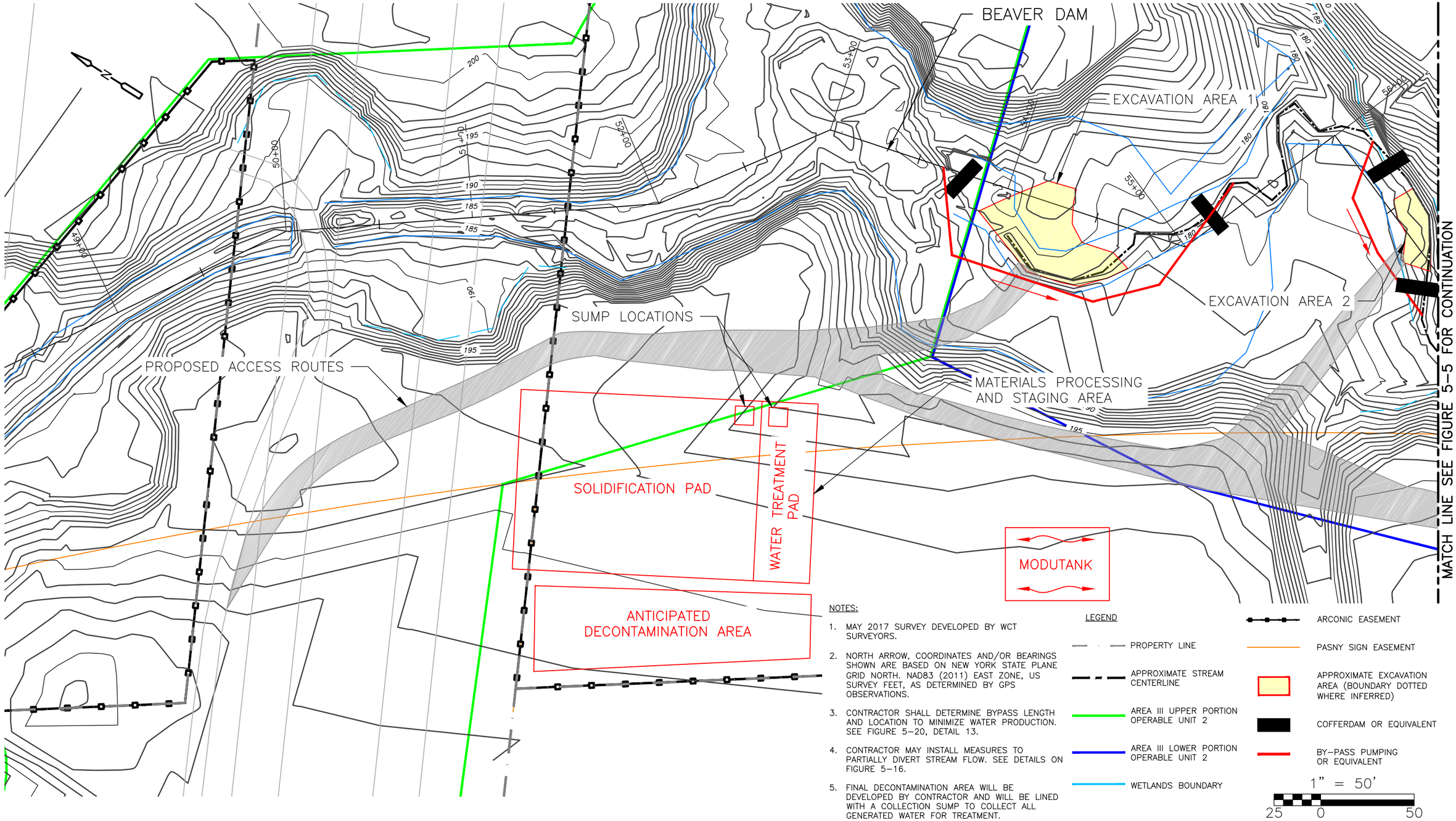
Signage will be installed on-site and along the waste haul route to/from the Secure Landfill as shown on **Figure 5-7.**

5.2.2.3 Exclusion Zone Demarcation

Prior to initiating excavation activities an exclusion zone will be demarcated around the active excavation areas. Appropriate signage will be installed outside the exclusion zone to demarcate the area inside the fence as the exclusion zone.

5.2.2.4 Temporary Stormwater Diversion

During excavation, bypass activities are anticipated in the UNT to aid in remediation. The system is likely to include by-passes at each of the removal areas of the UNT Area III LPOU2 when work is being performed. Base flow and stormwater from upstream of each removal area within the lower portion of the UNT, will be temporarily diverted during remedial construction activities for each removal location. The stormwater diversion features will include construction of temporary containment structures on the upstream and downstream sides of the creek for each of the removal areas depicted in Figures 5-4 to 5-6. Stormwater impounded behind the containment structures on the upstream side of the removal areas will be diverted around the removal area and released to a portion of the tributary where there are no impacted sediments and utilizing proper dissipation features to avoid impact to water quality (i.e. turbid conditions). Stormwater and groundwater seepage that comes in contact with disturbed sediment during removal activities will be collected and treated (See section 5.2.2.9).



NOTES:

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3. CONTRACTOR SHALL DETERMINE BYPASS LENGTH AND LOCATION TO MINIMIZE WATER PRODUCTION. SEE FIGURE 5–20, DETAIL 13.
4. CONTRACTOR MAY INSTALL MEASURES TO PARTIALLY DIVERT STREAM FLOW. SEE DETAILS ON FIGURE 5–16.
5. FINAL DECONTAMINATION AREA WILL BE DEVELOPED BY CONTRACTOR AND WILL BE LINED WITH A COLLECTION SUMP TO COLLECT ALL GENERATED WATER FOR TREATMENT.

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- COFFERDAM OR EQUIVALENT
- BY–PASS PUMPING OR EQUIVALENT

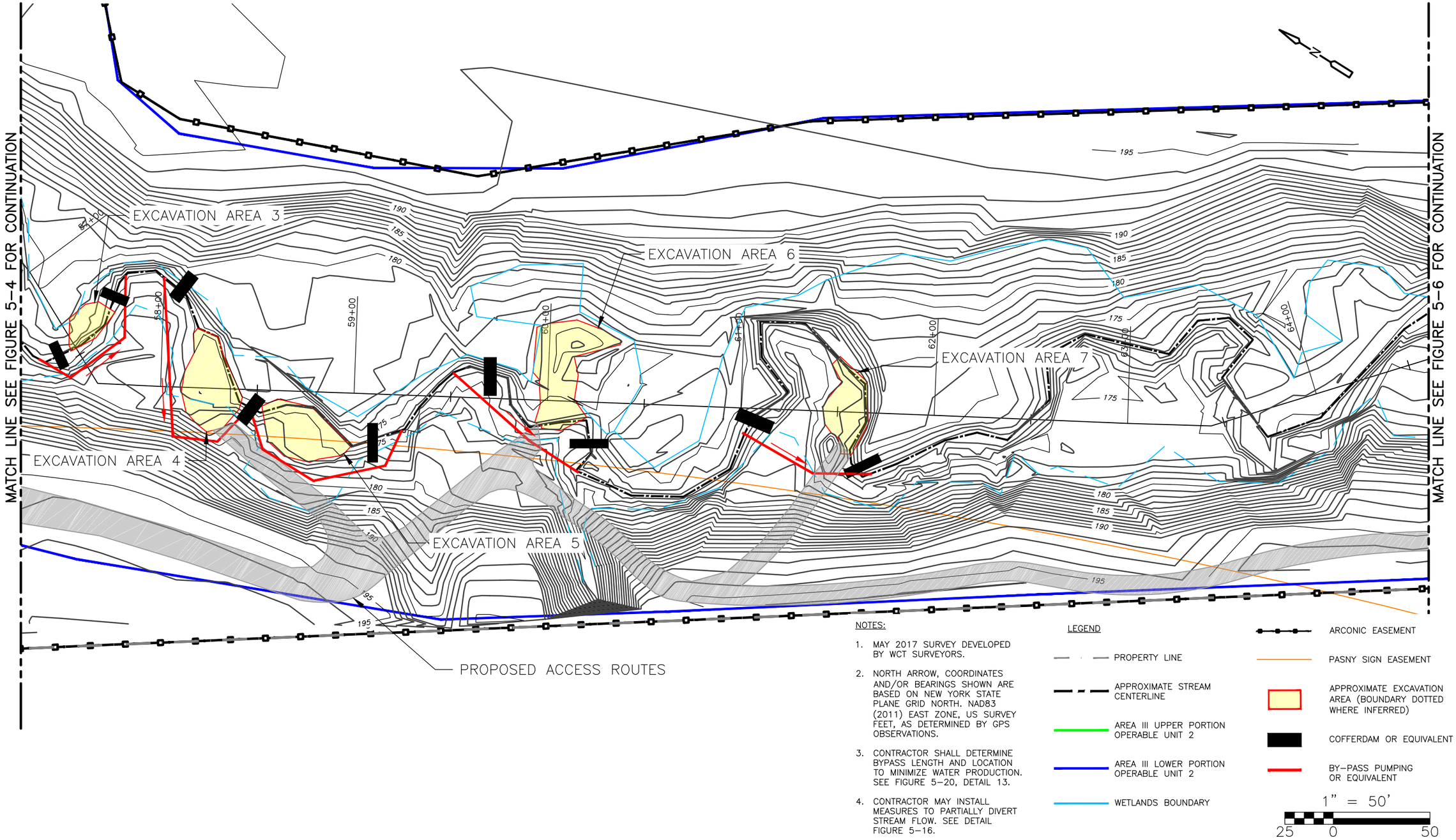
1" = 50'

25 0 50

CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III
CONSTRUCTION SITE PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 53□50 TO 5□□90
FIGURE 5-4



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3. CONTRACTOR SHALL DETERMINE BYPASS LENGTH AND LOCATION TO MINIMIZE WATER PRODUCTION. SEE FIGURE 5–20, DETAIL 13.
4. CONTRACTOR MAY INSTALL MEASURES TO PARTIALLY DIVERT STREAM FLOW. SEE DETAIL FIGURE 5–16.

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- COFFERDAM OR EQUIVALENT
- BY–PASS PUMPING OR EQUIVALENT

1" = 50'
25 0 50

CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III
CONSTRUCTION SITE PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 5□□90 TO □4□90
FIGURE 5-5

MATCH LINE SEE FIGURE 5–5 FOR CONTINUATION

EXCAVATION AREA 8

EXCAVATION AREA 9

PROPOSED WEST ACCESS ROUTE OPTION

NOTES:

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3. CONTRACTOR SHALL DETERMINE BYPASS LENGTH AND LOCATION TO MINIMIZE WATER PRODUCTION. SEE FIGURE 5–20, DETAIL 13.
4. CONTRACTOR MAY INSTALL MEASURES TO PARTIALLY DIVERT STREAM FLOW. SEE DETAIL FIGURE 5–16.

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- COFFERDAM OR EQUIVALENT
- BY–PASS PUMPING OR EQUIVALENT
- TREE

1" = 50'

25 0 50

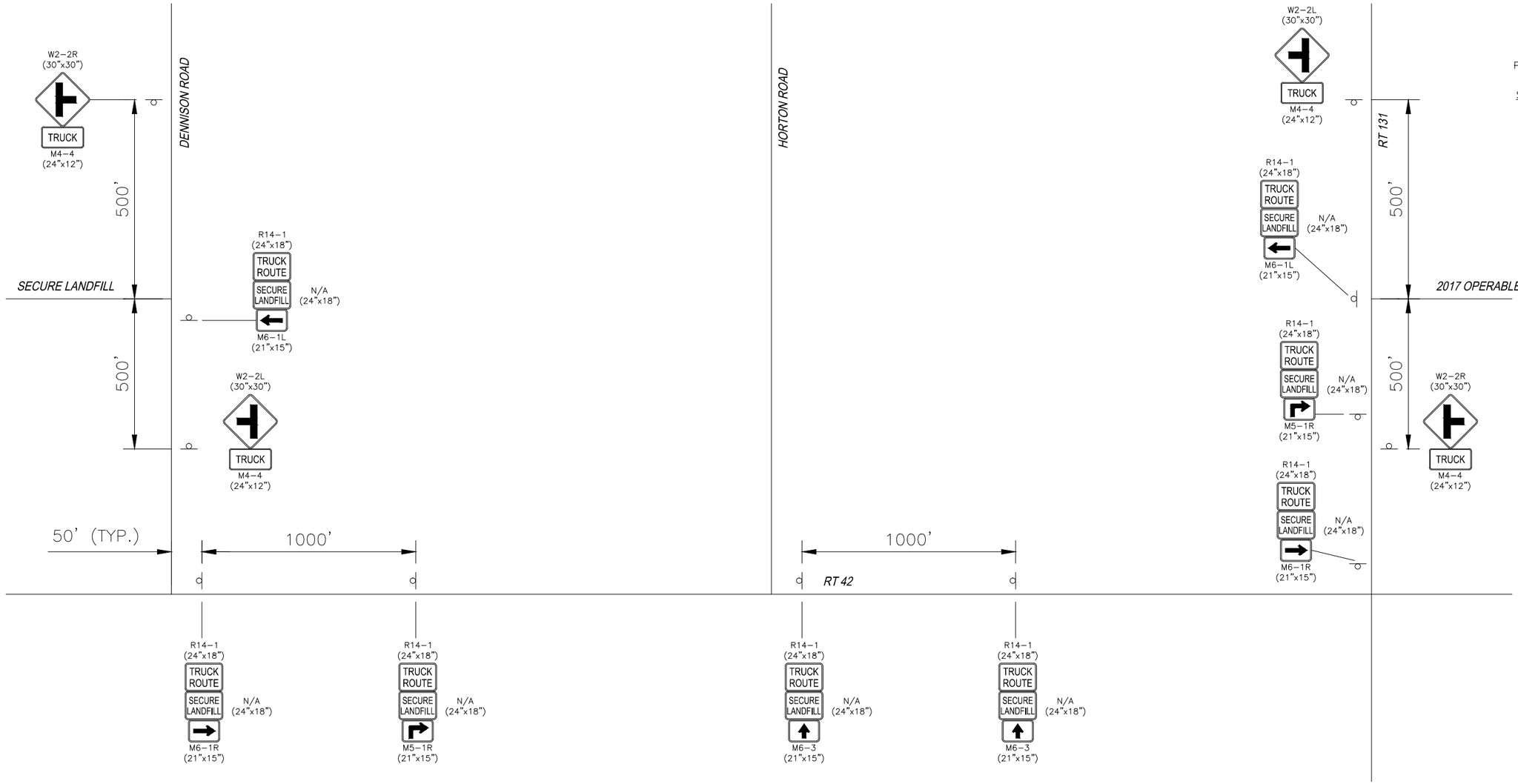
CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III

CONSTRUCTION SITE PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA □4□90 TO 72□50

FIGURE 5-□



NOTE: PLACEMENT OF SIGNAGE TO BE COORDINATED W/ STAGING AREA AND CELL 3 OPERATIONS BY CONTRACTOR.

CDM Smith

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UNNAMED TRIBUTARY (UNT) AREA III LOWER PORTION OPERABLE UNIT 2
MATERIALS TRANSPORTATION ROUTE AND SIGNAGE PLAN
FIGURE 5-7

5.2.2.5 Material Processing and Staging Area

A temporary material processing and staging area was constructed as part of the UNT Area III UPOU2 and will be used for the LPOU2 remediation. Excavated sediment and soils will be processed prior to hauling to the Secure Landfill for disposal. The material processing area includes a HDPE geomembrane liner installed over a prepared sub-base. The material processing area is graded such that stormwater runoff from this area will drain towards a sump from where it will be pumped to the temporary treatment facility, as depicted in Figure 5-4. Solidification of the excavated sediment/soils will be performed as needed (and with NYSDEC approval) in the lined material processing area using portable roll-offs or other means to meet the performance criteria discussed in Section 5.2.2.8.

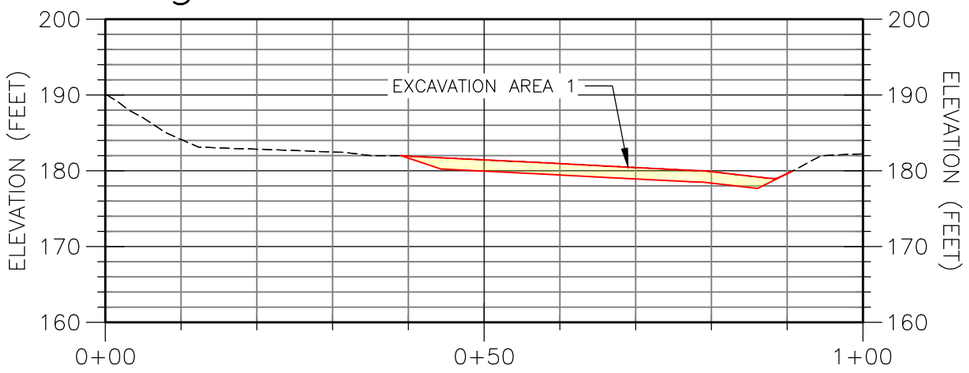
Borrow soils and construction equipment will be stored in a designated staging area at the site. The staging area will be constructed by leveling and compacting the existing subgrade to provide a firm well-draining surface that shall be slightly elevated above the surrounding ground to prevent storm water run on into the staging area. Stormwater runoff from the staging area will be managed in accordance with Section 5.3.

The material processing and staging areas will be located such that equipment operating within these areas maintain minimum horizontal and vertical clearance requirements (plus additional clearance required based on Kw) from the nearest Arconic overhead transmission line and from the New York Power Authority overhead transmission line. Additional clearance distance based upon the ambient air temperature and its impact on the transmission line height will also be considered.

5.2.2.6 Sediment/Soil Excavation

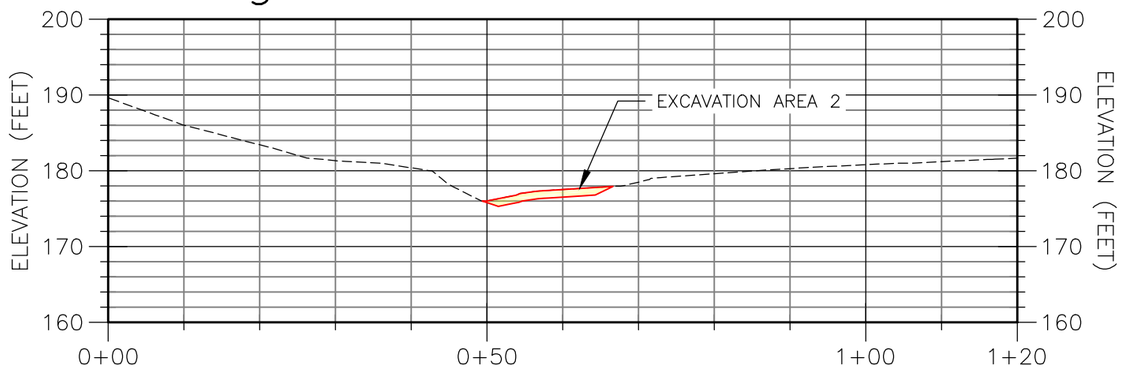
The sediment and streambank soil excavation limits based on the delineation sampling results is presented on Figures 5-1 through 5-3. Cross sections showing the depth of excavation are shown on **Figures 5-8** through **5-12.** Excavation of PCB-impacted sediment and soils for targeted removal areas between Sta. 53+50 to Sta. 62+50 and Sta. 67+00 to Sta. 72+00 will be performed from the western banks of the tributary channel using mini-excavators and likely small-scale track mounted dump trucks supported by construction mats. Excavation sequencing may be completed to allow for stream bypass during remedial work in this lower area. Areas along the upper slopes of the stream bed above the bank line may be excavated first, allowing the stream flow to continue along its natural course while these upper areas are remediated. The excavated portions of the stream bed will then be used as temporary stream diversions during subsequent excavations in the main stream bed. Verification samples will be collected from the upper slopes of the stream bed after excavation to verify removal of sediment greater than 1 ppm PCB concentration prior to using this area for temporary stream diversion. Once the main stream bed is remediated the area will be restored and the stream bed returned to its natural course. The excavated material will be hauled to the processing area as shown on Figure 5-4 prior to transporting to the Secure Landfill depending on visual indications of the moisture content and physical consistency of the excavated material.

Alignment 54+25 PROFILE



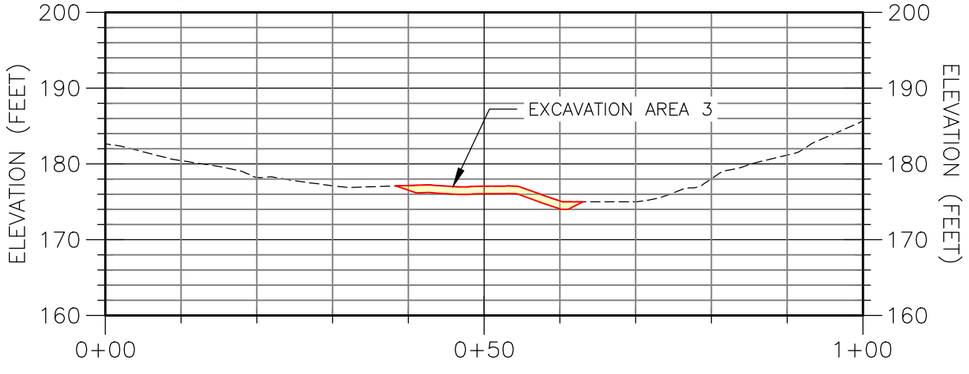
STA. 54+25
SECTION 1 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

Alignment 57+00 PROFILE



STA. 57+00
SECTION 2 – STA. 0+00 TO 1+20
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

Alignment 57+50 PROFILE

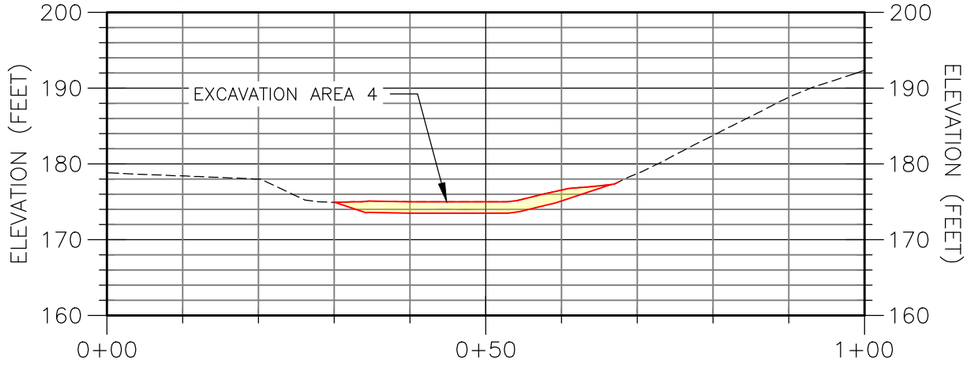


STA. 57+50
SECTION 3 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

NOTE:

EXCAVATION LIMITS ESTABLISHED USING BOTTOM ELEVATION FOR VERIFICATION SAMPLE WITH RESULTS LESS THAN 1 PPM.

Alignment 58+25 PROFILE



STA. 58+25
SECTION 4 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

LEGEND:

EXISTING GRADE

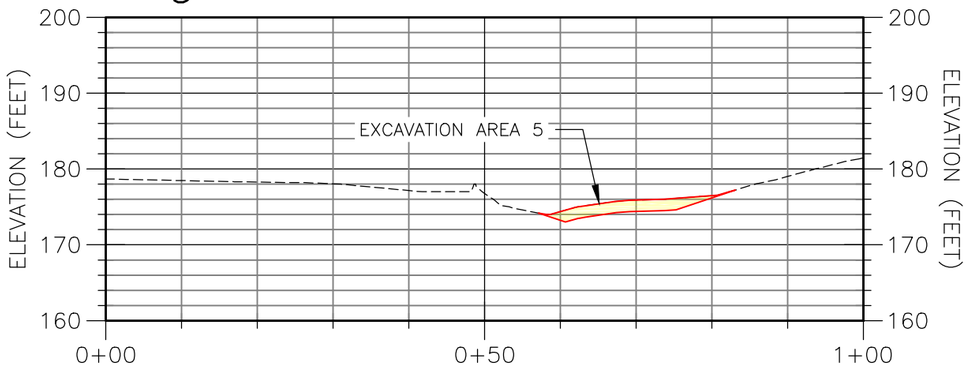
MATERIAL TO BE REMOVED AND BACKFILLED WITH CLEAN MATERIAL

CDM Smith

Arconic - Massena, New York

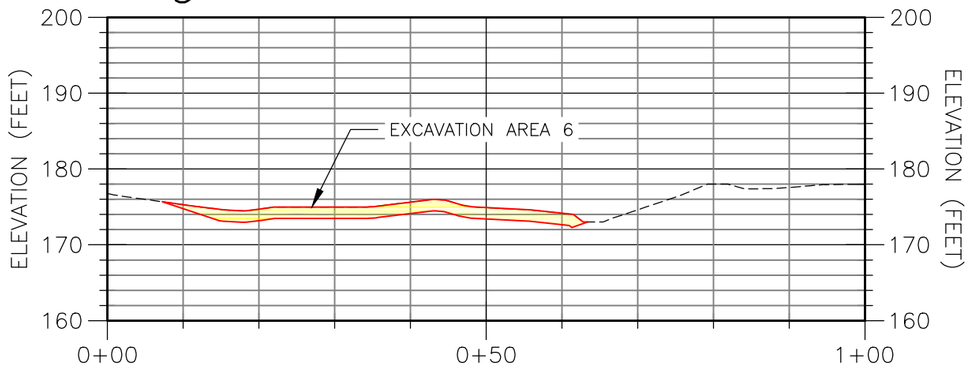
UNNAMED TRIBUTARY (UNT) AREA III
EXCA□ATION PLAN SECTIONS - AREA III LOWER PORTION OPERABLE UNIT 2
FIGURE 5-8

Alignment 58+75 PROFILE



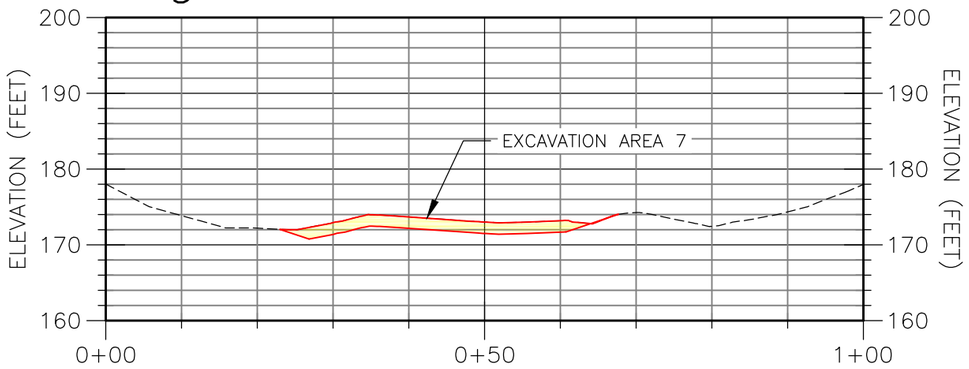
STA. 58+75
SECTION 5 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

Alignment 60+00 PROFILE



STA. 60+00
SECTION 6 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

Alignment 61+50 PROFILE

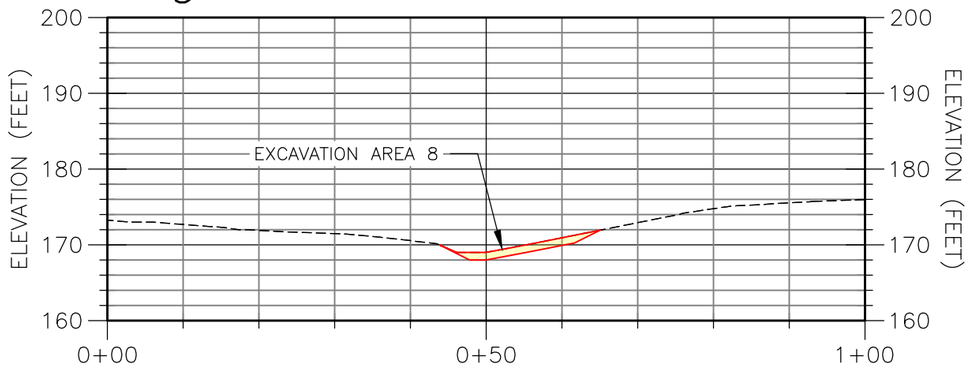


STA. 61+50
SECTION 7 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

NOTE:

EXCAVATION LIMITS ESTABLISHED USING BOTTOM ELEVATION FOR VERIFICATION SAMPLE WITH RESULTS LESS THAN 1 PPM.

Alignment 67+10 PROFILE



STA. 67+10
SECTION 8 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

LEGEND:

EXISTING GRADE

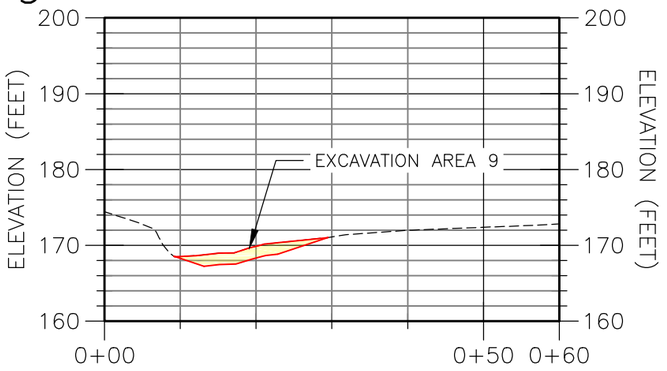
MATERIAL TO BE REMOVED AND BACKFILLED WITH CLEAN MATERIAL

CDM Smith

Arconic - Massena, New York

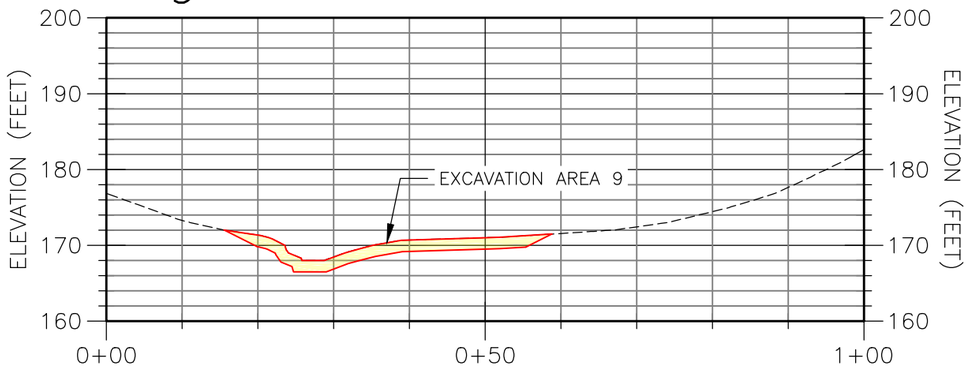
UNNAMED TRIBUTARY (UNT) AREA III
EXCA□ATION PLAN SECTIONS - AREA III LOWER PORTION OPERABLE UNIT 2
FIGURE 5-9

Alignment 68+00 PROFILE



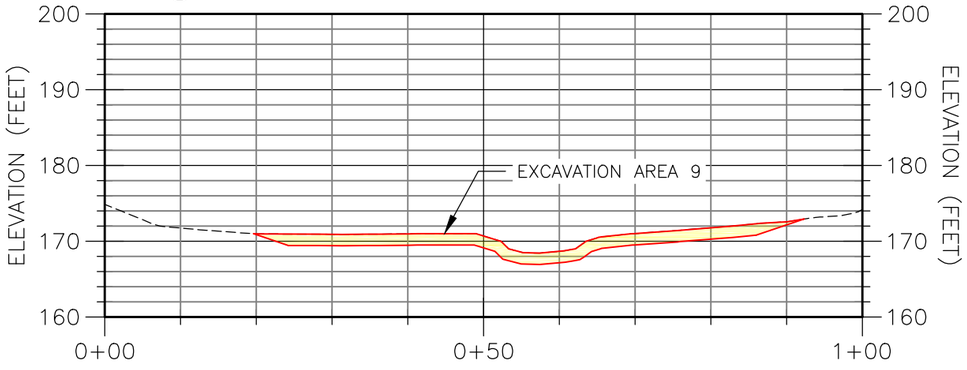
STA. 68+00
SECTION 9 – STA. 0+00 TO 0+60
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

Alignment 68+50 PROFILE



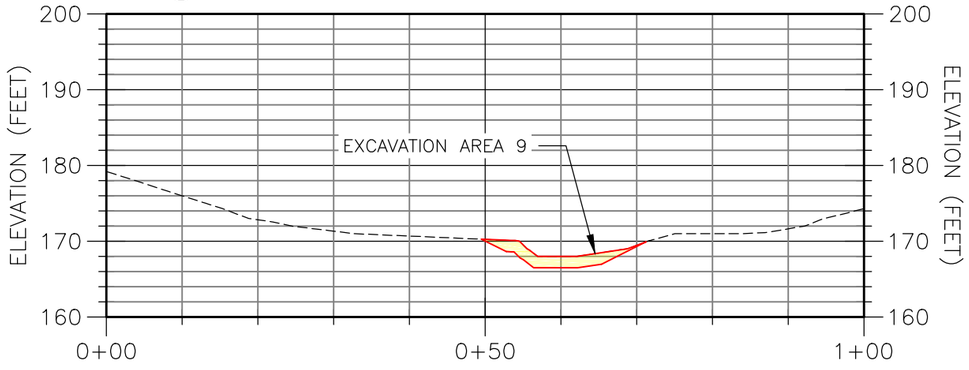
STA. 68+50
SECTION 10 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

Alignment 69+00 PROFILE



STA. 69+00
SECTION 11 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

Alignment 69+50 PROFILE



STA. 69+50
SECTION 12 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

NOTE:

EXCAVATION LIMITS ESTABLISHED USING BOTTOM ELEVATION FOR VERIFICATION SAMPLE WITH RESULTS LESS THAN 1 PPM.

LEGEND:

EXISTING GRADE

MATERIAL TO BE REMOVED AND BACKFILLED WITH CLEAN MATERIAL

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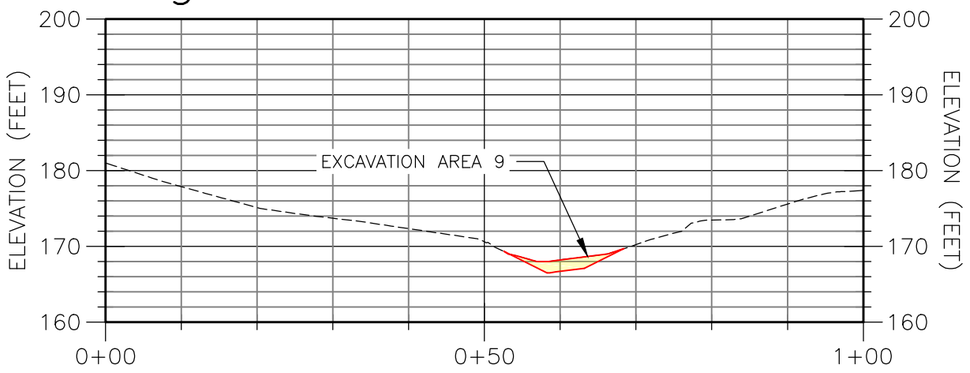
UNNAMED TRIBUTARY (UNT) AREA III

EXCA□ATION PLAN SECTIONS - AREA III LOWER PORTION OPERABLE UNIT 2

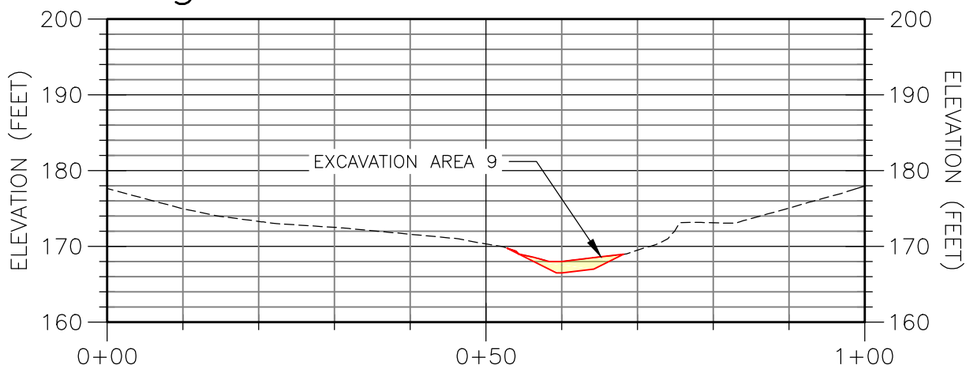
FIGURE 5-10

Alignment 70+00 PROFILE



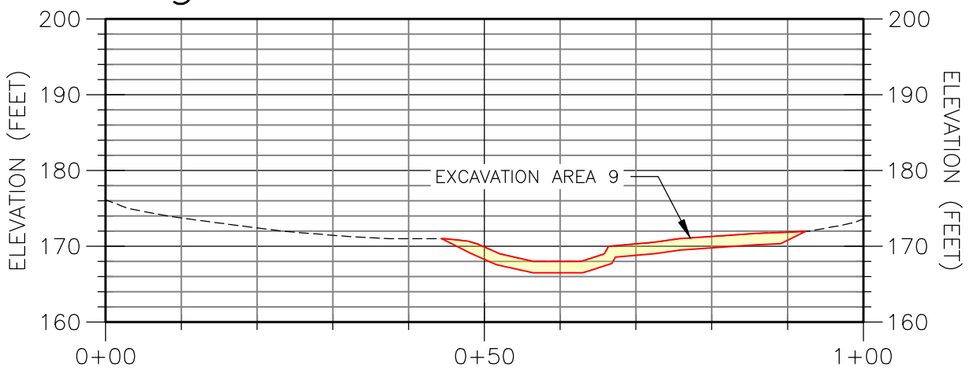
STA. 70+00
SECTION 13 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

Alignment 70+50 PROFILE



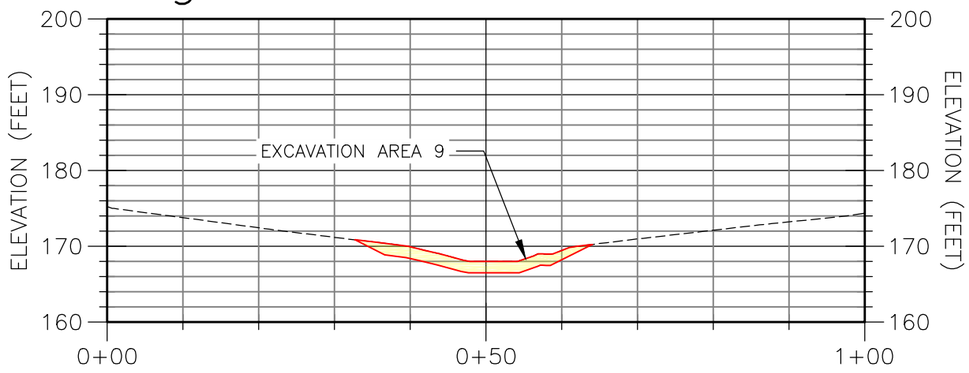
STA. 70+50
SECTION 14 – STA. 0+00 TO 1+20
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

Alignment 71+00 PROFILE



STA. 71+00
SECTION 15 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

Alignment 71+50 PROFILE



STA. 71+50
SECTION 16 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

NOTE:

EXCAVATION LIMITS ESTABLISHED USING BOTTOM ELEVATION FOR VERIFICATION SAMPLE WITH RESULTS LESS THAN 1 PPM.

LEGEND:

EXISTING GRADE

MATERIAL TO BE REMOVED AND BACKFILLED WITH CLEAN MATERIAL

CDM Smith

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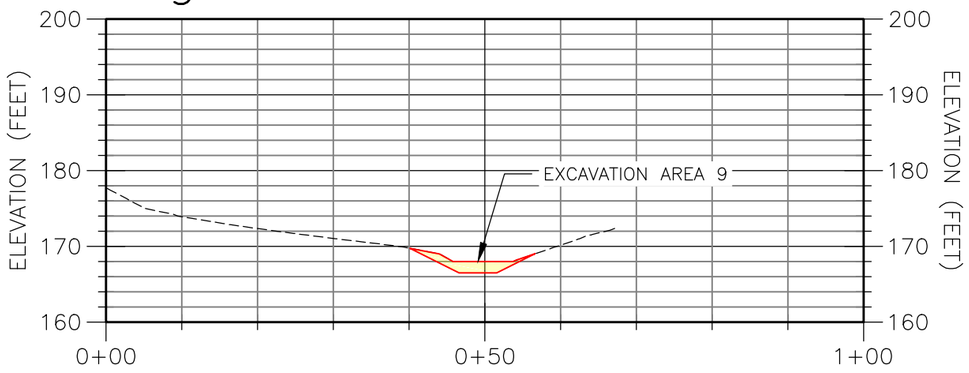
UNNAMED TRIBUTARY (UNT) AREA III
EXCA□ATION PLAN SECTIONS - AREA III LOWER PORTION OPERABLE UNIT 2
FIGURE 5-11

Alignment 72+00 PROFILE



STA. 72+00
SECTION 17 – STA. 0+00 TO 1+00
SCALE: 1" = 20' VERTICAL
1" = 20' HORIZONTAL

NOTE:

EXCAVATION LIMITS ESTABLISHED USING BOTTOM ELEVATION FOR VERIFICATION SAMPLE WITH RESULTS LESS THAN 1 PPM.

LEGEND:

EXISTING GRADE

MATERIAL TO BE REMOVED AND BACKFILLED WITH CLEAN MATERIAL

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UNNAMED TRIBUTARY (UNT) AREA III
EXCA□ATION PLAN SECTIONS - AREA III LOWER PORTION OPERABLE UNIT 2
FIGURE 5-12

Excavation operations shall be conducted such that dust emissions during excavation are minimized. Fugitive dust monitoring will be performed as part of the CAMP. Excavation and material loading operations will be performed within the exclusion zone and care shall be taken to avoid impacting areas outside the exclusion zone.

Refer to Figure 2-1 for application to both New York Power Authority and Alcoa overhead transmission lines.

5.2.2.7 Verification Sampling

After the contaminated sediment/soils have been excavated to the predetermined depth, the excavated surfaces will be sampled to verify complete removal of contaminated materials from the target areas. If verification sampling results indicate total PCB concentrations less than or equal to 1 ppm, excavation shall be deemed complete at that location. If verification sampling results indicate total PCB concentrations greater than 1 ppm, excavation shall continue laterally based on visual observation of potential depositional area or deeper in a minimum of 6-inch increments until PCB concentration equal to or less than 1 ppm are achieved. Verification sampling rationale and procedures are discussed in further detail in Section 6.

5.2.2.8 Sediment/Soil Solidification

Excavated sediment/soil materials that are visually identified as excessively wet for hauling and disposal to the Secure Landfill shall be solidified in the material processing area prior to hauling to the landfill to improve the strength of the waste materials. Solidification includes adding a binding reagent such as Portland cement, lime, lime kiln dust, cement kiln dust or another reagent/polymer approved by the NYSDEC for disposal in the Secure Landfill. The solidified materials shall meet the waste placement criteria for the Secure Landfill which includes passing the Paint Filter Test and achieving short term and long-term shear strengths of 6 pounds per square inch (psi) and 16 psi, respectively. Solidified materials that meet these criteria shall be loaded in to trucks for transport to and disposal in the Secure Landfill.

5.2.2.9 Temporary Water Treatment Facility

While excavation work is intended to be conducted in the dry (after removal of all standing water), in the event that storm water or groundwater is present in the removal areas during excavation, the water from the excavation areas will be treated. Water that drains from material processing will also be treated. Pre-treatment will occur at the UNT site in accordance with requirements listed below in **Table 5-2**.

Table 5-2 Temporary Water Treatment Parameters

Parameter	Outfall 01A/004
pH	> 6 pH < 9
Oil and Grease	< 10 mg/L
Surfactants	Non - Detectable
Total cyanide	Non - Detectable
Fluoride	Non - Detectable
PCBs	< 20 ug/L
PAHs	< 20 ug/L
TSS	< 100 mg/L

Note: ug/L = parts per billion
mg/L = parts per million

All excavation contact water generated during removal activities and water from the material processing area will be pumped to a single tank where most large particles will settle, this tank will be decanted as required and conveyed to the large settling tank. This large settling tank will then be decanted to third tank. The contents of the third tank will be tested and compared to the process sampling limits to verify that the pretreatment requirements are meet. Once this has been completed the contents of the third tank will be transported to the Arconic Outfall 004 Impoundment where it will undergo final treatment, including settling, filtration, granular activated carbon filtration. Treatment of UNT remediation water has been approved by the NYSDEC Region 6 Division of Water. Under this arrangement there is no plan to dispose of waters generated from the remediation back into the Unnamed Tributary.

5.2.2.10 Vehicle/Equipment Decontamination and Waste Haulage

Equipment that has come in contact with impacted sediment/soils and vehicles hauling impacted wastes shall be decontaminated at the decontaminated pad prior to leaving the site. The decontamination pad will be located immediately outside the exclusion zone and lined with a geosynthetic liner with appropriate protective cover to avoid migration of contamination beyond the excavation areas. Equipment and vehicles shall be decontaminated by pressure washing. Decontaminated equipment and vehicles shall be visually inspected for remnant dirt or other signs of contamination prior to leaving the site. The loaded dump truck shall be covered with tarp at the decontamination area prior to hauling to avoid dust borne migration of contamination. Proper manifesting and waste shipment procedures will be followed at the site prior to hauling the waste materials to the Secure Landfill via state and county roadways.

5.2.2.11 Backfilling

Upon successful post-excavation confirmation sampling, excavated areas will be backfilled to the approximate pre-excavation grades using clean off-site borrow materials as discussed in Section 7.2. Backfill materials shall be placed in lifts and adequately compacted. A post-backfill survey will be performed to document final grades within the remediated portions and to compare the final grades with the pre-excavation survey.

5.2.2.12 Site Restoration

Restoration activities will commence upon confirmation that excavations have met cleanup goals and will proceed as the excavation process moves from upstream to downstream. Restoration will include stabilization of bank soils including planting as needed, replacement of wetland soils in the stream bed at specific locations, and restoration of upland construction staging and solidification areas. Effort will be made to replicate the meandering stream channel and elevations of the overbank deposits. Additional detail on restoration efforts is provided in Section 7.0.

5.2.2.13 Demobilization

The Contractor will de-mobilize equipment and personnel from the Site after site restoration has been completed.

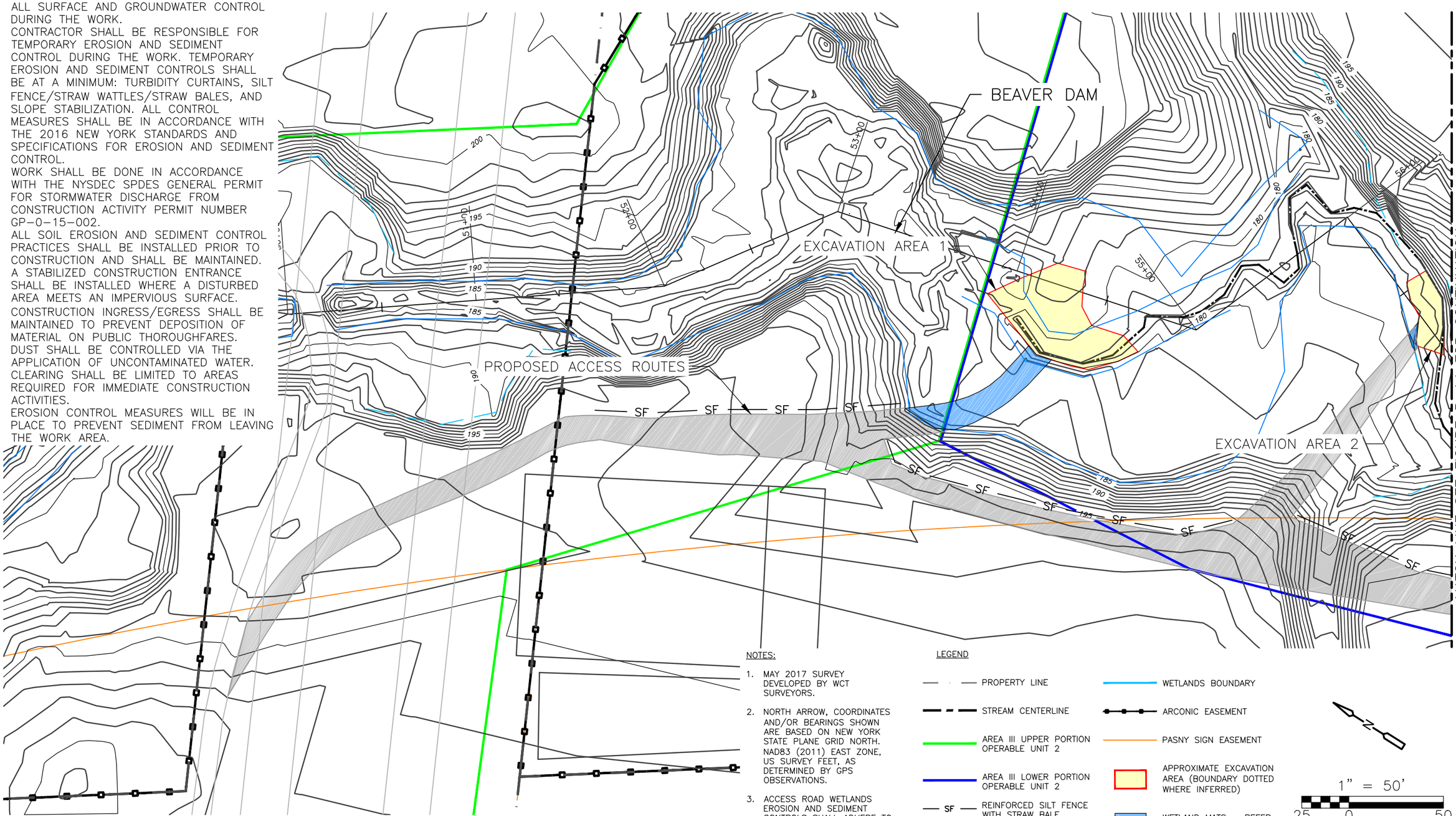
5.3 Stormwater Erosion and Sediment Control Practices/Best Management Practices (BMPs) Installation

Before construction is initiated, stormwater management measures will be installed at locations designated in the erosion and sediment control drawings, to control erosion and sedimentation associated with stormwater runoff. **Figures 5-13** through **5-20** show the Erosion and Sediment Control Plan with some example details. The area of remedial construction, sediment and soil removals and restoration is the topographically lowest point of the active construction work area. A stormwater analysis was performed on the work area to determine the anticipated flows based on various storm events, this is described in more detail in Section 5.3.1. This area will be subject to remedial activities until restoration and stabilization is complete. The remediation areas will be cordoned off and UNT water flow bypassed around the active sections to enable the excavation work to be performed "in the dry."

Stormwater management features include silt/sediment fences, a stabilized construction entrance, truck wheel wash, temporary sediment basins, erosion control blankets, temporary diversion swales, and possibly temporary sediment traps, among others. The location of construction work is shown on Figures 5-4 through 5-6. Runoff from cleared areas will be collected via drainage swales, each leading to filtration devices such as sediment traps or filters or other similar devices. Backfill material will be stockpiled in a designated area on the site. The active work area will be sloped to the centerline of the UNT, therefore surface water will be managed from a central location.

EROSION AND SEDIMENT CONTROL NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SURFACE AND GROUNDWATER CONTROL DURING THE WORK.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY EROSION AND SEDIMENT CONTROL DURING THE WORK. TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE AT A MINIMUM: TURBIDITY CURTAINS, SILT FENCE/STRAW WATTLES/STRAW BALES, AND SLOPE STABILIZATION. ALL CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE 2016 NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
3. WORK SHALL BE DONE IN ACCORDANCE WITH THE NYSDEC SPDES GENERAL PERMIT FOR STORMWATER DISCHARGE FROM CONSTRUCTION ACTIVITY PERMIT NUMBER GP–0–15–002.
4. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND SHALL BE MAINTAINED.
5. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED WHERE A DISTURBED AREA MEETS AN IMPERVIOUS SURFACE. CONSTRUCTION INGRESS/EGRESS SHALL BE MAINTAINED TO PREVENT DEPOSITION OF MATERIAL ON PUBLIC THOROUGHFARES.
6. DUST SHALL BE CONTROLLED VIA THE APPLICATION OF UNCONTAMINATED WATER.
7. CLEARING SHALL BE LIMITED TO AREAS REQUIRED FOR IMMEDIATE CONSTRUCTION ACTIVITIES.
8. EROSION CONTROL MEASURES WILL BE IN PLACE TO PREVENT SEDIMENT FROM LEAVING THE WORK AREA.



NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.
3. ACCESS ROAD WETLANDS EROSION AND SEDIMENT CONTROLS SHALL ADHERE TO RAWP AND SPECIFICATIONS.

LEGEND

- PROPERTY LINE
- STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- SF — REINFORCED SILT FENCE WITH STRAW BALE
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- WETLAND MATS – REFER TO DETAIL SHEET 5–17

1" = 50'
25 0 50

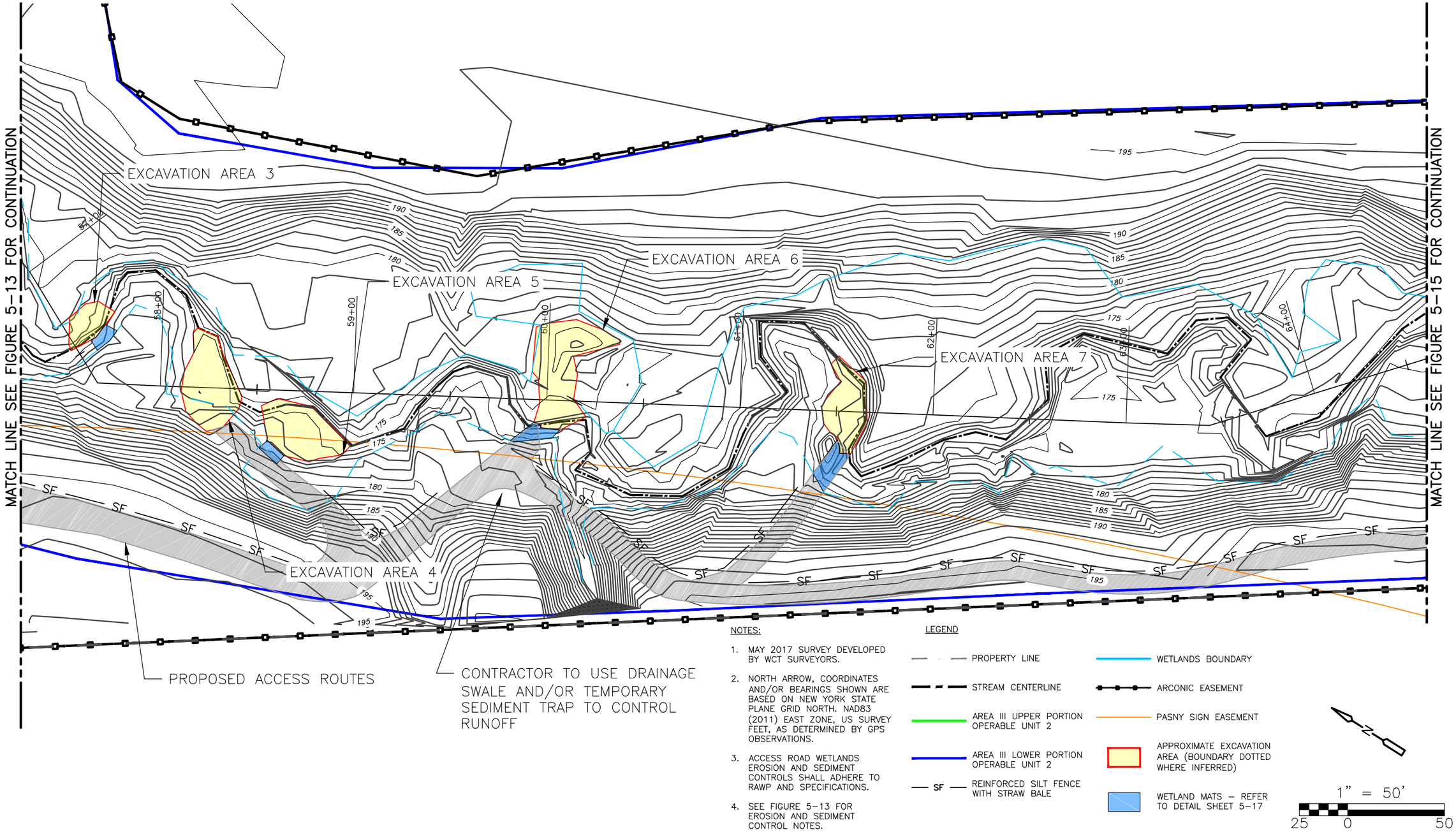
CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III

EROSION AND SEDIMENT CONTROL PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 53□50 TO 5□□90

FIGURE 5-13



NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.
3. ACCESS ROAD WETLANDS EROSION AND SEDIMENT CONTROLS SHALL ADHERE TO RAWP AND SPECIFICATIONS.
4. SEE FIGURE 5-13 FOR EROSION AND SEDIMENT CONTROL NOTES.

LEGEND

- PROPERTY LINE
- STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- SF — REINFORCED SILT FENCE WITH STRAW BALE
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- WETLAND MATS – REFER TO DETAIL SHEET 5-17

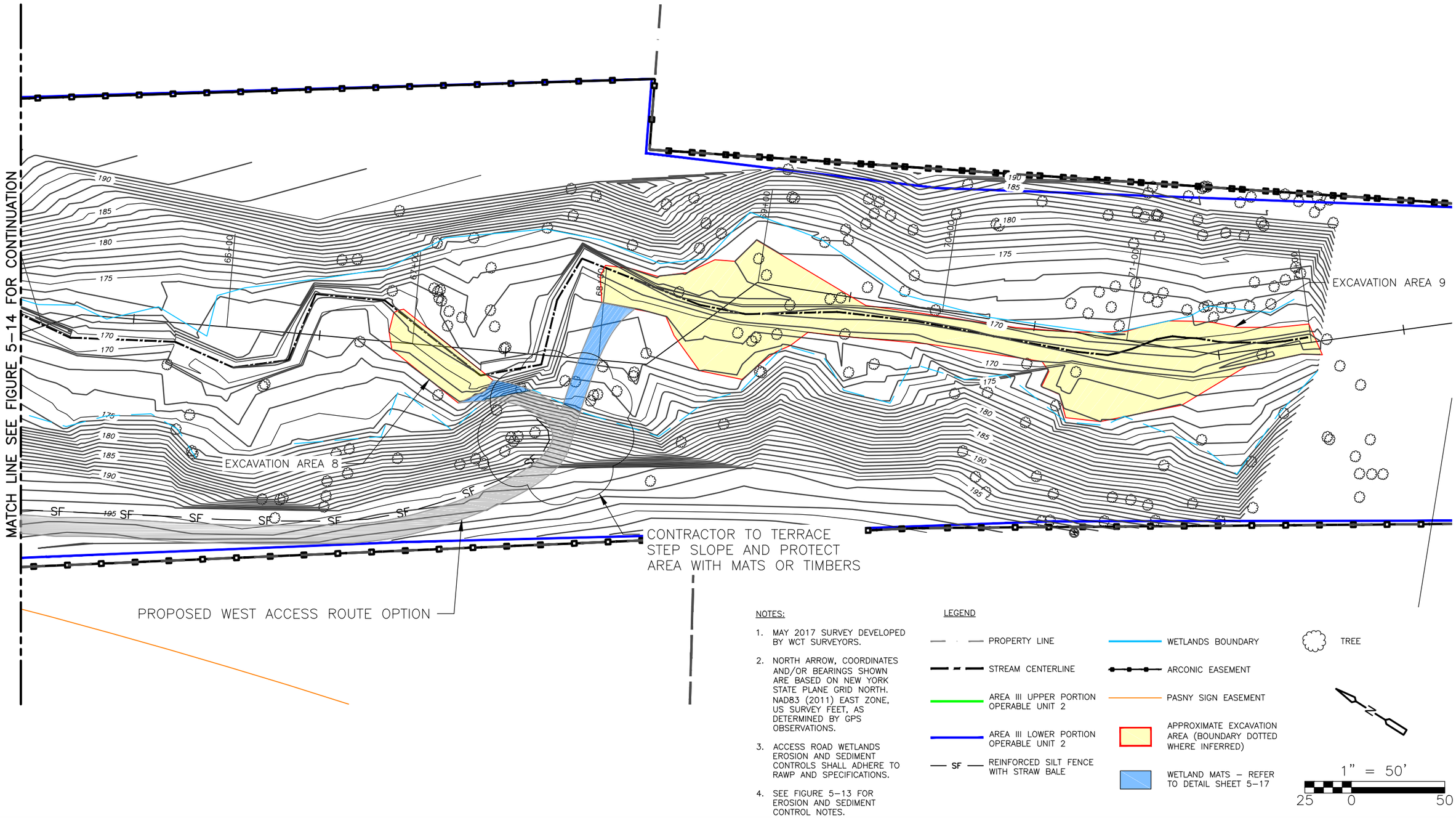
N

1" = 50'
25 0 50

CDM Smith

Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III
EROSION AND SEDIMENT CONTROL PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 5□□90 TO □4□90
FIGURE 5-14



NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.
3. ACCESS ROAD WETLANDS EROSION AND SEDIMENT CONTROLS SHALL ADHERE TO RAWP AND SPECIFICATIONS.
4. SEE FIGURE 5–13 FOR EROSION AND SEDIMENT CONTROL NOTES.

LEGEND

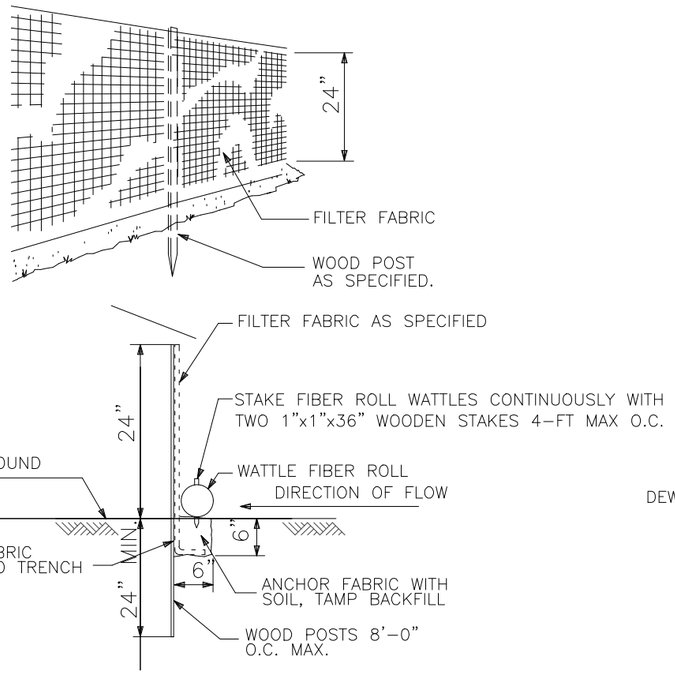
- PROPERTY LINE
- STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- SF — REINFORCED SILT FENCE WITH STRAW BALE
- WETLANDS BOUNDARY
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- WETLAND MATS – REFER TO DETAIL SHEET 5–17
- TREE

1" = 50'
25 0 50

CDM Smith

Arconic - Massena, New York

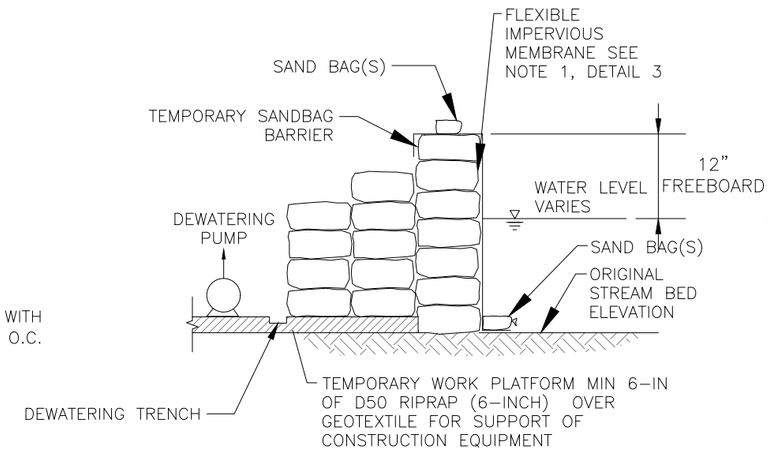
UNNAMED TRIBUTARY (UNT) AREA III
EROSION AND SEDIMENT CONTROL PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 4+90 TO 7+50
FIGURE 5-15



REINFORCED SEDIMENT FENCE

DETAIL 1

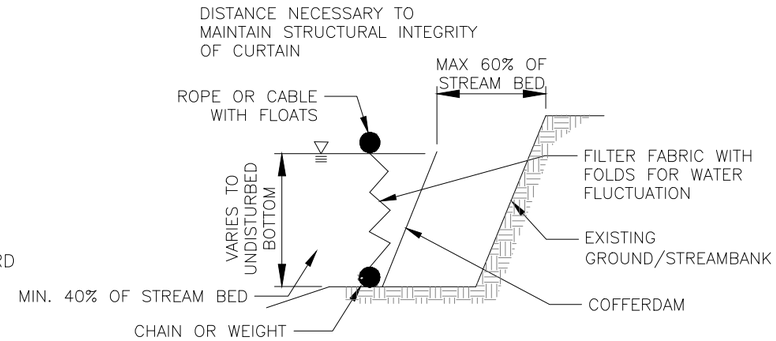
NOT TO SCALE



TEMPORARY COFFERDAM SAND BAG(S)

DETAIL 2

NOT TO SCALE



NOTES:

1. FLEXIBLE IMPERVIOUS MEMBRANE WITH INTEGRAL ADHESIVE STRIP FOR SEALING JOINTS IN THE MEMBRANE. MEMBRANE SHALL BE SIKAPROOF A12 OR APPROVED EQUAL. DAMAGE TO MEMBRANE TO BE REPAIRED IMMEDIATELY PER MEMBRANES MANUFACTURER'S INSTRUCTIONS.
2. PORTADAM OR EQUIVALENT MAY BE USED IN PLACE OF SAND BAGS.
3. TEMPORARY COFFERDAM SHALL DIVERT ALL FLOW THROUGH A MINIMUM OF 40 PERCENT OF THE STREAM BED OF THE UNT.
4. RESTORE STREAM BED AND BANK PER RAWP AND SPECIFICATIONS.

TEMPORARY STREAM DIVERSION COFFERDAM AND TURBIDITY CURTAIN

DETAIL 3

NOT TO SCALE

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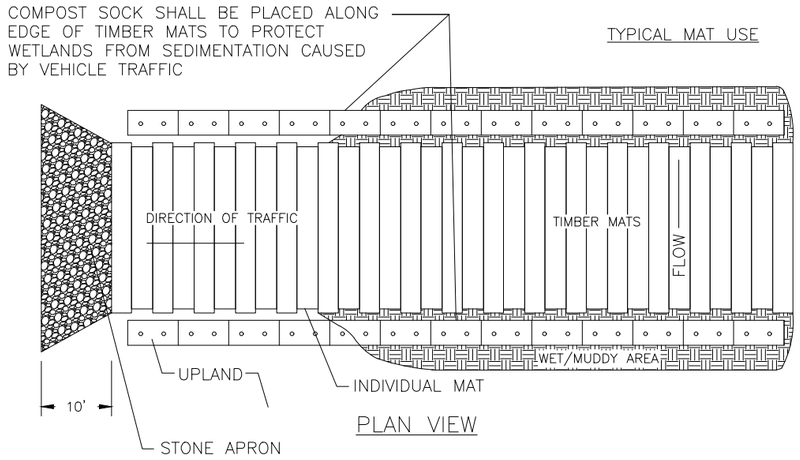
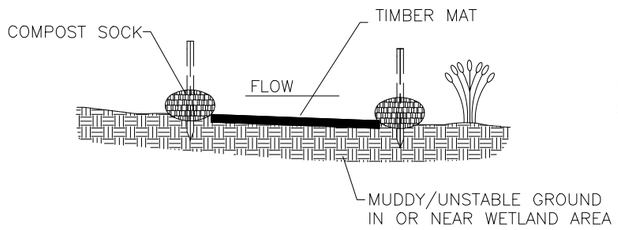
UNNAMED TRIBUTARY (UNT) AREA III LOWER PORTION OPERABLE UNIT 2
EROSION & SEDIMENT CONTROL EXAMPLE DETAILS
FIGURE 5-1



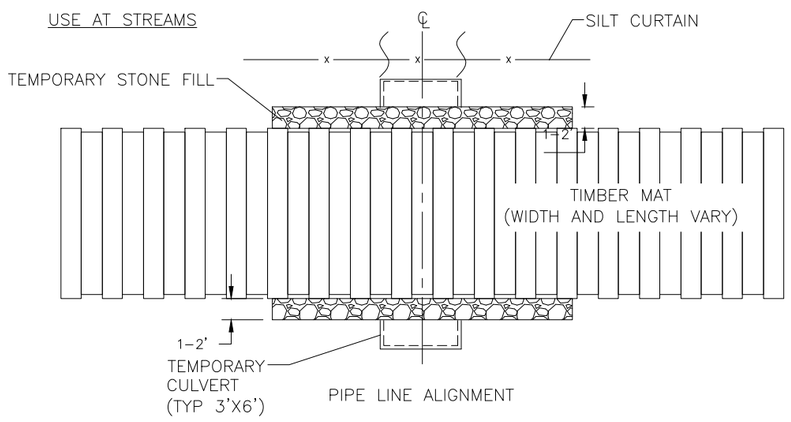
PLAN VIEW



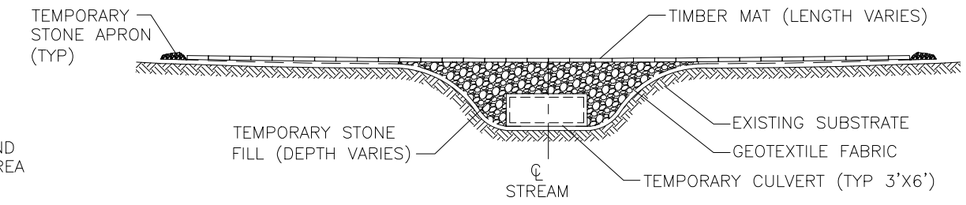
ELEVATION VIEW

NOTES:

1. PLACE TIMBER MATS SO PLANKS ARE PERPENDICULAR TO DIRECTION OF TRAFFIC.
2. REMOVE SEDIMENT DEPOSITS ALONG EDGES OF MATS ON A REGULAR BASIS.
3. LENGTH OF MAT VARIES. SEE FIGURES 5–13 THROUGH 5–15 FOR LENGTHS.
4. WIDTH VARIES BY MULTIPLES OF 4–FT. TYPICAL WIDTH IS 12–FT.
5. SOURCE: USACE – NEW ENGLAND DISTRICT, NE GP PERMIT RESOURCES, CONSTRUCTION MAT BMP'S – 6/10/13 DRAFT.



PLAN VIEW



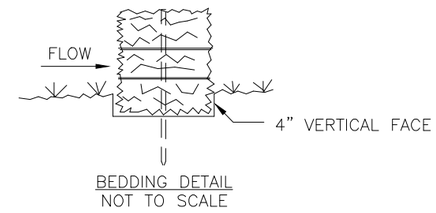
CROSS–SECTION

NOTES:

1. WIDTH OF TEMPORARY STONE FILL SHALL NOT EXCEED 35–FT.

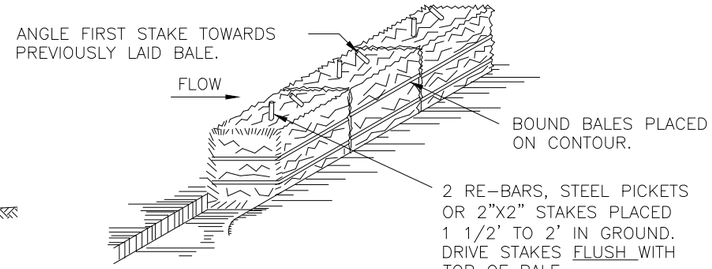
TIMBER MAT OR EQUIVALENT

DETAIL 5 / SCALE: NTS –



BEDDING DETAIL
NOT TO SCALE

DRAINAGE AREA NO MORE THAN 1/4 ACRE PER 100 FEET OF STRAW BALE DIKE FOR SLOPES LESS THAN 25%.



ANCHORING DETAIL
NOT TO SCALE

NOTES:

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE–BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULLNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

STRAW BALE DIKE (HAYBALE)

DETAIL □ / SCALE: NTS –

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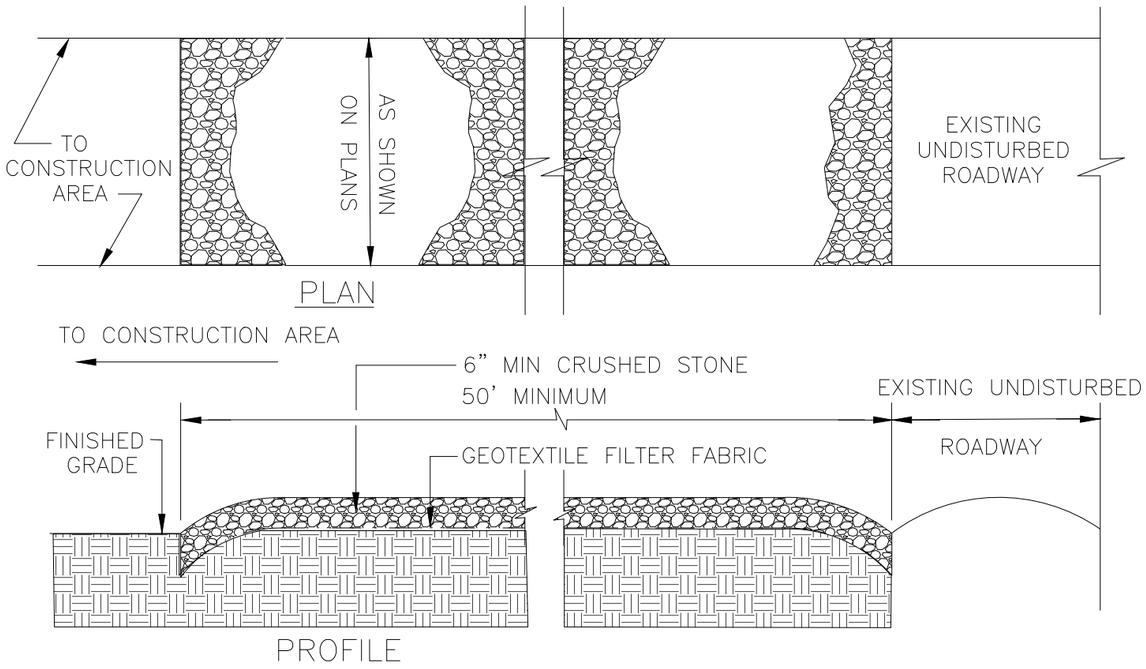
UNNAMED TRIBUTARY (UNT) AREA III LOWER PORTION OPERABLE UNIT 2
EROSION & SEDIMENT CONTROL EXAMPLE DETAILS
FIGURE 5-17



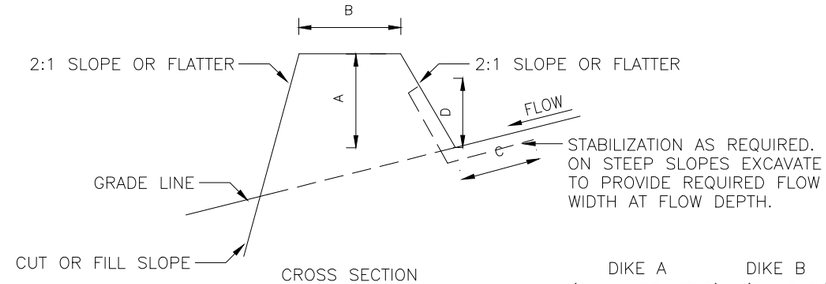
NOTES:

1. PROVIDE APPROPRIATE TRANSITION BETWEEN STABILIZED CONSTRUCTION ENTRANCE AND UNDISTURBED ROADWAY.
2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO UNDISTURBED ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDING STONE TO THE LENGTH OF THE ENTRANCE.
3. REPAIR AND CLEANOUT MEASURES USED TO TRAP SEDIMENT.
4. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO UNDISTURBED ROADWAY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

TEMPORARY STABILIZED CONSTRUCTION ENTRANCE

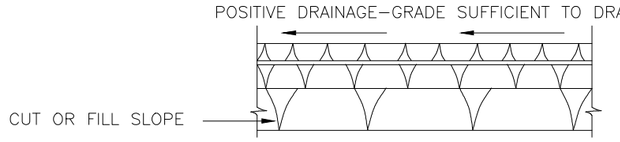
DETAIL 7

SCALE: NTS



CROSS SECTION
NOT TO SCALE

	DIKE A (5 AC. OR LESS)	DIKE B (5–10AC.)
A – DIKE HEIGHT	18"	36"
B – DIKE WIDTH	24"	36"
C – FLOW WIDTH	48"	72"
D – FLOW DEPTH	8"	15"



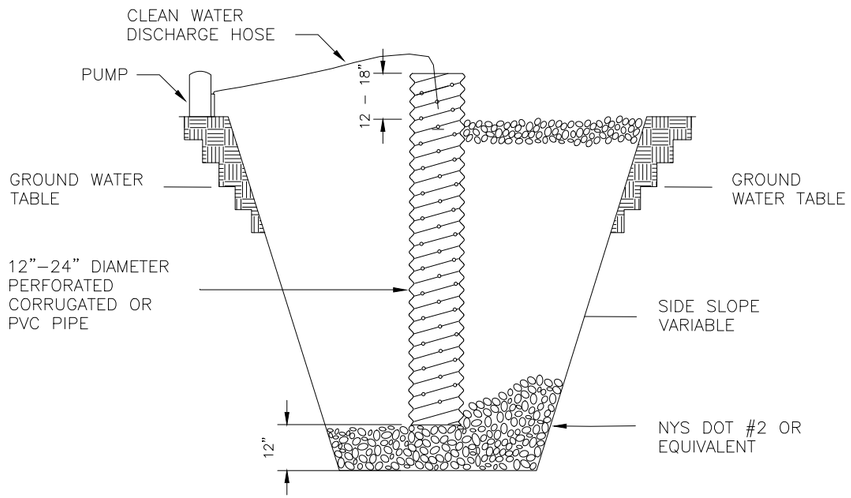
EARTH DIKE

DETAIL 8

SCALE: NTS

NOTES:

1. ALL DIKES SHALL BE COMPACTED BY EARTH–MOVING EQUIPMENT.
2. ALL DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. TOP WIDTH MAY BE WIDER AND SIDE SLOPES BE FLATTER IF DESIRED TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
4. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED SAFE OUTLET.
5. EARTH DIKES SHALL HAVE AN OUTLET THAT FUNCTIONS WITH A MINIMUM OF EROSION. RUNOFF SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE SUCH AS A SEDIMENT TRAP OR SEDIMENT BASIN WHERE EITHER THE DIKE CHANNEL OR THE DRAINAGE AREA ABOVE THE DIKE ARE NOT ADEQUATELY STABILIZED.



DEWATERING SUMP PIT

DETAIL 9

SCALE: NTS

NOTES:

1. PIT DIMENSIONS ARE VARIABLE.
2. THE STANDPIPE SHOULD BE CONSTRUCTED BY PERFORATING A 12–24" DIAMETER CORRUGATED OR PVC PIPE.
3. A BASE OF NYS DOT #2 OR EQUIVALENT AGGREGATE SHOULD BE PLACED IN THE PIT TO A DEPTH OF 12". AFTER INSTALLING THE STANDPIPE, THE PIT SURROUNDING THE STANDPIPE SHOULD BE BACKFILLED WITH NYS DOT #2 OR EQUIVALENT AGGREGATE.
4. THE STANDPIPE SHOULD EXTEND 12–18" ABOVE THE LIP OF THE PIT.
5. IF DISCHARGE WILL BE PUMPED DIRECTLY TO A WEIR TANK, THE STANDPIPE SHOULD BE WRAPPED WITH FILTERCLOTH BEFORE INSTALLATION. IT IS RECOMMENDED THAT 1/4"–1/2" HARDWARE CLOTH MAY BE PLACED AROUND THE STANDPIPE, PRIOR TO ATTACHING THE FILTERCLOTH.

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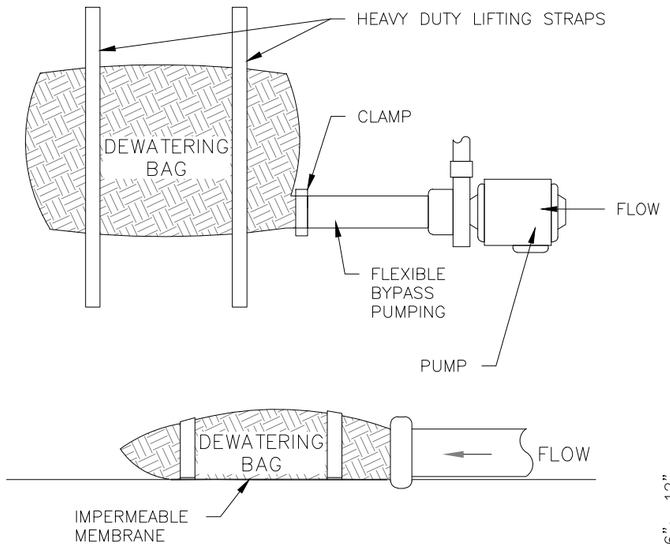
UNNAMED TRIBUTARY (UNT) AREA III LOWER PORTION OPERABLE UNIT 2
EROSION & SEDIMENT CONTROL EXAMPLE DETAILS
FIGURE 5-18



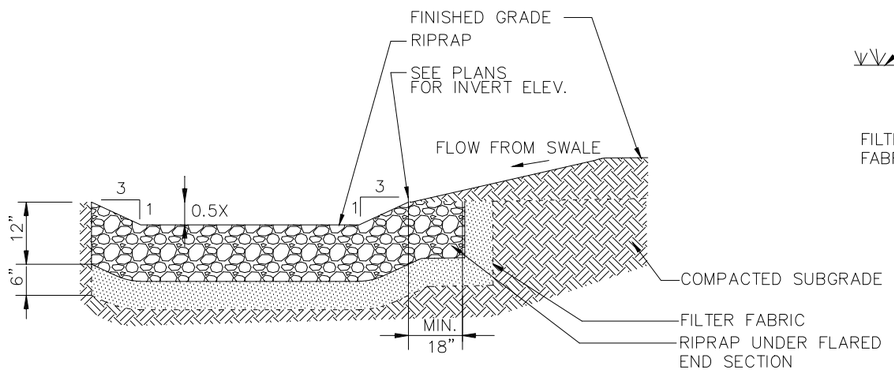
NOTES:

1. DEWATERING BAG SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.
2. DEWATERING BAGS SHALL BE REPLACED WHEN THEY BECOME ½ FULL OF SEDIMENT. SPARE BAGS SHALL BE AVAILABLE FOR REPLACEMENT. A SUITABLE MEANS OF ACCESSING THE BAG IS REQUIRED FOR DISPOSAL PURPOSES.
3. DEWATERING BAGS SHALL DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. AN IMPERMEABLE MEMBRANE IS REQUIRED IF THE AREA IS NOT EROSION RESISTANT.
4. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER.
5. DEWATERING BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, CEASE PUMPING UNTIL PROBLEM IS CORRECTED.
6. DEWATERING BAG SHALL BE PLACED ON STABLE, FLAT GROUND THAT IS READILY ACCESSIBLE BY THE EQUIPMENT NEEDED TO REMOVE THE BAG WHEN IT IS FULL. CONTRACTOR SHALL PROVIDE HAY BALES AND SILT FENCE AROUND DEWATERING BAG, AT THE DIRECTION OF THE ENGINEER.
7. THE DEWATERING BAG SHALL BE PLACED AT LEAST 50 FEET FROM ALL WETLANDS, STREAMS OR OTHER SURFACE WATER UNLESS DIRECTED BY ENGINEER OR AS SHOWN ON THE DRAWINGS.

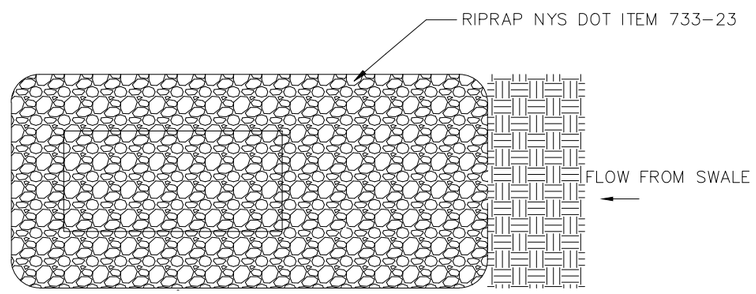
DEWATERING BAG

DETAIL 10

SCALE: NTS –



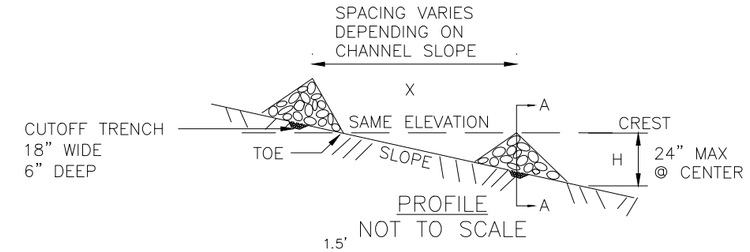
SECTION



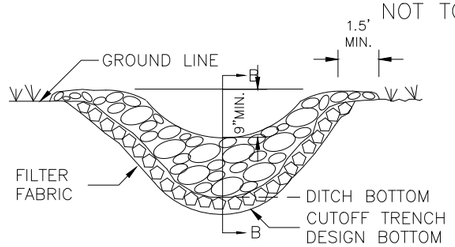
RIPRAP DISSIPATION

DETAIL 11

SCALE: NTS –

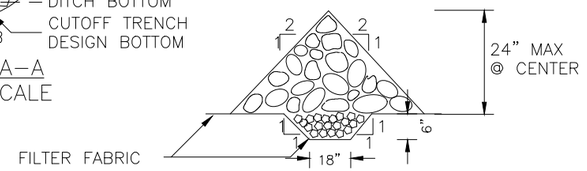


PROFILE
NOT TO SCALE



SECTION A–A
NOT TO SCALE

$$X = \frac{H\ (Ft)}{SLOPE\ (FT/FT)}$$



SECTION B–B
NOT TO SCALE

NOTES:

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE. MAXIMUM DRAINAGE AREA 2 ACRES.

STONE CHECK DAM

DETAIL 12

SCALE: NTS –

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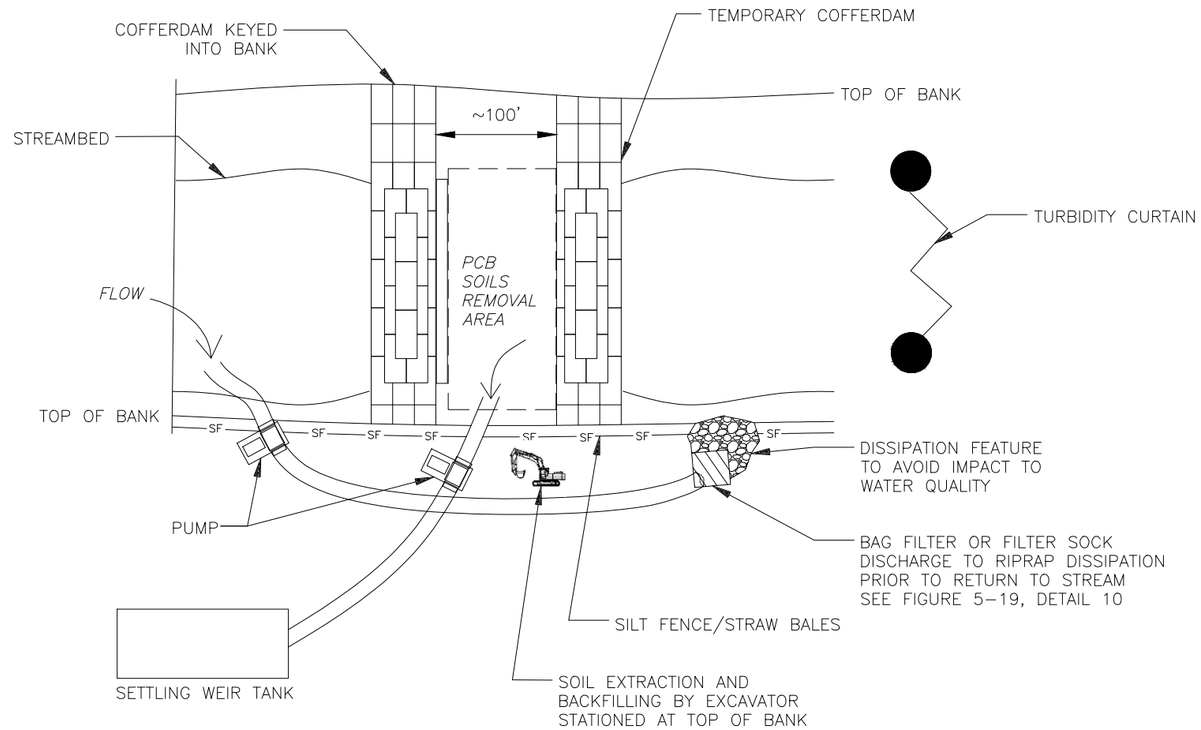
UNNAMED TRIBUTARY (UNT) AREA III LOWER PORTION OPERABLE UNIT 2
EROSION & SEDIMENT CONTROL EXAMPLE DETAILS
FIGURE 5-19



NOTES:

1. BYPASS FLOW TO DISCHARGE UPSTREAM OF TURBIDITY CURTAIN.
2. CONTRACTOR TO UTILIZE ENERGY DISSIPATION MEASURES AS REQUIRED TO PREVENT TURBID CONDITIONS FROM DISCHARGE. REFER TO FIGURE 5–19, DETAIL 11 RIPRAP DISSIPATION.
3. TURBIDITY CURTAIN IS TO BE ANCHORED TO STREAM BANK IN ACCORDANCE WITH MANUFACTURE'S REQUIREMENTS.

TYPICAL BYPASS WITH COFFERDAM

DETAIL 13 / –

NOT TO SCALE

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UNNAMED TRIBUTARY (UNT) AREA III LOWER PORTION OPERABLE UNIT 2
EROSION & SEDIMENT CONTROL EXAMPLE DETAILS
FIGURE 5-20

Measures that will be implemented for erosion and sediment control during initial construction activities include:

- Installing fiber rolls and/or silt fence;
- Installing a stabilized construction entrance and staging area;
- Implementation of erosion control blankets;
- Drainage swales, riprap and check dams;
- Sediment traps or basins; and
- Dust control.

These measures will be in place to help prevent sediment resulting from construction activities from leaving the work areas and entering the UNT downstream of the work area.

Sedimentation and erosion control measures meeting the requirements of the New York Standards and Specifications for Erosion Control and General Permit 0-15-002 shall be installed by the contractor along the downgradient side of haul roads and all areas of disturbed soil. Refer to RAWP Figure 5-13 notes for contractor erosion and sedimentation requirements. Work in the individual excavation areas will be performed in the dry up to and including the dewatered stream channel. These areas will then be restored prior to removal of sedimentation and erosion control measures and stream bypass measures.

The following is a list and brief description of temporary erosion and sedimentation control features to be used during the construction process.

Temporary Sediment Trap. A temporary sediment trap is a settling area created by constructing an earthen embankment with a stone outlet. The purpose is to detain sediment-laden runoff from small disturbed areas, generally less than five acres, allowing the majority of the sediment to settle out, thus protecting drainage ways and adjacent properties.

Sediment Basin. A temporary sediment basin is a barrier or dam with a controlled stormwater release structure formed by constructing an embankment of compacted soil across a drainage way. The purpose is to detain sediment-laden runoff from disturbed areas larger than those upstream of traps, generally five acres or greater.

Sediment Fence. A sediment fence is a temporary barrier composed of trap rock and straw bales, used to intercept sediment-laden runoff (sheet-flow) from small drainage areas of disturbed soil. The sediment fence reduces runoff velocity and affects deposition of sediment load.

Silt Fence. A silt fence is a temporary barrier composed of synthetic filter fabric, used to intercept sediment-laden runoff (sheet-flow) from small drainage areas of disturbed soil. The sediment fence reduces runoff velocity and affects deposition of sediment load.

Stabilized Construction Entrance. This measure consists of a stabilized pad of aggregate underlain with filter cloth. It is located at a point where traffic will be entering or leaving a construction site to or from a public right-of-way. The stabilized construction entrance serves to reduce the tracking of sediment onto public streets.

Temporary Diversion Swale. This is a temporary, excavated drainage way used to prevent runoff from entering disturbed areas by intercepting and diverting it to a sediment trap.

Check Dam. These are small, temporary stone dams constructed across a drainage channel to reduce erosion and limit sediment transport by restricting the velocity of flow in the channel.

Truck Wheel Wash. These systems clean the tires of trucks when they are leaving a site by strategically spraying water at each wheel axel.

Erosion Control Blanket. This is a blanket woven from natural or synthetic materials meant to slow down the speed at which water moves across the surface.

Dust Control. Monitoring for particles will be conducted in accordance with the CAMP (Appendix C). Visual air monitoring will be performed concurrently with remediation activities. If physical controls are needed, dust suppression will be implemented as needed. Dust suppression may include the use of water. The site may be sprayed with water until the surface is wet. This is especially effective on the driving areas and entrance ways to the construction work areas.

5.3.1 Stormwater Runoff Analysis

The total tributary watershed to the UNT is approximately 956 acres and consists of primarily wooded and heavily vegetated areas. Stormwater runoff flows from surrounding highpoints into the UNT with an approximate elevation difference of 70-100 feet. throughout the watershed. As shown on **Figure 5-21** three catchment areas for the UNT have been identified. The Western Tributary catchment area is approximately 417 acres, the East Tributary catchment area is approximately 469 acres, and the South Tributary catchment area is approximately 70 acres. The expected stormwater volumes for various storms is provided in more detail further in this section. Land use in the immediate vicinity of the UNT is primarily wooded and heavily vegetated. To the east of the UNT is agricultural land; to the south is County Route 42, some residential houses, and ultimately the Grasse River; and to the west and north of the UNT is undeveloped wooded land. Overhead transmission power lines cross the northern portion of UNT Area III UROU2.

Soil types vary across the UNT area, but generally consist of silty clay and loam. Site soils identified by the Natural Resources Conservation Service (NRCS) soil mapping primarily include:

- Hogansburg and Grenville (HrB) soils, 0 to 8 percent slope: very stony;
- Udorthents (Uf), clayey;
- Malone (MbB) loam, 0 to 8 percent slopes: very stony;
- Adjiduamo (Am) mucky silty clay, 0 to 3 percent slope: frequently ponded;

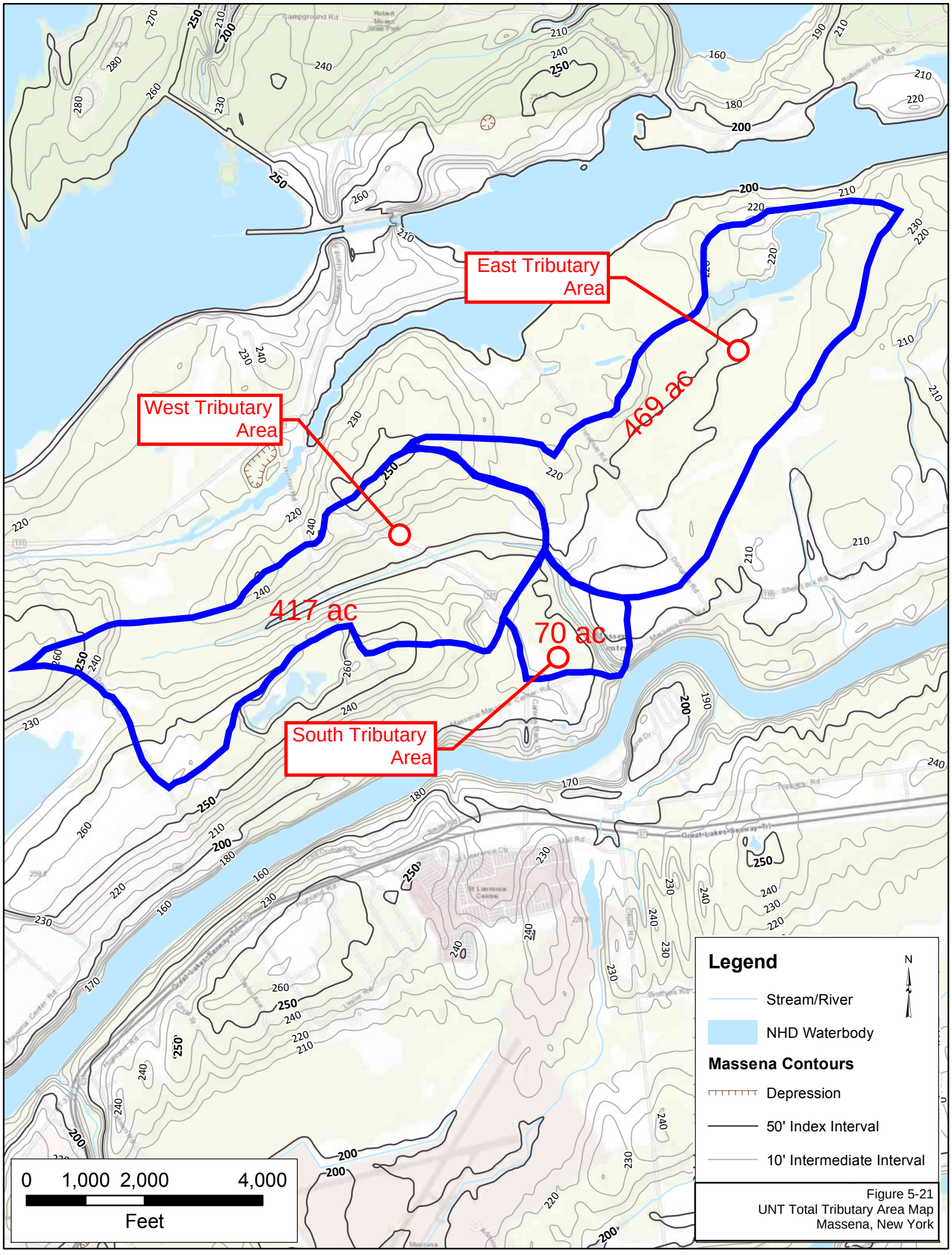


Figure 5-21
UNT Total Tributary Area Map
Massena, New York

- Adjiduamo (Ak) silty clay, 0 to 3 percent slope;
- Croghan (CvB) loamy fine sand, 3 to 8 percent slope; and
- Muskellunge (MsA) silty clay loam, 0 to 3 percent slope.

The computer program HydroCAD, Version 10.00, was used to determine peak rates of runoff for the 2-, 10-, 25-, 50- and 100-year, 24-hour rainfall events. The HydroCAD program is based on the Natural Resources Conservation Service's (NRCS, formerly Soil Conservation Service) Runoff Curve Number Method.

Precipitation data for standard storms used in the models were taken from the recently published National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 10, Version 2 Point Precipitation Frequency Estimates. The Atlas 14 estimated precipitation depths during the 2-, 10-, 25-, 50- and 100-year 24-hour storms are 2.26, 3.24, 3.85, 4.33, and 4.80 inches, respectively.

The total tributary area was broken into three drainage areas for project purposes. These areas are the West, East, and South Tributary areas. Each of these areas are depicted in Figure 5-19. The peak rates of runoff for the three tributary areas and the total runoff to the Unnamed Tributary are shown in **Table 5-3** below.

Table 5-3 Drainage Area Calculations

24-hour Storm Event	West Tributary Area (cfs)	East Tributary Area (cfs)	South Tributary Area (cfs)	UNT Total (cfs)
2-yr	68.6	65.8	25.5	134.9
10-yr	157.7	149.8	58.9	308.5
25-yr	221.6	209.2	82.4	431.5
50-yr	274.5	258.3	101.8	533.3
100-yr	328.1	307.9	121.4	636.2

5.3.2 Construction Dewatering

During construction of the project, dewatering activities may be needed and will be designed in accordance with the New York SPDES requirements. Treatment of water from collected areas with disturbed sediment is described in section 5.2.2.9.

5.3.3 Inspections and Maintenance of Stormwater Controls During Construction

The area of remedial construction, sediment and soil removals and restoration is the topographically lowest point of the active construction work area. This area will be subject to remedial activities until restoration and stabilization is complete. The remediation areas will be cordoned off and UNT water flow bypassed around the active sections to enable the excavation work to be performed "in the dry". Inspection of the UNT flow for turbidity at this location is considered adequate and appropriate for evaluation potential downstream impacts.

If a breach in construction area containment occurs resulting in a release of visible turbidity and sediment, sampling of the active channel downstream of the work area will be performed. Samples will be collected of sediment depositional areas within the active channel at 50-foot intervals for a distance of 250 feet downstream. Samples will be analyzed for total PCBs by method 8082A.

Maintenance measures include repairs of erosion measures as well as sediment removal from roadways. Control devices in need of repair will be repaired promptly after identification. Erosion control devices will be maintained until all disturbed earth has been vegetated, at which time they will be removed. Examples include:

Straw Bales. Sediment will be removed and legally disposed periodically from behind the straw bales; in no case will the accumulated sediment be allowed to rise above the mid-height of the straw bale (design capacity reduced by 50 percent). Straw bales, which deteriorate or have otherwise lost their effectiveness during the course of the work, will be removed and replaced with new straw bales

Silt/Sediment Fence. Sediment will be removed and legally disposed periodically within fenced areas; and in no case, will the accumulated sediment be allowed to rise above one-third the height of the silt/sediment fence. The installation(s) of the silt/sediment fence will be maintained or replaced, when it becomes ineffective, until it is no longer necessary, and then it shall be removed.

Slopes. Any indication of slope erosion should be addressed immediately. If necessary, additional slope stabilization materials will be placed on the slope, or an additional diversion should be implemented.

Outlet Structures. Outlet structures will be inspected after all rainfall events that generate storm flows that attain an elevation above the outlet orifice. All debris or other material that affects the operation of the outlet orifice will be removed.

5.3.4 Site Inspections

A qualified inspector will ensure proper functioning of the soil erosion and sediment control measures and perform a site inspection at least every 7 calendar days and within 24 hours of the end of a storm event of one-half inch per 24-hour period or greater. The qualified inspector shall inspect all erosion and sediment control practices that will include, at a minimum, the following areas:

- Stabilization and structural erosion and sedimentation control measures;
- Disturbed areas of the site that have not been permanently stabilized;
- The staging areas and material storage areas that are exposed to precipitation; and
- All points of discharge that may discharge to natural surface water bodies located within, or immediately adjacent to, the limits of the construction work.

Areas that are stabilized at the end of each construction phase shall be inspected two weeks after stabilization. Inspections will be performed after site preparation, on-site construction, and final site restoration. Following commencement of construction, site inspections of soil and sediment erosion control measures shall be conducted at least once every seven calendar days. Records of inspections and repairs will be prepared and maintained on the site.

The inspection reports will contain at a minimum:

- Date and time of inspection.
- Name and title of person(s) performing inspection.
- A description of the weather and soil conditions (e.g., dry, wet, saturated) at the time of the inspection.
- A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e., ditches, etc.) and overland flow.
- A description of the condition of all-natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface water body.
- Identification of all erosion and sediment control practices that need repair or maintenance.
- Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced.
- Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection.
- Identification of all construction that is not in conformance with the RAWP and technical standards.
- Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices.

If no incidents of non-compliance are found, the report will contain a statement that the work areas are in compliance with the RAWP and the Stormwater Pollution Prevention Plan; as required by the General Permit (GP 0-015-002).

Section 6
Verification Sampling and Contingencies

This section describes the criteria, verification sampling approach, data/results analysis, communication and contingencies associated with documenting the successful accomplishment of planned remediation.

6.1 Sampling Rationale

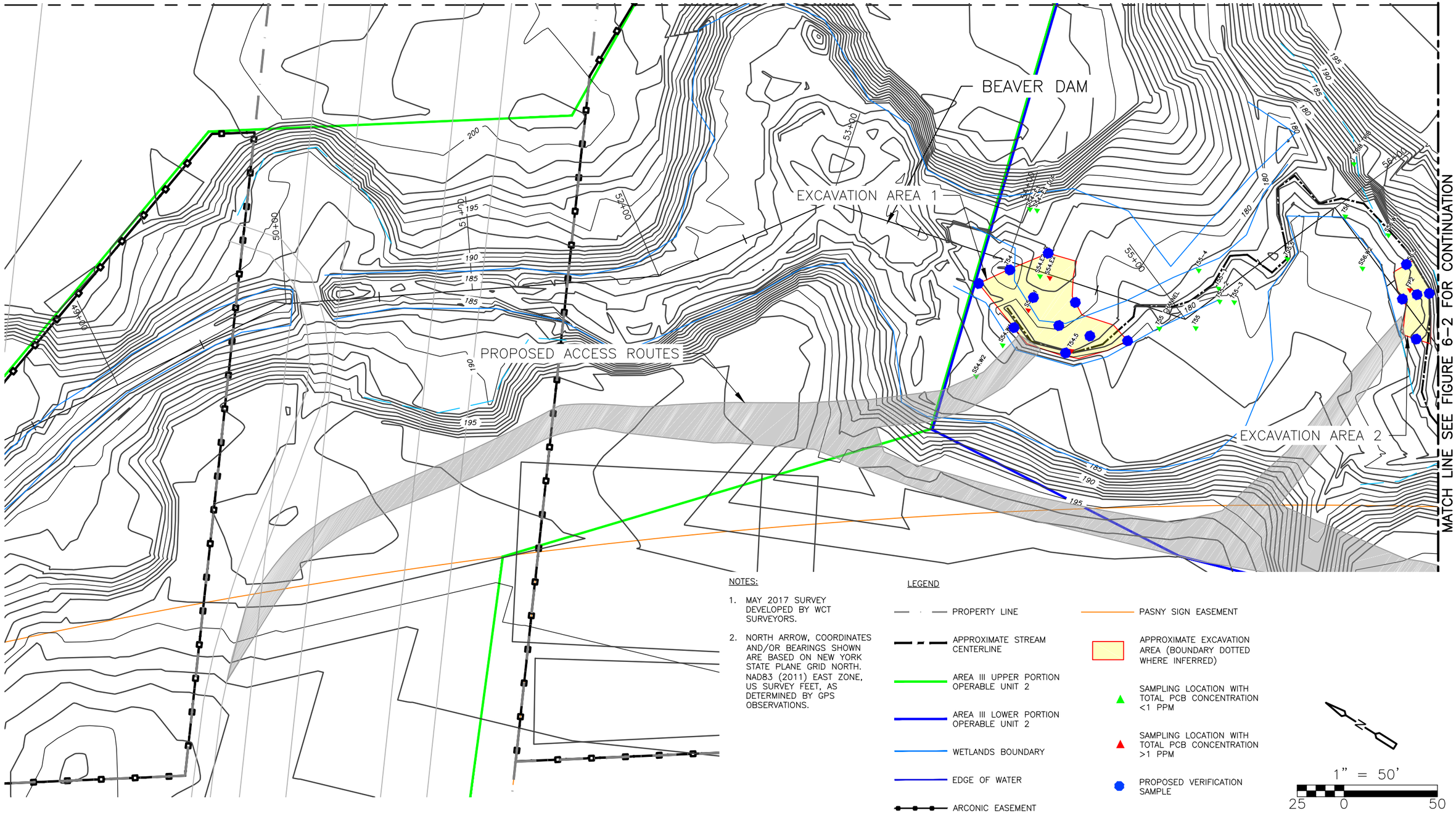
Verification sampling is intended to provide a robust documentation of the average concentration of the remediated surfaces. Sampling locations will be established to incorporate the base, sidewalls and confirm the adequacy of the extent of removal. Sampling is intended and designed to verify the bulk contamination of the remediated surface is less than or equal to the cleanup criteria of 1 ppm total PCBs. Sampling and analyses will be coordinated with removal activities so that the work can efficiently proceed from upstream to downstream.

6.2 Sampling Methodology

PCB contaminated areas were delineated through a transect-triad approach in extensive sampling efforts in 2016 and 2017. This data serves as a reference in distinguishing the areas needed for removal, verification and confirmation sampling after remediation activities in 2018 at UNT Area III UPOU2 and LPOU2. Areas targeted for removal are based on the presence of one or more samples exceeding the cleanup goal of 1 ppm, the topographical outline of the depositional feature associated with the cleanup goal exceedance and the available sampling data with PCB concentrations less than the cleanup goal bracketing the removal areas. Verification sampling conducted after remediation will focus on the base and perimeter of excavated areas.

An overview plan of the proposed locations is shown on **Figures 6-1** through **6-3**.

In UNT Area III LPOU2 (approximately Sta. 53+50 to Sta. 72+00), samples will be collected from targeted removal areas, between Sta. 53+50 and Sta. 67+50, and from a comprehensive removal between Sta. 68+50 to Sta. 72+00, consistent with the provision of DER-10 section 5.4(b) 3 through 5. Verification sample locations are shown on Figures 6-1, 6-2 and 6-3. Samples will be collected from the sidewalls of the excavation at the upstream and downstream extent of each targeted removal area. In addition, samples will be collected at approximate 30-foot intervals along the perimeter of each side of the targeted excavation areas. At the base of the excavations, one sample will be collected for every 900 square feet in accordance with DER-10. For the comprehensive removal between Sta. 68+50 and Sta. 72+00 sample locations are shown on Figure 6-3. Based on calculations for both linear footage for excavation sidewalls (1 sample every 30 linear feet) and excavation bottom square footage (1 sample every 900 square feet) total sampling presented has a slightly reduced sampling frequency consistent with DER-10 5.4(b) 5. However, given the orientation and size of this comprehensive removal area the sampling configuration has been established to provide sufficient coverage for both sidewall and bottom post-excavation verification sampling.



NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- EDGE OF WATER
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION <1 PPM
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION >1 PPM
- PROPOSED VERIFICATION SAMPLE

N

1" = 50'

25 0 50

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UNNAMED TRIBUTARY (UNT) AREA III

□ERIFICATION SAMPLING PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 53□50 TO 5□□90

FIGURE □-1

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pw:\\pw.cdmsmit□.com:PW_PL1\1902\21794\04 Design Services NM_30□\02 Civil\UNT Area III Operable Unit 1\Figure □-1, □-2, □-3.dwg

MATCH LINE SEE FIGURE 6-1 FOR CONTINUATION

MATCH LINE SEE FIGURE 6-3 FOR CONTINUATION

EXCAVATION AREA 3

EXCAVATION AREA 4

EXCAVATION AREA 5

EXCAVATION AREA 6

EXCAVATION AREA 7

PROPOSED ACCESS ROUTES

NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS.
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS.

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- EDGE OF WATER
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT
- APPROXIMATE EXCAVATION AREA (BOUNDARY DOTTED WHERE INFERRED)
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION <1 PPM
- SAMPLING LOCATION WITH TOTAL PCB CONCENTRATION >1 PPM
- PROPOSED VERIFICATION SAMPLE

1" = 50'

25 0 50

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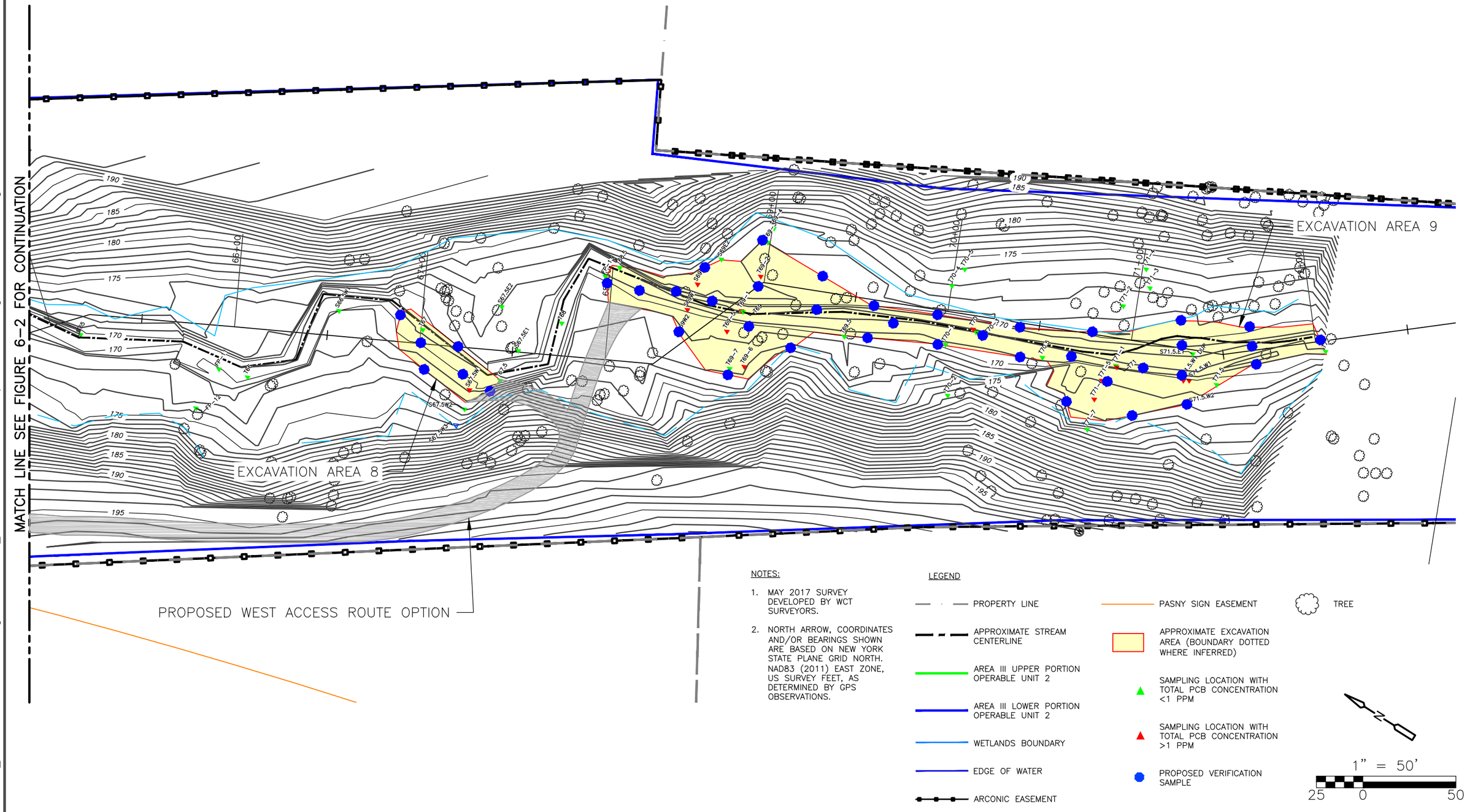
UNNAMED TRIBUTARY (UNT) AREA III

□ERIFICATION SAMPLING PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 5□□90 TO □4□90

FIGURE □-2



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UNNAMED TRIBUTARY (UNT) AREA III
□ERIFICATION SAMPLING PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA □4□90 TO 72□50
FIGURE □-3

Initial excavation depth is typically a minimum of 6 inches below the last confirmed sample greater than 1 ppm. Final excavation limits will be determined by verification samples. Samples will be collected from the proposed sample locations and thoroughly homogenized prior to placement in laboratory supplied glassware. To collect sufficient data for cleanup verification and to assess the depth of any additional excavation required to meet cleanup goals, Arconic proposes to collect 18- to 24-inch cores beginning at the bottom of excavation at each verification sample location. These cores will be analyzed in 6-inch intervals beginning with the 0- to 6-inch verification sample. If the shallow sample documents that cleanup goals have been met, no additional analyses will be required. If cleanup goals are exceeded in the shallow sample, the two deeper samples will be analyzed. These data will determine if removal of six inches or one foot of additional material is required. A sample meeting the cleanup goal of 1 ppm will serve as a verification sample provided the excavation grade is documented to reach that elevation. This approach will provide sufficient verification sampling and allow excavation backfilling and restoration to proceed without delay.

6.3 Sample Analyses

Verification samples collected post excavation from the UNT will be analyzed for PCBs. Each sample will be visually examined and described. The sample will be homogenized and put into the laboratory supplied sample containers for transportation to the laboratory for analysis.

Verification samples for laboratory analysis will be submitted to a New York State certified laboratory for analysis of PCB Aroclors using USEPA Method 8082A. Samples will be relinquished to the laboratory courier for transport between the project site and laboratory every day. Samples for laboratory analysis will be submitted for rapid turnaround time, to ensure data is expeditated to lessen the impact on construction and water management. The laboratory will provide a data package including a case narrative, chain-of-custody, summary of results, summary of quality control/quality assurance results, and raw data.

6.4 Data Management and Communication

To coordinate and manage the laboratory logistics and data management, communication with the laboratory and a logistics plan will be established before the start of the project. A courier schedule will be set up to ensure that samples are transported to the laboratory at the end of each day, results will be delivered to CDM Smith in an electronic data deliverable, and lab reports will be provided in a consistent format to facilitate the evaluation and quick turnaround of the preliminary analysis in order to inform those in the field whether or not an area has met excavation objectives.

Upon initial receipt of verification sampling results, the data will receive a rapid data usability evaluation for consistency to ensure data is acceptable, and then communicated to the team in the field and the NYSDEC. The results will be used to determine if additional removal is necessary. If no additional removal is necessary, restoration will be initiated as soon as practical. Restoration will include stabilization of bank soils, replacement of wetland soils in the stream bed at specific locations, and restoration of upland construction staging and solidification areas. Effort will be made to replicate the meandering stream channel and elevations of the overbank deposits.

Additional detail on restoration efforts is provided in Section 7.0 A formal data usability summary report (DUSR) will be submitted with the final cleanup verification report.

Quality assurance and quality control (QA/QC) procedures will be followed during all sampling activities and data management. QA/QC procedures will be consistent with DER-10, Appendix 2B requirements.

One blind duplicate sample and one matrix spike/matrix spike duplicate (MS/MSD) will be collected for every 20 samples. Laboratory quality control data associated with these samples will be reviewed in accordance with the Quality Assurance Project Plan (QAPP) (CDM, March 2008). A Data Quality Assessment (DQA) will be performed on the samples to evaluate the overall quality of the data package based on the QA/QC samples.

6.5 Additional Removal Contingencies

If verification sampling results indicate total PCB concentrations less than or equal to 1 ppm, excavation shall be deemed complete at that location. If verification sampling results indicate total PCB concentrations greater than 1 ppm, excavation shall continue laterally toward apparent break in slope limits of the specific depositional area subject to removal and if necessary, vertically in minimum of 6-inch increments until PCB concentration less than or equal to 1 ppm are achieved. Verification sampling will be repeated with an additional two verification samples for each excavation management unit subject to over excavation. Removal will not be considered complete until all verification results are less than or equal to 1 ppm.

Section 7
Site and Stream Restoration

This section presents a summary of the environmental functions and values of the UNT and the plans for restoration after removal of contaminated sediment.

7.1 UNT Functions and Values

This Wetland Functions and Values Assessment evaluates the UNT and associated vegetated wetlands (delineated April 2017) located in Massena, NY. This assessment follows the procedures prescribed in the U.S. Army Corps of Engineers New England District manual titled *"The Highway Methodology Workbook Supplement Wetland Functions and Values"* (United States Army Corps of Engineers [USACE] 1999).

This is a descriptive, rather than numerical or weighted approach to assess wetland functions and values. Wetland systems are likely to support multiple functions or values to a certain degree, but it is important to identify those functions and values that are most important or most strongly supported by a particular system, (i.e., principal function/value). Eight functions and five values are recognized by the USACE, identified in **Table 7-1**.

Table 7-1 Wetland Functions and Values

Functions	Values
Groundwater Recharge/Discharge	Recreation (Consumptive and Non-Consumptive)
Floodflow Alteration (Storage and Desynchronization)	Educational/Scientific Value
Fish and Shellfish Habitat	Uniqueness/Heritage
Sediment/Toxicant/Pathogen Retention	Visual Quality/Aesthetics
Nutrient Removal/Retention/Transformation	Federally Threatened or Endangered Species Habitat
Production Export (Nutrient)	
Sediment/Shoreline Stabilization	
Wildlife Habitat	

The USACE (1999) provides the following definitions of functions and values:

- Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society. Functions result from both living and non-living components of a specific wetland. These include all processes necessary for the self-maintenance of the wetland ecosystem such as Primary production and nutrient cycling. Therefore, functions relate to the ecological significance of wetland properties without regard to subjective human values.

- Values are benefits that derive from either one or more functions and the physical characteristics associated with the wetland. Most wetlands have corresponding societal values. The value of a particular wetland function, or combination thereof, is based on human judgment of the worth, merit, quality or importance attributed to those functions.

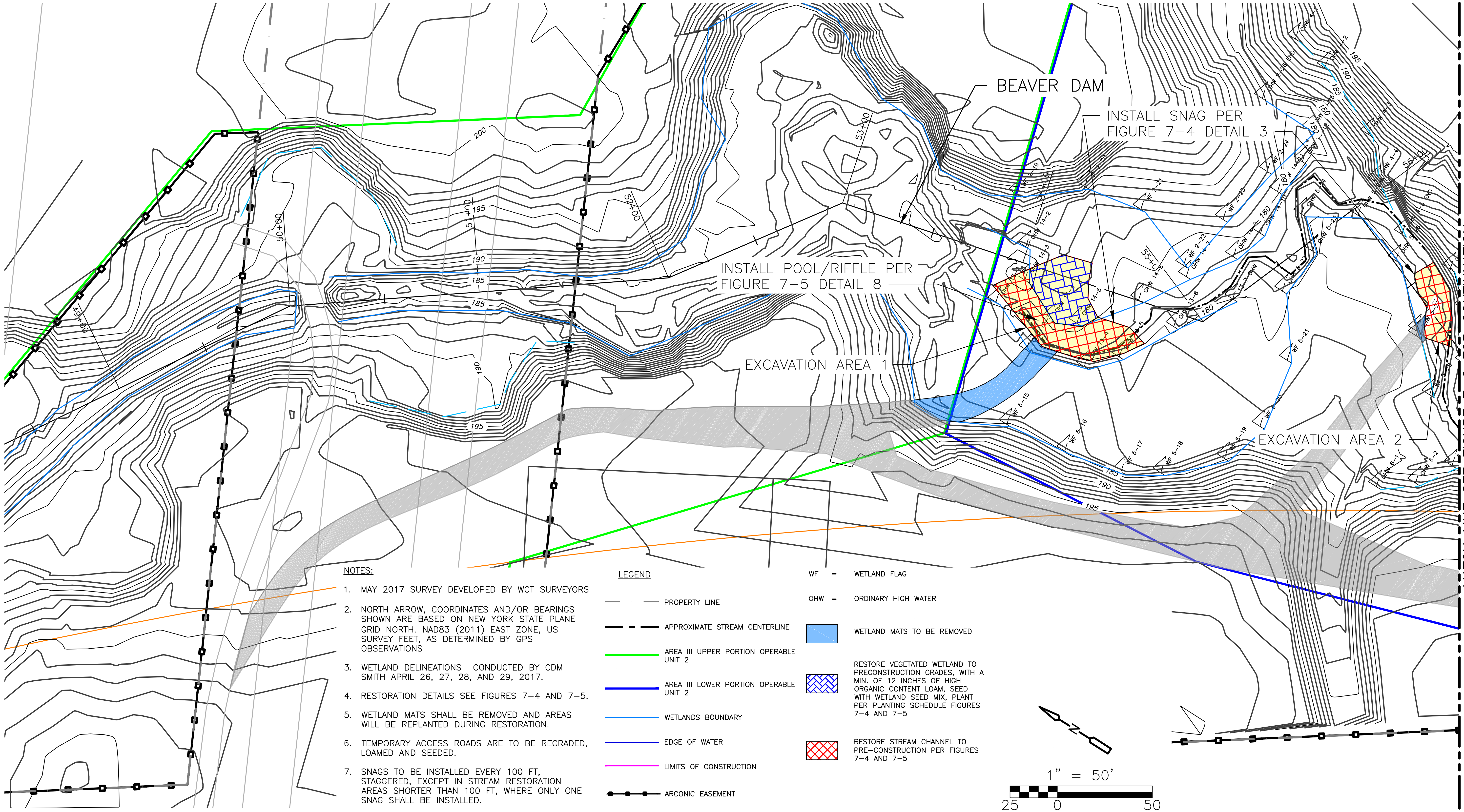
Based on the Wetland Function Evaluation Worksheet completed for the UNT project area, the primary functions of the UNT are sediment/toxicant/pathogen retention and sediment/shoreline stabilization. The UNT also provides and supports groundwater recharge, detains flood waters, and wildlife and fish habitat. Due to the lack of deep organic soils nutrient removal/retention/ transformation is limited, some nutrient production export occurs but primarily from higher trophic users. The UNT has very low recreation and educational/scientific value due to lack of public access.

7.2 Restoration

Channel and Bank Restoration

The proposed restoration design will make use of natural matting and rolls that require seeding and plantings to establish ground cover including coir fascines/rolls and erosion control blankets to replicate existing conditions (i.e., vegetated banks). The banks will be largely exposed to sunlight which will enable seed to germinate and shrubs to thrive. Maximum velocities in the UNT are approximately 13 feet per second (fps) which makes the use of coir fascines/rolls a feasible restoration option. HydroCAD modelling shows that the maximum velocities during a 25-year storm event is approximately 11.5 fps.

Removal of PCB-impacted soil will alter both the stream channel and banks, and federal jurisdictional vegetated wetlands (see **Figures 7-1, 7-2 and 7-3**). All disturbed areas will be restored with no loss of Waters of the U.S. The channel bottom will be restored to preconstruction grades within the channel using clean common fill to 6 inches below final grade. Stream bed material consisting of 50 percent loam, 25 percent coarse sand and 25 percent washed round stone will be installed with a minimum thickness of 6 inches to restore the excavated channel bottom to final grade. Disturbance to the banks of the UNT channel is unavoidable. Altered banks along the channel will be restored per Detail 1 on **Figure 7-4** using reinforced soil slopes (coir rolls and erosion control blanket) and vegetative soil surface stabilization to protect the bank from future erosion with coir fascines/rolls, tubelings, and shrub plantings. This approach will stabilize the slope for the long-term to protect from washouts. Additional plantings of shrubs such as nannyberry (*Viburnum lentago*) and red-osier dogwood (*Cornus alterniflora*) above the coir rolls will generate future cover along the riparian corridor. These proposed natural stabilization techniques are expected to reestablish the bank similar to current natural condition. Several wetland restoration details are provided to be representative of different stream and bank environments at the proposed excavation areas of LPOU2. Detail 9 on **Figure 7-5** provides additional and more specific bank restoration details representative of the areas around Sta. 60+15 and Sta. 69+50, where one bank is lower and the other bank is steeper with a benched wetland atop it. Detail 6 on Figure 7-5 provides additional and more specific bank restoration details representative of the areas around Sta. 54+25 and Sta. 71+00, where the stream channel is wider and has lower banks than certain upstream sections.



NOTES:

1. MAY 2017 SURVEY DEVELOPED BY WCT SURVEYORS
2. NORTH ARROW, COORDINATES AND/OR BEARINGS SHOWN ARE BASED ON NEW YORK STATE PLANE GRID NORTH. NAD83 (2011) EAST ZONE, US SURVEY FEET, AS DETERMINED BY GPS OBSERVATIONS
3. WETLAND DELINEATIONS CONDUCTED BY CDM SMITH APRIL 26, 27, 28, AND 29, 2017.
4. RESTORATION DETAILS SEE FIGURES 7-4 AND 7-5.
5. WETLAND MATS SHALL BE REMOVED AND AREAS WILL BE REPLANTED DURING RESTORATION.
6. TEMPORARY ACCESS ROADS ARE TO BE REGRADED, LOAMED AND SEEDED.
7. SNAGS TO BE INSTALLED EVERY 100 FT, STAGGERED, EXCEPT IN STREAM RESTORATION AREAS SHORTER THAN 100 FT, WHERE ONLY ONE SNAG SHALL BE INSTALLED.
8. RESTORATION SHALL BE COMPLETED TO MATCH EXISTING GRADE/CONDITIONS.

LEGEND

PROPERTY LINE
APPROXIMATE STREAM CENTERLINE
AREA III UPPER PORTION OPERABLE UNIT 2
AREA III LOWER PORTION OPERABLE UNIT 2
WETLANDS BOUNDARY
EDGE OF WATER
LIMITS OF CONSTRUCTION
ARCONIC EASEMENT
PASNY SIGN EASEMENT

WF = WETLAND FLAG
OHW = ORDINARY HIGH WATER
WETLAND MATS TO BE REMOVED
RESTORE VEGETATED WETLAND TO PRECONSTRUCTION GRADES, WITH A MIN. OF 12 INCHES OF HIGH ORGANIC CONTENT LOAM, SEED WITH WETLAND SEED MIX, PLANT PER PLANTING SCHEDULE FIGURES 7-4 AND 7-5
RESTORE STREAM CHANNEL TO PRE-CONSTRUCTION PER FIGURES 7-4 AND 7-5

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pw:\\pw.cdmsmit□.com:PW_PL1\1902\217949\04 Design Services NM_30□\02 Civil\UNT Area III Operable Unit 1\Figure 7-1, 7-2, 7-3.dwg

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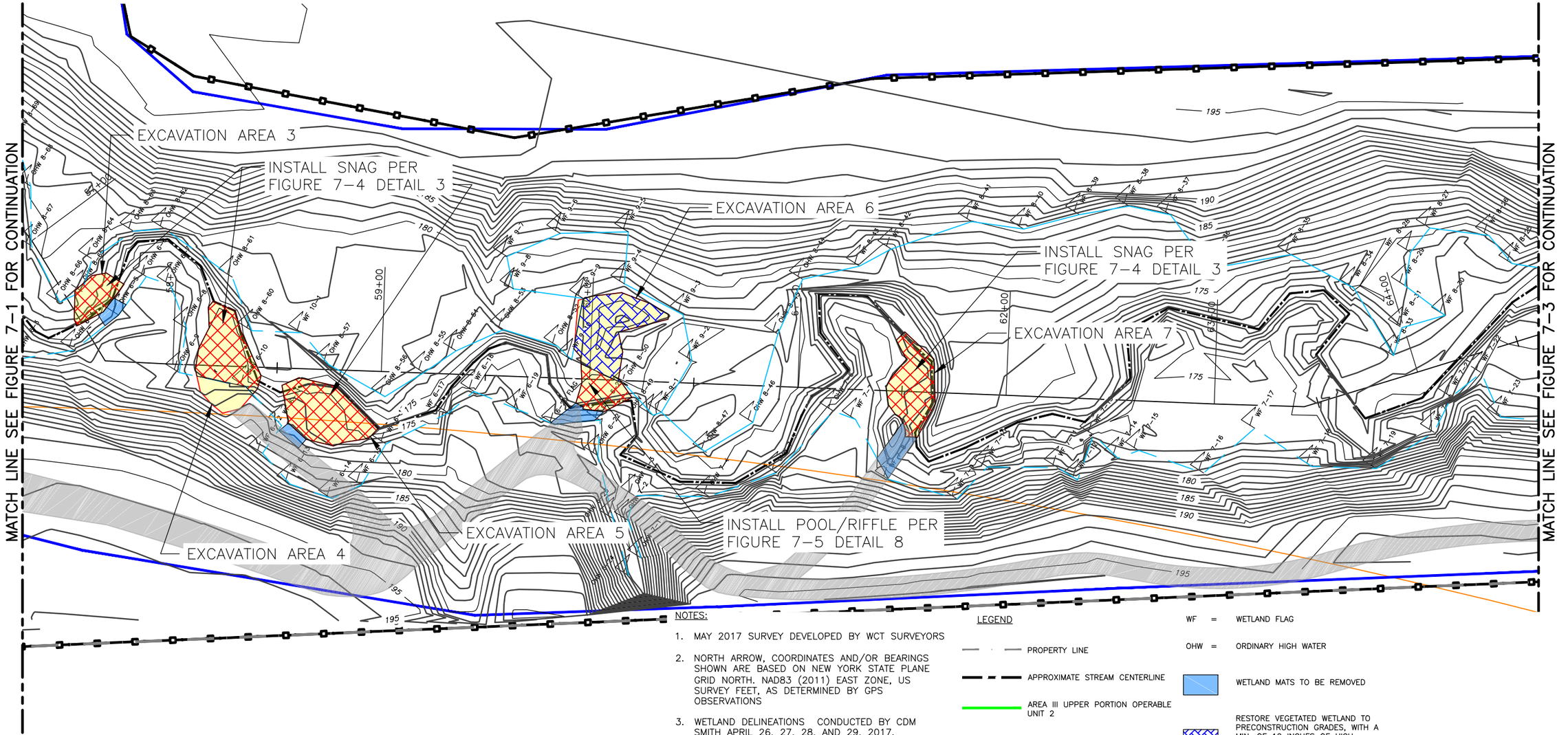
UNNAMED TRIBUTARY (UNT) AREA III

RESTORATION PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 53□50 TO 5□□90

FIGURE 7-1



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8. RESTORATION SHALL BE COMPLETED TO MATCH EXISTING GRADE/CONDITIONS.

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- EDGE OF WATER
- LIMITS OF CONSTRUCTION
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT

WF = WETLAND FLAG

OHW = ORDINARY HIGH WATER

WETLAND MATS TO BE REMOVED

RESTORE VEGETATED WETLAND TO PRECONSTRUCTION GRADES, WITH A MIN. OF 12 INCHES OF HIGH ORGANIC CONTENT LOAM, SEED WITH WETLAND SEED MIX, PLANT PER PLANTING SCHEDULE FIGURES 7-4 AND 7-5

RESTORE STREAM CHANNEL TO PRE-CONSTRUCTION PER FIGURES 7-4 AND 7-5

N

1" = 50'

25 0 50

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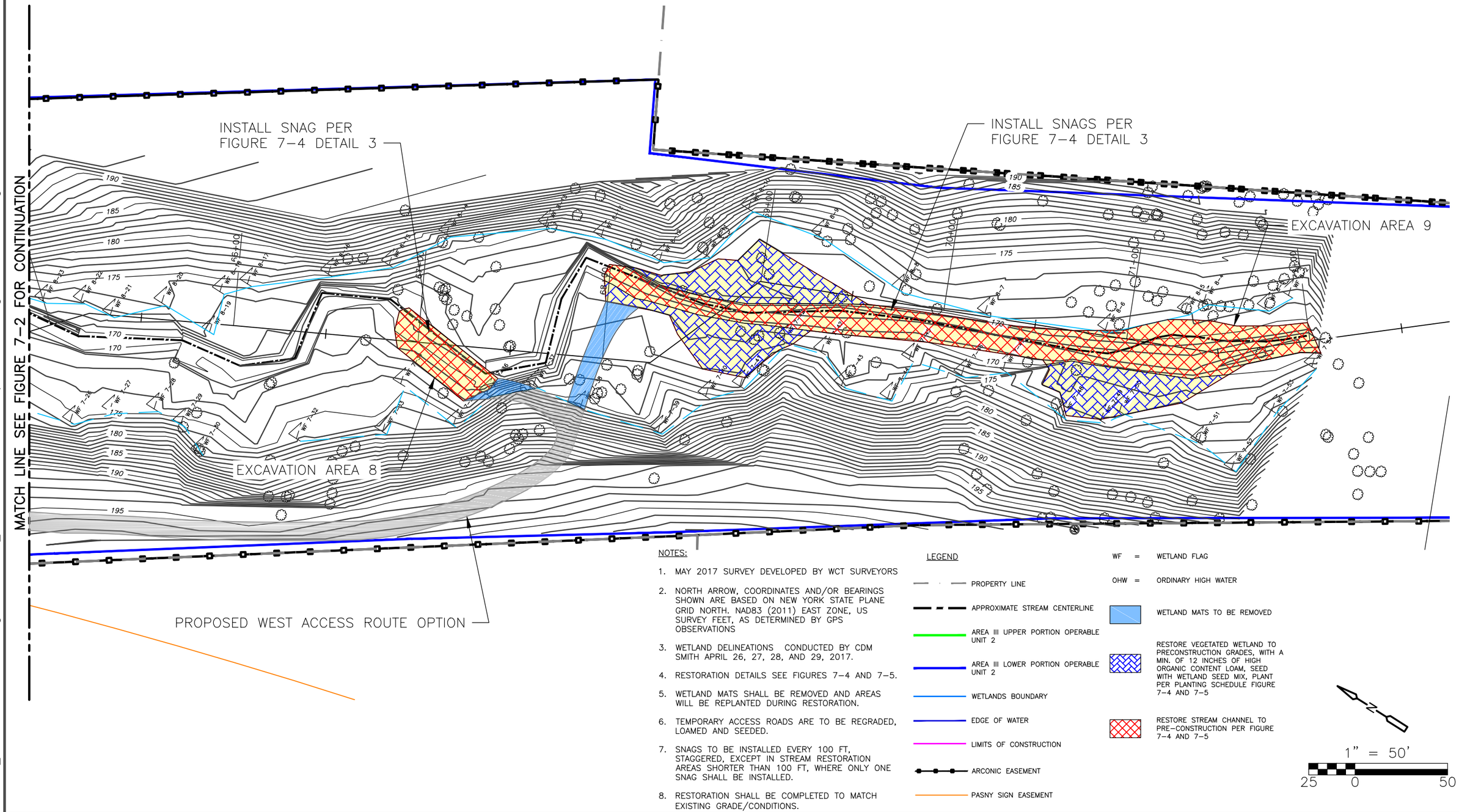
UNNAMED TRIBUTARY (UNT) AREA III

RESTORATION PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 5□□90 TO □4□90

FIGURE 7-2



NOTES:

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4. RESTORATION DETAILS SEE FIGURES 7-4 AND 7-5.
5. WETLAND MATS SHALL BE REMOVED AND AREAS WILL BE REPLANTED DURING RESTORATION.
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8. RESTORATION SHALL BE COMPLETED TO MATCH EXISTING GRADE/CONDITIONS.

LEGEND

- PROPERTY LINE
- APPROXIMATE STREAM CENTERLINE
- AREA III UPPER PORTION OPERABLE UNIT 2
- AREA III LOWER PORTION OPERABLE UNIT 2
- WETLANDS BOUNDARY
- EDGE OF WATER
- LIMITS OF CONSTRUCTION
- ARCONIC EASEMENT
- PASNY SIGN EASEMENT

WF = WETLAND FLAG

OHW = ORDINARY HIGH WATER

WETLAND MATS TO BE REMOVED

RESTORE VEGETATED WETLAND TO PRECONSTRUCTION GRADES, WITH A MIN. OF 12 INCHES OF HIGH ORGANIC CONTENT LOAM, SEED WITH WETLAND SEED MIX, PLANT PER PLANTING SCHEDULE FIGURE 7-4 AND 7-5

RESTORE STREAM CHANNEL TO PRE-CONSTRUCTION PER FIGURE 7-4 AND 7-5

1" = 50'

25 0 50

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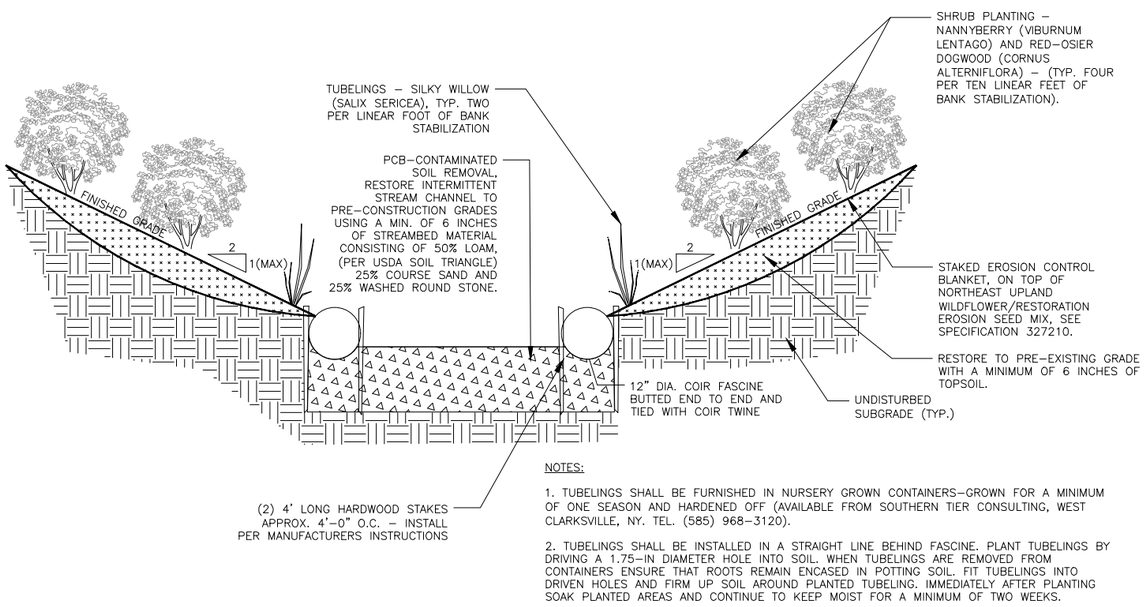
UNNAMED TRIBUTARY (UNT) AREA III
RESTORATION PLAN - AREA III LOWER PORTION OPERABLE UNIT 2 - STA 4+90 TO 72+50
FIGURE 7-3



NOTES:

1. TUBELINGS SHALL BE FURNISHED IN NURSERY GROWN CONTAINERS–GROWN FOR A MINIMUM OF ONE SEASON AND HARDENED OFF (AVAILABLE FROM SOUTHERN TIER CONSULTING, WEST CLARKSVILLE, NY. TEL. (585) 968–3120).

2. TUBELINGS SHALL BE INSTALLED IN A STRAIGHT LINE BEHIND FASCINE. PLANT TUBELINGS BY DRIVING A 1.75–IN DIAMETER HOLE INTO SOIL. WHEN TUBELINGS ARE REMOVED FROM CONTAINERS ENSURE THAT ROOTS REMAIN ENCASED IN POTTING SOIL. FIT TUBELINGS INTO DRIVEN HOLES AND FIRM UP SOIL AROUND PLANTED TUBELING. IMMEDIATELY AFTER PLANTING SOAK PLANTED AREAS AND CONTINUE TO KEEP MOIST FOR A MINIMUM OF TWO WEEKS.

BANK STABILIZATION WITH COIR FASCINE, TUBELINGS AND SHRUB PLANTINGS

DETAIL 1 – NOT TO SCALE

GENERAL UPLAND TREE PLANTING SCHEDULE			
COMMON NAME	SCIENTIFIC NAME	SIZE	SPACING
NORTHERN RED OAK	QUERCUS RUBRA	1 TO 1.5" CAL	MINIMUM 20' OC
WHITE OAK	Q. ALBA	1 TO 1.5" CAL	MINIMUM 20' OC
SUGAR MAPLE	ACER SACCHARUM	1 TO 1.5" CAL	MINIMUM 20' OC
RED MAPLE	A. RUBRUM	1 TO 1.5" CAL	MINIMUM 20' OC
WILD BLACK CHERRY	PRUNUS SEROTINA	1 TO 1.5" CAL	MINIMUM 20' OC
BLACK WALNUT	JUGLANS NIGRA	1 TO 1.5" CAL	MINIMUM 20' OC
YELLOW BIRCH	BETULA ALLEGHANIENSIS	1 TO 1.5" CAL	MINIMUM 20' OC
HAWTHORN	CRATAEGUS PRINLEI	1 TO 1.5" CAL	MINIMUM 20' OC

UPLAND TREE PLANT SCHEDULE

DETAIL 2 – NOT TO SCALE

NOTES:

1. UPLAND TREES TO BE PLANTED IN UPLAND AREAS CLEARED FOR ACCESS AT THE CONCLUSION OF THE WORK.
2. TREE SPECIES AND SIZE PROVIDED FOR COSTING PURPOSES.
3. SPECIES AND PLACEMENT ARE TO BE CONFIRMED WITH ENGINEER PRIOR TO PLANTING.
4. BURLAP TO BE REMOVED IF NON–BIODEGRADABLE AT TIME OF PLANTING.
5. TREES TO BE STAKED AND MULCHED.

PLAN

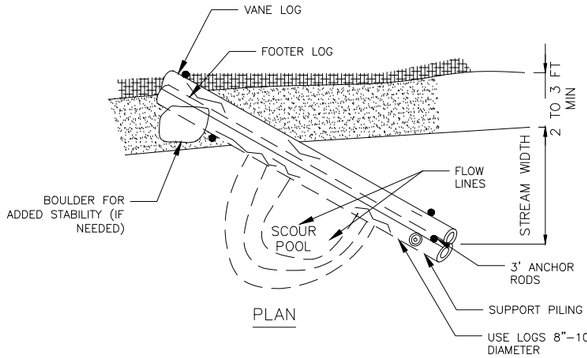
SECTION

SNAG

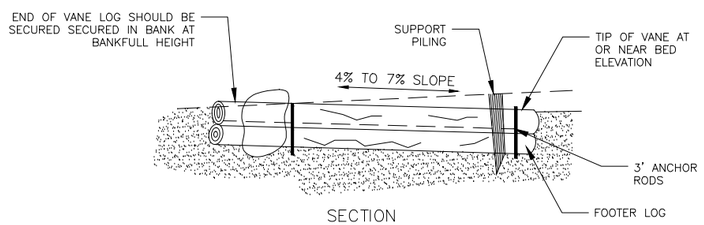
DETAIL 3 – NOT TO SCALE

NOTES:

1. FASTEN TOP LOG TO FOOTER LOG USING 10" TIMBERLOK SCREWS OR EQUIVALENT.
2. FINAL PLACEMENT AND SPACING OF SNAGS TO BE DETERMINED IN THE FIELD BY ENGINEER FOLLOWING EXCAVATION.



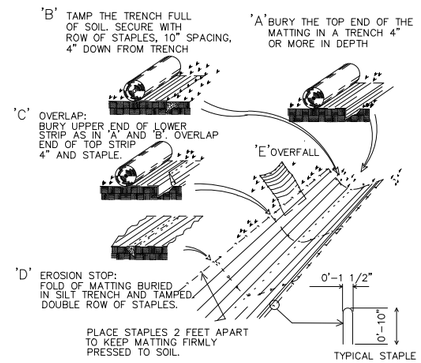
PLAN



SECTION

LOG VANE AND RESTORATION

DETAIL 4 – NOT TO SCALE



EROSION CONTROL BLANKET

DETAIL 5 – NOT TO SCALE

NOTE:
1. APPLY ON ALL NEW LOAM AND SEEDED SLOPES STEEPER THAN 4(H):1(V).
2. BIONET® S150BN® SHORT–TERM BIODEGRADEABLE DOUBLE–NET STRAW BLANKET, OR EQUIVALENT.

NOTE:

1. NO SYNTHETIC GEOTEXTILE OR PHOTO–DEGRADEABLE PLASTICS. ONLY 100% NATURAL/BIODEGRADEABLE MATERIALS SHALL BE USED.

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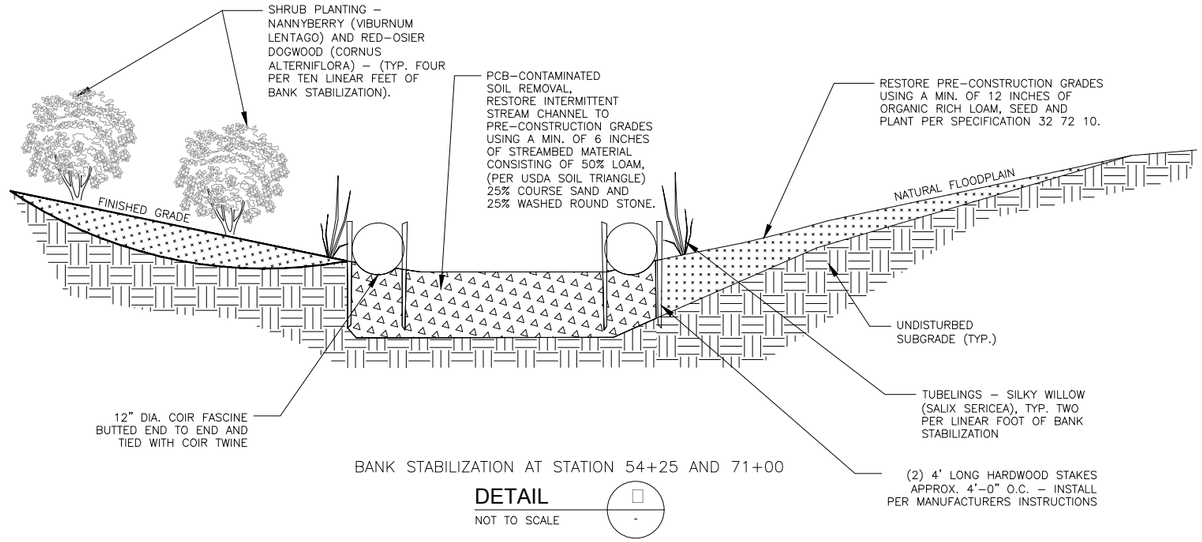
UNNAMED TRIBUTARY (UNT) AREA III LOWER PORTION OPERABLE UNIT 2
RESTORATION DETAILS
FIGURE 7-4



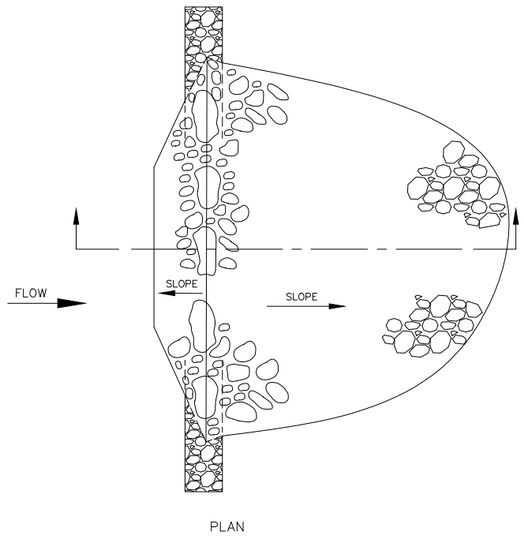
BANK STABILIZATION AT STATION 54+25 AND 71+00

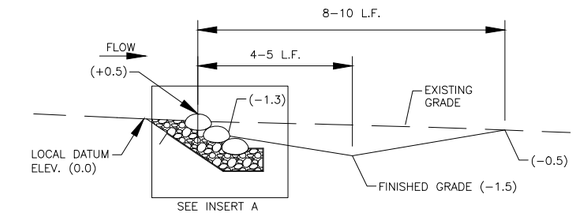
DETAIL □ NOT TO SCALE -

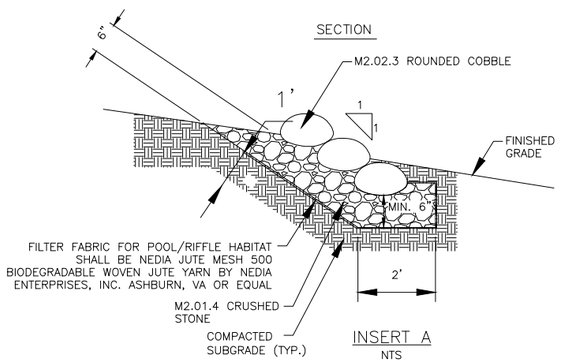
PLANT SCHEDULE FOR VEGETATED WETLANDS				
COMMON NAME	LATIN NAME	CONTAINER	APP. HEIGHT	PLANT DENSITY
RED–OSIER DOGWOOD	CORNUS SERICEA	#2	2–3'	8' ON CENTER
SILKY DOGWOOD	CORNUS AMOMUM	#2	2–3'	8' ON CENTER
NANNYBERRY	VIBURNUM LENTAGO	#2	2–3'	8' ON CENTER
COMMON ELDERBERRY	SAMBUCUS NIGRA	#2	2–3'	8' ON CENTER

VEGETATED WETLANDS PLANT SCHEDULE

DETAIL 7 NOT TO SCALE –

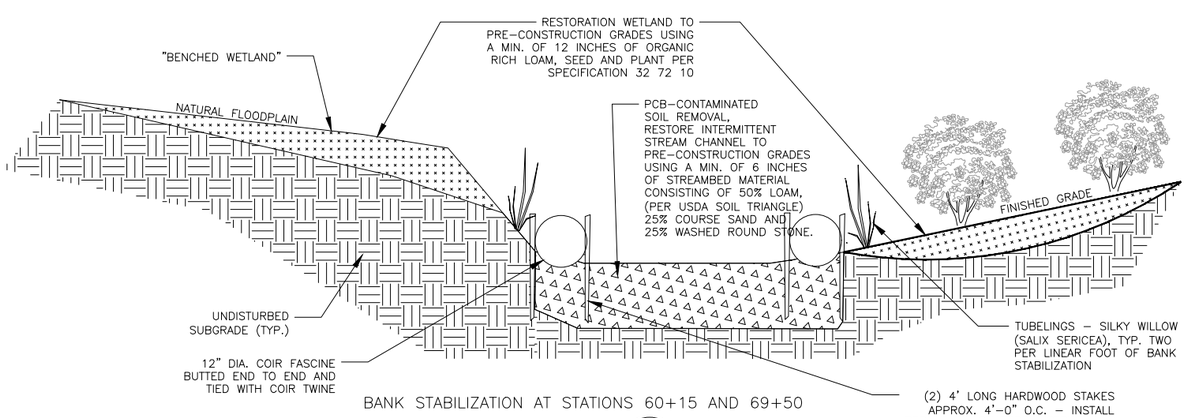






POOL/RIFFLE HABITAT AT STATIONS 54+15 AND 60+00

DETAIL 8 NOT TO SCALE –



BANK STABILIZATION AT STATIONS 60+15 AND 69+50

DETAIL 9 NOT TO SCALE –

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UNNAMED TRIBUTARY (UNT) AREA III LOWER PORTION OPERABLE UNIT 2
RESTORATION DETAILS
FIGURE 7-5

Snags will be installed using minimum 12-inch by 12-inch logs at each proposed channel excavation area and installed within the restored bank toe per Detail 3 on Figure 7-4. Snags will be installed staggered at a distance of 50 feet on each side of the channel, if the excavation section is long enough to support more than one snag. Where the length of the excavation area is shorter than 50 feet, only one snag will be installed. The final placement of snags will be determined in the field by the engineer following excavation. Existing observed pool/riffle habitat along the channel at approximately Sta. 54+15 and Sta. 60+00 will be replaced per Detail 8 shown on Figure 7-5.

At most proposed excavation areas, bordering vegetated wetlands are present on either side of the channel within the proposed limits of excavation. The restoration of impacted wetlands will be accomplished by placing a minimum 12 inches of organic rich loam and seeding with Northeast Wetland Seed Mix and planting with native wetland shrubs including nannyberry and red-osier dogwood. The restored banks will be seeded with Northeast Upland Wildflower/Restoration Erosion Mix, or equivalent, available from Southern Tier Consulting Inc. (http://www.southerntierconsulting.com/). This restoration erosion control mix includes fast growing grasses and native and naturalized pasture wildflowers. This seed mix will provide plant diversity to support wildlife. Plant materials are selected native plants which will provide shade, cover, and serve as a food source for wildlife. The plants will be nursery grown under climatic conditions similar to those in the locality of the project and will conform to the variety and sizes indicated on the Upland Tree Plant Schedule Detail 2 on Figure 7-4 and Vegetated Wetland Plant Schedule Detail 7 on Figure 7-5.

Wetland Restoration in Temporary Access Routes Areas

Several temporary access routes will be constructed to provide vehicle access to targeted excavation areas. The locations of these access routes are provided on Figures 7-1, 7-2 and 7-3. Access routes will avoid where practicable construction within flagged wetlands boundaries and the construction of the access routes will limit the placement of fill within flagged wetland boundaries to the maximum extent practicable. Wetland construction mats will be placed in the vicinity of excavation areas to support construction vehicles while reducing the need for the placement of fill within the wetland. The placement of wetland construction mats will result in temporary impacts to the wetlands areas in which they are placed. At the conclusion of the work, the mats will be removed and the area restored by seeding with a wetland seed mix and planting of native wetland shrubs.

Upland Restoration

The proposed restoration of the uplands solidification area consists primarily of loam and seeding to restore the vegetative areas to their pre-construction condition. Upon completion of the remediation work, restoration would consist of the following; finish grades (if applicable), place loam, apply lime and fertilizer (non-petro-chemical), seed and mulch, and maintain the areas to ensure full restoration. All restorations will be conducted in accordance with the project specifications.

Other upland areas impacted by construction include those through which access roads will be constructed. These areas will be restored by matching pre-existing grades, seeding with Northeast Upland Wildflower/Restoration Erosion Mix, and planting of native upland shrubs and saplings.

7.3 Wetland Restoration Plan

The proposed PCB soil removal will result in approximately 18,230 square feet of temporary alteration to Vegetated Wetlands consisting of palustrine forested broad-leaved deciduous habitat (PFO1), palustrine scrub-shrub broad-leaved deciduous habitat (PSS1), and palustrine emergent marsh habitat (PEM1). Excavation areas will be backfilled to original grades using imported high organic content loam, seeded with Northeast Wetland Shrub/Herb Mix available from Southern Tier Consulting Inc. (http://www.southerntierconsulting.com/), and planted with wetland shrubs as shown on the planting schedule (Detail 7) on Figure 7-5.

Section 8
Health and Safety

A Health and Safety Plan for the protection of on-site workers, and a Community Health and Safety Plan complete with CAMP, to address the health and safety of the public living and working near the site, will be prepared for the project site prior to the start of work. These plans will be prepared by the Contractor selected to perform the work and will be prepared in accordance with all relevant OSHA and DER-10 guidance. Section 8.1 and 8.2 present the minimum requirements of these plans.

8.1 Health and Safety Plan

A site health and safety plan will be prepared in accordance with OSHA 1910.120, as detailed in Section 1.9 of DER-10. All health and safety plans submitted in response to Section 1.9 are to be prepared, signed and implemented by a certified industrial hygienist by the American Board of Industrial Hygiene, a certified safety professional by the Board of Certified Safety Professionals or other qualified person pursuant to 29 CFR1910.120. This site-specific health and safety plan will be adhered to by all personnel involved in the remedial activities detail in this RAWP. For the protection of all on-site workers and personnel, the health and safety plan will identify known and potential hazards and provide information on how to avoid and/or mitigate risk. The health and safety plan will include the following components:

- Basic site information (i.e., location, name, address), objectives of the field work, and personnel and responsibilities;
- A detailed figure showing the site location, any exclusions zones, evacuation point, decontamination areas or other relevant site health and safety features;
- Site history, hazards of concerns, work zones, and waste characteristics;
- Descriptions of the site and surrounding features, the surrounding population (i.e. residential, industrial, commercial), and a summary of the known hazardous materials and their quantity;
- Summary of the known contaminates, their highest observed concentrations, and signs, symptoms and effects of acute exposure to those contaminates are also included;
- Details on the tasks to be performed in the field and if the will disturb waste, what their specific hazards are, and their level of risk (i.e., low, moderate, medium, high);
- The personal protective equipment necessary based on which of the lists task are being performed, as well as decontamination procedures; and
- Emergency contact for CDM Smith Health and Safety Managers as well as local, state, and poison control contract information.

This health and safety plan will be prepared by a qualified person in accordance with the most recently adopted and applicable general industry and construction standards. A copy of the health and safety plan will always be present and available at the site while applicable activities are being conducted.

An additional site-specific Health and Safety Plan for the UNT Area III UPOU2 and UNT Area III LPOU2 developed by Perras Excavating, Inc. has been included in Appendix B of this RAWP.

8.2 Community Air Monitoring Plan

In addition to the health and safety plan for the protection of onsite workers, a CAMP has been established to protect the public living and working near the project site. A CAMP for UNT Area III UPOU2 and LPOU2 was submitted to NYSDEC on May 15, 2018. The proposed CAMP for Area III UPOU2 and LPOU2 is found in Appendix C of this RAWP.

At a minimum, the CAMP must meet the requirements identified by the NYSDOH for a site, as detailed in Appendix 1A of the DER-10 technical guidance.

The CAMP includes the following components:

- Continuous monitoring. Continuous monitoring will be required for all ground intrusive activities. Ground intrusive activities for this project include, but are not limited to, soil/sediment/waste excavation, and handling. Continuous monitoring will be conducted for particulates. VOCs are not constituents of concern in the UNT.
- Periodic monitoring. Periodic monitoring for particulates will be required during non - intrusive activities such as collection of soil and sediment samples and the transport of material from the site to the Secure Landfill.

A fugitive dust/particulate monitoring program will be required to be protective during intrusive activities. Guidance for establishing a fugitive dust/particulate monitoring program as included in Appendix 1B of the DER-10.

A fugitive dust suppression and particulate monitoring program should be employed at sites during construction and intrusive activities. Components include:

- Reasonable fugitive dust suppression techniques must be employed during all activities which may generate fugitive dust.
- Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil.
- Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10).
- QA/QC measures must be taken to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

- The action level will be established at 100 µg/m3 (15 minutes average), as per Appendix 1A of the DER-10. Should the action level of 100 µg/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

Techniques that can be used for the control of the generation and migration of dust include:

- Applying water on haul roads;
- Wetting equipment and excavation faces;
- Spraying water on buckets during excavation and dumping;
- Hauling materials in properly tarped or water tight containers;
- Restricting vehicles speeds to 10 mph;
- Covering excavated areas and materials after excavation activity ceases; and
- Reducing the excavation size and/or number of excavations.

Community air monitoring for VOCs and particulate matter less than 10 micrometers in size (PM10) will be initiated at the start of ground intrusive activities at UNT Area III LPOU2, which will include access road installation, and will continue through backfilling activities to restore pre-remediation grades. Air monitoring for PCBs will be performed during removal and/or handling of contaminated materials or potentially contaminated sediment, soil, and other materials. The CAMP will provide a measure of protection for the downwind community (i.e., offsite receptors including residences, businesses, and offsite workers not directly involved with construction activities) from potential airborne contaminant releases as a direct result of the remedial work activities. Additionally, the CAMP will provide the necessary data to help confirm that construction activities did not result in releases through the air to the offsite receptors.

Fixed air monitoring stations will be established based on the location of construction activities (primarily removal and processing activities), potential receptor locations, and considering the historic predominant wind direction. Data from the station at the airport will be used to determine the upwind and downwind locations daily based on the predominant wind through observation of meteorological conditions/data (e.g., wind speed/direction and wind gust). A wind sock located in proximity to the UNT will be used to ground truth these data in real time. As requested and consistent with monitoring being performed at Arconic's Secure Landfill site, the portable stations will be turned on at the start of the day and turned off at the end of the working day. Additional CAMP provisions, including Corrective Action Levels and Actions, are further discussed in Appendix C.

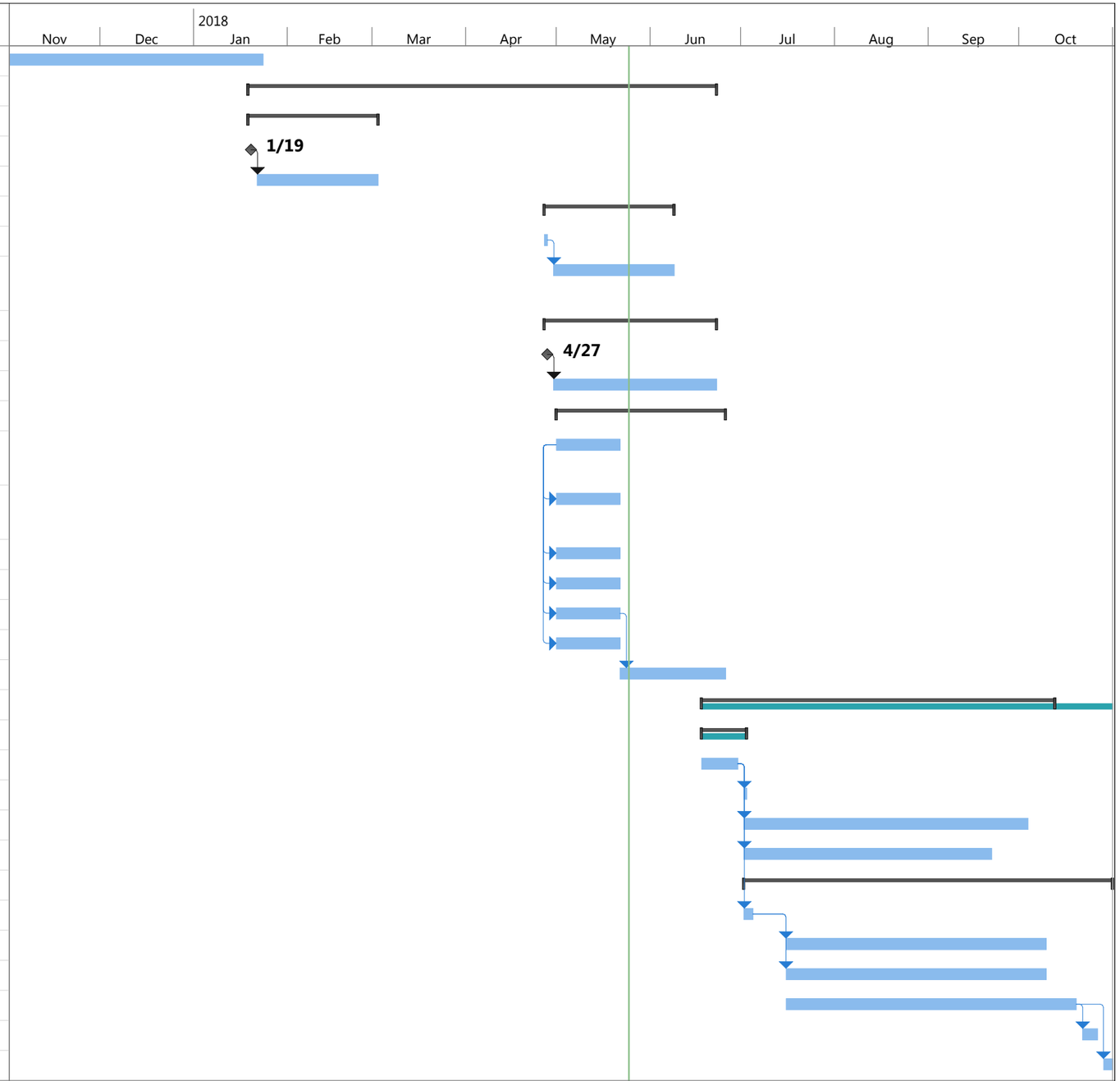
Section 9
Construction Schedule

Remedial construction of Area III for the UNT is proposed to include UNT Area III LPOU2, Sta. 53+50 to Country Route 42, as well as UNT Area III UPOU2, Sta. 46+00 to Sta. 53+50, which is detailed in an approved RAWP, dated August 2017. Remedial construction activities are proposed to be completed in 2018.

The schedule to begin construction relies upon several key milestone and restriction dates. Construction start is based upon the submittal and approval of this RAWP, submittal and approval of several key permitting submittals, submittal and approval of several key work plan submittals and obtaining access from surrounding properties. Additionally, PCB-impacted material will be transported to the Secure Landfill for disposal. The Secure Landfill has opening and seasonal closure dates. **Figure 9-1** depicts the planned sequencing and schedule for the planning and construction of UNT Area III UPOU2 and LPOU2, from the submittal of the LPOU2 RAWP to the submittal of as-builts, post construction.

RAWP approval, permit approval, access and work plans are scheduled to be completed in June to allow for a construction mobilization prior to July 2018. Major mobilization components will be completed in the first five days, followed by initial site preparation work. Site preparation work will include initial survey, erosion and sediment control development, access road preparation and vegetation clearing. Site preparation should be completed on July 16, 2018 to allow for excavation, processing, transportation and disposal of contaminated material. Verification sampling will be completed as work progresses; analysis of these samples will be completed via an expedited turn-around time. Site restoration sequencing will likely follow the excavation of contaminated material from the north to south. Restoration will be completed as the remedial work progresses, at which time the site will be winterized. Construction is scheduled to be completed to meet the anticipated Secure Landfill closure date, estimated to be October 31, 2018. Demobilization and as-builts will be completed during September, and an UNT Area III UPOU2 and LPOU2 Construction Completion Report will be submitted to NYSDEC by the end of calendar year 2018.

ID	Task Name	Duration	Start	Finish
1	**Site Access**	60 days	Wed 11/1/17	Tue 1/23/18
2	**Permits**	**111 days**	**Fri 1/19/18**	**Fri 6/22/18**
3	**Joint Permit Application**	**31 days**	**Fri 1/19/18**	**Fri 3/2/18**
4	Submittal to NYSDEC & USACE	1 day	Fri 1/19/18	Fri 1/19/18
5	NYSDEC Review/Approval	30 days	Mon 1/22/18	Fri 3/2/18
6	**SWPPP**	**31 days**	**Fri 4/27/18**	**Fri 6/8/18**
7	SWPPP - Amendment - Submittal to Agencies	1 day	Fri 4/27/18	Fri 4/27/18
8	SWPPP - Amendment - Agency Review and Approval	30 days	Mon 4/30/18	Fri 6/8/18
9	**SPDES Equivalency**	**41 days**	**Fri 4/27/18**	**Fri 6/22/18**
10	SPDES Equivalency - Submittal to Agencies	1 day	Fri 4/27/18	Fri 4/27/18
11	SPDES Equivalency - Agency Review and Approv	40 days	Mon 4/30/18	Fri 6/22/18
12	**Work Plans and Submittals w/Review**	**40 days**	**Tue 5/1/18**	**Mon 6/25/18**
13	Site Specific Heath and Safety Plan (HASP) - Amendment to Agencies	15 days	Tue 5/1/18	Mon 5/21/18
14	Community Air Monitoring Plan - Amendment to Agencies	15 days	Tue 5/1/18	Mon 5/21/18
15	Contractor Safe Work Plan (CSWP)	15 days	Tue 5/1/18	Mon 5/21/18
16	Construction Work Plan to Agencies	15 days	Tue 5/1/18	Mon 5/21/18
17	Waste Management Plan to Agencies	15 days	Tue 5/1/18	Mon 5/21/18
18	CQA Plan To Contractor and Agencies	15 days	Tue 5/1/18	Mon 5/21/18
19	Agency Review	25 days	Tue 5/22/18	Mon 6/25/18
20	**CONSTRUCTION ACTIVITY**	**85 days**	**Mon 6/18/18**	**Fri 10/12/18**
21	**SITE MOBILIZATION**	**11 days**	**Mon 6/18/18**	**Mon 7/2/18**
22	Site Mobilization	10 days	Mon 6/18/18	Fri 6/29/18
23	Temporary Toilet & Facilities	1 day	Mon 7/2/18	Mon 7/2/18
24	Construction Management	68 days	Mon 7/2/18	Wed 10/3/18
25	Survey - Contractor	60 days	Mon 7/2/18	Fri 9/21/18
26	**SITE WORK**	**88 days**	**Mon 7/2/18**	**Wed 10/31/18**
27	Sediment Fence Install/Surface Water Controls	3 days	Mon 7/2/18	Wed 7/4/18
28	Excavation, Processing, Transport and Disposal	62 days	Mon 7/16/18	Tue 10/9/18
29	Confirmation Sampling	62 days	Mon 7/16/18	Tue 10/9/18
30	Restoration	70 days	Mon 7/16/18	Fri 10/19/18
31	As-Builts	5 days	Mon 10/22/18	Fri 10/26/18
32	Demobilization	3 days	Mon 10/29/18	Wed 10/31/18



UNT Area 3, Upper and Lower Portion OU2
2018 Remedial Schedule

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone

Section 10
Reporting

This section describes the documentation and reporting for remedy construction of the UNT Area III UPOU2 and UNT Area III LPOU2.

10.1 Construction Completion Report (CCR)

At the conclusion of remedy construction in UNT Area III UPOU2 and LPOU2, a Construction Completion Report will be prepared for submittal to NYSDEC in accordance with DER-10 Section 5.8. This document will describe the activities completed in accordance with the approved RAWP, and provide data to document the successful completion of construction activities. As appropriate it will include:

- A description of the remedy, as constructed, pursuant to the RAWP;
- A description of any problems encountered during construction and a description of their resolution;
- Quantities and concentrations of contaminants removed;
- A listing of the waste streams, quantities and locations of materials disposed; and
- Restoration actions.

The document will include verification sampling results, data usability summary reports and as-built drawings. Each as-built drawing will bear the stamp and signature of a NYS professional engineer. The CCR will be prepared, stamped, certified and signed by an individual licensed in accordance with article 145 of the Education Law to practice the profession of engineering using the appropriate certification.

Prior to the completion of remedy construction, monthly progress reports will be submitted to NYSDEC, detailing progress towards the conclusion of the construction.

10.2 Final Engineering Report

At the conclusion of remedy construction in UNT Area III UPOU2 and LPOU2 a Final Engineering Report (FER) will be prepared. The FER is prepared to document implementation of the complete remedial program and will serve as the basis for NYSDEC to issue a certificate of completion or closure letter for the UNT. The FER will include the CCR described above and the *Certification Report for the Unnamed Tributary* and the *Cleanup Verification Sampling and Analysis Report for the Unnamed Tributary* (CDM, February 1999) as appendices. Remediation of the UNT and preparation and submittal of the FER is expected to be completed by the end of 2018. Remediation is expected to remove the constituents of concern, PCBs, to established cleanup criteria such that institutional controls and/or a site management plan will not be required.

Appendix A

Agency Correspondence

PO Box 150
Massena, NY 13662

March 28, 2017

Mr. Lincoln B. Fancher
Engineering Geologist II
New York State Department of Environmental Conservation
Division of Environmental Remediation – Region 6
317 Washington Street, 7th Floor
Watertown, New York 13601-3787

Re: Arconic – Massena Operations, Site# 645019, Unnamed Tributary (UNT)
2017/2018 Project Activities – Phased Approach

Dear Mr. Fancher:

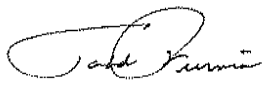
As a follow up to our meeting on March 22, 2017 and subsequent conversation on Friday, March 24 regarding the Unnamed Tributary (UNT), Arconic Inc. (Arconic) has decided to modify its proposed remedial schedule of the UNT. It is Arconic's intent to divide the UNT into two "operable" units.

The northern operable unit will begin at transect T46+00 and extend to the beaver dam located just beyond transect T53+00. This area is depicted on the attached Figure 2. It is Arconic's intent to remediate and restore this operable unit in 2017. The southern operable unit will begin at transect T53+00, on the southern side of the beaver dam, and extend to transect T72+00. This area is depicted on the attached Figures 3, 4 and 5. Arconic will develop a remedial plan for this portion of the UNT in 2017 and complete remediation and restoration in 2018.

As previously discussed, the scheduled remediation and restoration of the UNT in 2017 is very aggressive. The intent of this change is to "streamline" project activities in 2017 by focusing remediation and restoration on the well-defined, less complex northern operable unit and allowing for further delineation, as necessary, of the southern operable unit. Please note that this schedule change has no impact to the Grasse River Remediation project.

If you have any questions, please contact me at (315) 212-9069

Sincerely,



Todd J. Furnia
Environmental and Security Manager

cc: P. Taylor (NYSDEC)
C. Gosier (NYSDEC)
S. McLaughlin (NYSDOH)
K. Gribben (Arconic)
R. Morosky (Alcoa)
E. Ashley (CDM Smith)
J. Welch (CDM Smith)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 6
Dulles State Office Building, 317 Washington Street, Watertown, NY 13601-3787
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www.dec.ny.gov

April 13, 2017

Mr. Todd Furnia
Environmental and Security Manager
Arconic, Inc.
P.O. Box 150
Massena, NY 13662

RE: Unnamed Tributary, Site# 645019
2017-2018 Project Activities – Phased Approach

Dear Mr. Furnia:

The Department is in general concurrence with the proposal by Arconic, Inc., iterated in your letter of March 28, 2017, to phase the remediation of Area III of the Unnamed Tributary (UNT) in two segments over the 2017 and 2018 construction seasons. As described in your letter, the upstream portion (from transect T46 to the vicinity of T53) would take place in 2017; the lower section above the County Route 42 culvert (from transect T53 to T72) would be addressed in 2018. This will allow the development of remedial designs/ work plans for the two segments to follow independent tracks.

Based on the discussions of our meeting on March 22, 2017, we understand Arconic is planning to address remediation of sediments in the vicinity of the confluence of the UNT with the Grasse River (sample FP-16, between transect T76 and T-END), in conjunction with remediation in the Grasse River. This may require adjustment of remedial design elements associated with that project.

Comments on the March 1, 2017 Supplemental Remedial Investigation Sampling Report (Technical Memorandum prepared on behalf of Arconic by CDM Smith) are pending, and will follow in separate correspondence.

Please contact me if there are any questions or concerns.

Sincerely,

Lincoln B. Fancher
Engineering Geologist 2/ Project Manager
Region 6 – Division of Environmental Remediation

ec: Peter Taylor (NYSDEC, Region 6 Remediation Engineer)
Kevin Farrar (NYSDEC, DER, Bureau D, Section A - Chief)
David Tromp (NYSDEC, DER, Bureau D, Section A)
Corbin Gosier (NYSDEC, DF&W, Bureau of Habitat)
Scarlett McLaughlin (NYSDOH)

cc: Young S. Chang (USEPA, Region 2)

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August 14, 2017

Mr. Todd J. Furnia
Environmental & Security Manager
Arconic, Inc.
Massena Operations Environmental Department
P.O. Box 150
Massena, NY 13662-0150

RE: Arconic (formerly ALCOA, Inc.) Unnamed Tributary Site, NYSDEC Site# 645019
Unnamed Tributary Area III (Operable Unit 2 – Upper Portion)
Remedial Action Work Plan (Revision 2) and Responses to Comments (August 1, 2017)
Specifications (Revision 1) and Responses to Comments (August 1, 2017)

Dear Mr. Furnia:

The New York State Department of Environmental Conservation (DEC, or Department), has reviewed the materials received on August 4, 2017 (transmitted by email), in relation to the Unnamed Tributary Area III (OU-2)/ Upper Portion remediation project:

1. Arconic letter dated August 1, 2017 – Responses to comments on the draft Remedial Action Work Plan (responding to DEC letter dated July 24, 2017 - please note, Arconic's letter references date of June 30, 2017);

2. A revised Remedial Action Work Plan (RAWP), dated August 1, 2017 (revision 2);

3. Arconic letter dated August 1, 2017 – Responses to comments on the construction Specifications (DEC letter dated June 30, 2017);

4. (Revised) Specifications, dated August 1, 2017 (revision 1).

The responses to comments in the respective letters, and the associated document revisions, are acceptable to the Department. With these revisions, the RAWP is considered "approvable". The following separate documents, still in development or under review, are components of the RAWP. Final approval of the RAWP is contingent on receipt/ approval of these documents, which will be incorporated by reference (including any subsequent revisions).

1. Community Air Monitoring Plan (CAMP) – Initial submission of the CAMP was received by DEC July 24, 2017. NYSDOH comments on the CAMP were received by DEC August 8, 2017, and subsequently transmitted to Arconic by DEC in correspondence dated August 10, 2017. (A response from Arconic is pending.)

2. Erosion and Sediment Control Plan – A Storm Water Pollution Prevention Plan (SWPPP) was received by DEC August 9, 2017. DEC Region 6 Division of Environmental Permits has forwarded the SWPPP to DEC Region 6 Division of Water. (Additional communication from DEC on the SWPPP may be pending.)

3. Health and Safety Plan (HASP) – A HASP has not been received by DEC as of the date of this letter.

In addition to the documents listed above, the Alcoa, Inc. Massena West and East Plants Quality Assurance Project Plan (QAPP) for General Groundwater and Surface Water Monitoring Programs (March 13, 2008, and any subsequent revisions), is also incorporated as part of the RAWP by reference.

As indicated in the Department's letter of June 16, 2017 (comment# 12 of the Department's comments on the Remedial Action Work Plan initial submission, dated May 15, 2017), development of a separate, updated post-remediation monitoring plan will be necessary. This monitoring plan should provide for assessment of the effectiveness of the stream and wetland restoration (including the success criteria to be applied), as well as a long-term biota monitoring plan to assess the effectiveness of the remedial measures in lowering the contaminant concentrations in fish tissue. The monitoring plan should provide for contingencies, in the event that measures implemented for restoration of the stream and wetland areas prove insufficient. A draft monitoring plan should be submitted to the Department no later than September 11, 2017, in order to provide for review/ approval by completion of the 2017 Area III (OU-2/ upper portion) phase of work.

Please contact me if you have any questions.

Sincerely,

Lincoln B. Fancher
Engineering Geologist II/ Project Manager
Region 6 – Division of Environmental Remediation

ec: Peter Taylor (NYSDEC/ Region 6 Remediation Engineer)
Thomas Voss (NYSDEC/ Region 6 Environmental Permits Administrator)
Thomas Vigneault (NYSDEC/ Region 6 Water Engineer)
Corbin Gosier (NYSDEC/ DFW, Bureau of Habitat)
Maureen Schuck/ Scarlett McLaughlin (NYSDOH/ BEEI)

cc: Kirk Gribbon (Arconic, Inc.)
Ernest Ashley/ Jonathan Welch (CDM Smith)

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September 20, 2017

Mr. Todd J. Furnia
Environmental & Security Manager
Arconic, Inc.
Massena Operations Environmental Department
P.O. Box 150
Massena, NY 13662-0150

RE: Site# 645019, ALCOA Unnamed Tributary Site, Operable Unit 02/Area III
Massena (T), St. Lawrence Co.

Dear Mr. Furnia:

The New York State Department of Health (DOH) has provided the Department of Environmental Conservation (DEC/ the Department) with its acceptance of the Community Air Monitoring Plan (CAMP), as revised September 18, 2017. Therefore, the Remedial Action Work Plan (RAWP) is conditionally approved pending submission of a design for the temporary water treatment system (RAWP Section 5.2.2.9). Considering this, approval is granted for implementation of only those portions of the RAWP which do not involve in-stream work (i.e., construction of the access road and staging/ solidification area, and related tasks). We are also requesting that you provide at least five days advance notification to the Department prior to commencing work and include a revised construction schedule.

As we discussed on September 20, 2017, insufficient time remains in the 2017 construction season to fully implement the RAWP for the upper portion of Area III (OU-2) and work this fall will only consist of access road and staging/ solidification area construction, and other preparatory tasks. It is our understanding Arconic is currently in the process of revising its plans, with the intent to perform the in-stream remedial work and restoration for the entire length of Area III during 2018.

Before any work can begin in the lower section of Area III, a comparable RAWP and associated component documents will need to developed for that section. As discussed during our telephone conversation today, a meeting or conference call will be planned in the coming weeks, to discuss the timetable for development of these documents, and to identify any potential additional regulatory requirements which may result from the consolidation of the two phases of remedial work during 2018.

Please contact me if there are any questions.

Sincerely,

Lincoln B. Fancher
Engineering Geologist II/ Project Manager
Region 6 – Division of Environmental Remediation

ec: Peter Taylor (NYSDEC/ Region 6 Remediation Engineer)
Thomas Voss (NYSDEC/ Region 6 Division of Environmental Permits Administrator)
Corbin Gosier (NYSDEC/ DFW, Bureau of Habitat)
Scarlett MCLaughlin (NYSDOH)
Maureen Schuck (NYSDOH)

cc: Kirk Gribbon (Arconic, Inc.)
Ernest Ashley (CDM Smith)
Jonathan Welch (CDM Smith)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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October 12, 2017

Mr. Todd J. Furnia
Environmental & Security Manager
Arconic, Inc.
Massena Operations Environmental Department
P.O. Box 150
Massena, NY 13662-0150

RE: ALCOA Unnamed Tributary Site, NYSDEC Site# 645019
Unnamed Tributary Area III (Operable Unit 2) – Lower Portion
Additional Characterization Sampling

Dear Mr. Furnia:

The New York State Department of Environmental Conservation (DEC) and Department of Health (DOH) have reviewed the locations of additional characterization sampling proposed for the Unnamed Tributary Area III (OU-2)/ Lower Portion, as described in your email correspondence of October 4, 2017, with locations as illustrated in associated figures. The DEC and DOH are in general concurrence with the proposed sampling. The sampling procedures and analytical methods to be employed should be consistent with those previously approved (2016 Unnamed Tributary Sediment Sampling Work Plan, prepared by CDM Smith, June 2016). Please be advised that the results of the proposed sampling may indicate the need for additional sampling to further delineate the site contamination and inform remedial actions at the site.

We understand the planned sampling will begin October 18, 2017, and will take approximately three days to complete. Please contact me if you have any questions or concerns.

Sincerely,

Lincoln B. Fancher
Engineering Geologist II/ Project Manager
Region 6 – Division of Environmental Remediation

ec: Peter Taylor (NYSDEC/ Region 6 Remediation Engineer)
Corbin Gosier (NYSDEC/ DFW, Bureau of Habitat)
Maureen Schuck/ Scarlett MCLaughlin (NYSDOH/ BEEI)

cc: Kirk Gribbon (Arconic, Inc.)
Ernest Ashley/ Jonathan Welch (CDM Smith)

Appendix B

Perras Excavating, Inc – Health and Safety Plan

ARCONIC

Arconic
45 County Route 42
Massena, NY 13662

September 1, 2017

Mr. Lincoln B. Fancher
Engineering Geologist II
NYSDEC, Region 6
Division of Environmental Remediation
317 Washington Street
Watertown, New York 13601

Subject: Arconic Inc. – Unnamed Tributary Remediation (Site #645019)
Upper Reach Health and Safety Plan

Dear Mr. Fancher:

Attached please find the Unnamed Tributary Remediation Upper Reach Health and Safety Plan.

If you have any questions, please contact me.

Very truly yours,

Todd Furnia
Environmental and Security Manager

TF:jhm

Attachments

cc: Peter Taylor, NYSDEC
Corbin Gosier, NYSDEC
Thomas Voss, NYSDEC
Scarlett, McLaughlin, NYSDOH
Maureen Schuck, NYSDOH
Paul Rodrigue, CDM Smith
Ryan Kingsley, CDM Smith

1. Introduction

The following Health and Safety Plan (HASP) has been written for the Unnamed Tributary – Upper Portion Operable Unit 2 Remediation Project in Massena, New York.

A copy of this HASP will be made available to all site personnel for review. Employees working on-site will be required to complete a Health and Safety Plan Review Acknowledgement form to verify they have reviewed this plan. Perras Environmental Control, Inc. (PEC) and its subcontractors are required to certify that all employees have received the required training, medical exams, and are medically cleared for respirator use. Subcontractors performing tasks in the Exclusion Zones will be OSHA 40-hour certified and are subject to the same requirements as PEC employees as set forth in the HASP. Prior to starting activities at the site, all employees and subcontractors will also be required to fill out a Field Medical Data Sheet.

All on-site personnel involved with the remediation project will attend a pre-construction briefing on the chemical and physical hazards associated with the site. The initial health and safety briefing will consist of the following information:

- Names of personnel responsible for site safety and health
- Identification of known hazards present on the site (including PCB Awareness Training)
- Safe use of engineering controls and equipment on-site
- Safe work practices to minimize risks from hazards
- Selection, use, care, and maintenance of Personal Protection Equipment (PPE)
- Site control procedures
- Site decontamination procedures
- Standard operation safety procedures
- Review of all work plans and related safety protocols

Documentation of all training, fit test and medical monitoring certificates will be maintained on-site and will be available on request.

An Environment, Safety, and Health Meeting (ESHM) will be conducted prior to the start of daily activities. The topics covered will include the day's targeted activities, identified hazards and safe work practices, PPE requirements, and staff responsibilities.

1.1 Scope and Applicability

The purpose of the HASP is to identify, evaluate, and control health and safety hazards, and provide emergency response for operations at the site during all work activities leading up to and during remediation of the Unnamed Tributary. This plan applies to all site employees and visitors under the direction of PEC.

All personnel on-site shall be informed of the site emergency response procedures and any potential fire, explosion, health, or safety hazards of the operation. This HASP summarizes those hazards and defines protective measures planned for the site. All personnel will review the plan prior to working on-site.

The HASP guidelines and requirements are based upon anticipated field activities and will be amended if additional hazards are discovered throughout the duration of the project. All work will be performed to comply with the Occupational Safety and Health Administration (OSHA) 29 CFR 1910 and 1926.

1.2 Description of Work

The project activities addressed by this HASP are as follows:

- Site setup and general mobilization
- Site Survey (WCT Surveyors)
- Site Clearing (outside of Exclusion Zone – Putney Tree Service)
- Install Road Signage and MPT
- Upgrade Site Access Road
- Install Temporary Erosion and Sediment Control Features/Exclusion Zone Fencing
- Install Temporary Storm Water Diversion Features/Cofferdams and UNT Bypass
- Install Field Office
- Construct Material Solidification Area and Decon Pad
- Install Temporary Water Treatment System
- Excavate Impacted Sediments and Streambank Soils, Solidify Material and Transport to the Secure Landfill
- Perform Verification Sampling and Testing (by others)
- Backfill to Pre-existing grade
- Restore channel, banks and wetlands
- As-built survey
- Demobilization, Remove temporary facilities and equipment

1.3 Site Location

The site is located just north of the intersection of County Route 42 and New York State 131 in the Town of Massena, St. Lawrence County, New York.

2.0 Health and Safety Organization

2.1 Contact Information & Emergency Numbers

The project organization structure and key project personnel are indicated below:

NAME	COMPANY	RESPONSIBILITIES	PHONE NUMBERS
Main Office - PEC	PEC		315-769-5900
Dan Dinneen	PEC	Project Manager	315-250-0230
Ken Christie	PEC	Site Superintendent	315-250-0186
Scott McRoberts	PEC	Health & Safety Officer (HSO)/QA/QC	315-250-0227
Mike Elsner	Arconic	Manager of Construction	315-764-4150 (Office) 315-705-7918(Mobile)
Bruce Cook	CDM Smith	Consultant to Alcoa	315-323-1924 (Mobile)
Toby Topa	CDM Smith	Site Health & Safety	315-842-6116 (Mobile)
New York State Police			315-769-0127
Fire			911
Ambulance			911
Chemical Emergency Advice			800-424-9300
Poison Control			800-336-6997
Pollution Emergency	NYS DEC	Spill Response	800-457-7362
National Response Center			800-424-8802
Hospital	Massena Memorial Hospital	1 Hospital Drive Massena, NY 13662	315-764-1711

2.2 Responsibility and Authority of Key Personnel

The responsibility and authority of key personnel relative to the implementation of this HASP is described below.

Project Manager

- Insure that the work is being performed in compliance with the Project Design and the Health and Safety Work Plan
- Coordinate indoctrination and required safety training of new workers with the Health and Safety Officer. This will include the review of the HASP and receipt of all medical clearances to perform work on site.
- If dangers not addressed in the HASP are encountered throughout the project, coordinate a temporary suspension of field activities with the Health and Safety Officer.

Project Superintendent

- Coordinate work activities in compliance with the HASP.
- If dangers not addressed in the HASP are encountered throughout the project, coordinate a temporary suspension of field activities with the Health and Safety Officer.

Health and Safety Officer (HSO)

- Oversee health and safety activities on-site in accordance with the HASP.
- Enforce and monitor the HASP by performing Safety Audits regularly.
- Educate site personnel by:
  - Daily toolbox safety meetings and posting safety tips in the break trailer.
  - Coordination of weekly safety meetings.
  - Safety training of site personnel including review of the HASP.
- Report safety related incidents or accidents to the PEC Project Manager and the Arconic Site Manager.
- Implementation, enforcement, and monitoring of the HASP as well as PEC Policies and Procedures. Verify that all personnel working on the site have current medical clearance to perform their work activities.
- Perform pre-construction indoctrination and training of all on-site personnel about this safety plan and other safety requirements required during construction.
- Maintain health and safety equipment on-site.
- Maintain documentation of health and safety measures taken at the Site including:
  1. Communication of the Health and Safety Plan;
  2. Levels of protection and required upgrades;
  3. Environmental monitoring results;
  4. Incident reporting;
  5. Upgrade/downgrade the levels of protection in response to field conditions outlined in the HASP.

- Report all violations of the HASP to the Project Manager.
- Interface with the Project Manager in matters of health and safety and change work practices if they are determined to be hazardous to health and safety.
- Remove personnel from the project if their actions or condition endangers their health and safety or the health and safety of others.
- Responsible for maintaining and separating the Exclusion Zone (Dirty) from the Support Zone (Clean) areas in the limited remediation area.

3.0 Physical Hazards

3.1 Equipment Operation

All equipment will be equipped with backup alarms to alert workers of moving equipment. Ground personnel will approach equipment from the front and make visual eye contact with the operator when approaching.

Equipment operation will only be performed by trained operators. PEC operators will be hired through the Operating Engineers Local 545 and have received training on all equipment being used on site. Supporting documentation will be provided by the union with copies on-site.

Slopes and unstable ground could pose a danger in the form of roll-overs of the equipment. All manufactured roll over protection devices including seat belts will be operational in the equipment. Equipment pre-inspection forms will be completed prior to each use and if the equipment is not safe to run it will be removed from the construction work area for repairs.

3.2 Equipment Parking and Loading

Whenever the equipment is parked, the parking brake will be engaged. Wheel chocks will be used and the parking brake engaged when equipment is left on inclines.

A loader will not travel without adequate visibility for the driver and stability of the equipment. No loading device will be left unattended until the load or bucket is lowered to the ground.

3.3 Equipment Fueling

Equipment will be turned off prior to fueling. Fueling will be done in such a manner that the likelihood of spills is minimal. If a spill occurs, PEC will report the spill to Arconic personnel and the clean-up will be performed. Fuel tank caps will be replaced before starting the engine.

A good metal to metal contact will be kept between the nozzle of supply hose and the fuel tank. Welding and/or sparking equipment will not be allowed near refueling areas. Smoking will not be permitted during refueling efforts. No open lights, welding, or sparking equipment will be used near internal combustion equipment being fueled or near storage tanks. No smoking will be permitted at or near the fuel storage area or on equipment being fueled. All fuel storage tanks on site will have a secondary containment.

Each fuel storage tank or drum will have the word "Flammable" marked on it and will also identify the type of fuel. A fire extinguisher will be accessible during fueling operations. In addition, each piece of heavy equipment will be equipped with a fire extinguisher.

3.4 Backup Alarms

Every piece of equipment including vehicles used to haul dirt, rock, concrete, or other construction material will be equipped with a backup alarm device that operates automatically while the vehicle is backing. The warning sound will be such that it can be heard within a radius of 100 feet. For congested areas and areas with excessive noise that negates the audible alarm, a signaler, in clear view of the operator, will direct the backing operation. Other vehicles (if operating in areas where their backward movement will constitute a hazard to employees working in the area on foot, and where the operator's vision is obstructed to the rear of the vehicle) will be equipped with an effective method to safeguard employees, such as:

- automatic backup audible alarm, which will sound immediately on backing
- in addition to the above requirements, administrative controls will be established including:
    - using a spotter or flagger who will direct the backing operation
    - establish procedures that require the operator to dismount and circle the vehicle immediately prior to starting a backup operation
    - prohibiting all foot traffic in the work area (Worker on Foot Zone)

The equipment operator will not leave the controls of the vehicle while it is moving under its own engine power. Hauling or earth-moving operations will be controlled so that equipment or vehicle operators know of the presence of other personnel in the areas of operation.

3.5 Fall Protection

Fall protection procedure will be followed when there is a potential for same level or different level falls. All site personnel exposed to fall hazards must comply with this procedure. The procedure covers fall hazard provisions for:

- Walking or working at unprotected heights of four (4) feet or more.
- PEC will use Harnesses and lanyards in these situations.
- Using Aerial Lifts
    - A safety harness and lanyard will be used when working in an aerial lift

3.6 Noise

Excessive noise will be encountered throughout the project and employees will be supplied with earplugs and/or earmuffs. The HSO will determine if the use of earplugs and/or earmuffs is needed based on based on noise surveys. PEC will perform noise surveys at the discretion of the HSO and the documentation will be submitted with the Daily Activity Report.

3.7 Surface Encumbrances and Underground Installations Safety Guidelines

All surface encumbrances that create a hazard to employees will be removed or supported, as necessary, to safeguard employees. The estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, will be determined prior to opening an excavation. The following procedures are designed to provide employees of this company with a system for protection and safe conditions while working in a trenching or excavation environment. These guidelines are designed for use by employees at all levels within the work force.

- Establish the locations of all underground utilities and services before beginning trenching or excavation operations.
- Contact utility and service companies to include municipal owned and advise them prior to the start of all actual excavation through the use of Dig Safe New York.
- When excavation operations approach the estimated location of underground installations, the exact location of the installations will be determined by safe and acceptable means (modern techniques and customary types of equipment) where this determination is unclear the owning utility will be contacted for assistance.
- While any excavation is open, underground installations will be protected, supported, or removed as necessary to safeguard employees.

3.8 Electrical Safety

Electrical hazards associated with this project will involve the use of portable electrical equipment (generators, pumps) and working near or under overhead power lines. All portable electric tools will be used in conjunction with a GFCI. For any electrical installation required for this project, a qualified electrician will perform the work.

3.8.1 Vehicular and Mechanical Equipment in Vicinity of Overhead Electrical Lines

- Company vehicles or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that required clearance, as determined by Alcoa and NYPA, are maintained. Overhead transmission line heights will fluctuate with temperature and this will be reviewed with all personnel on site. Equipment will be grounded as specified by Alcoa and NYPA. A permit will be issued by NYPA prior any work being performed under the NYPA power lines.

3.8.2 Portable Electrical Equipment Usage

- Handling. Portable equipment shall be handled in a manner which will not cause damage. Flexible electric cords connected to equipment may not be used for raising or lowering the equipment. Flexible cords may not be fastened with staples or otherwise hung in such a fashion as could damage the outer jacket or insulation.
- Visual Inspection

- Portable cord- and plug-connected equipment and flexible cord sets (extension cords) shall be visually inspected before use on any shift for external defects (such as loose parts, deformed and missing pins, or damage to outer jacket or insulation) and for evidence of possible internal damage (such as pinched or crushed outer jacket). Flexible cords will be rated for outdoor use and will be 10 or 12 gauge. Cord- and plug-connected equipment and flexible cord sets (extension cords) which remain connected once they are put in place and are not exposed to damage need not be visually inspected until they are relocated.
- If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be removed from service, and no employee may use it until repairs and tests necessary to render the equipment safe have been made.
- When an attachment plug is to be connected to a receptacle (including any on a cord set), the relationship of the plug and receptacle contacts shall first be checked to ensure that they are of proper mating configurations.

- Grounding Equipment
  - A flexible cord used with grounding-type equipment shall contain an equipment grounding conductor.
  - Attachment plugs and receptacles may not be connected or altered in a manner which would prevent proper continuity of the equipment grounding conductor at the point where plugs are attached to receptacles. Additionally, these devices may not be altered to allow the grounding pole of a plug to be inserted into slots intended for connection to the current-carrying conductors.
  - Adapters which interrupt the continuity of the equipment grounding connection may not be used.
- Conductive Work Locations
  - Portable electric equipment and flexible cords used in highly conductive work locations (such as those inundated with water or other conductive liquids), or in job locations where employees are likely to contact water or conductive liquids, shall be approved for those locations.

3.9 Lifting

Employees will not lift heavy loads. For all loads greater than 50 lbs., the buddy system will be used requiring at least two people to perform the lift. In addition, employees will use proper lifting techniques including bending at the knees and not the back, never twist your torso when lifting and if possible, use a mechanical lifting device.

3.10 Vehicle & Equipment Maintenance

All vehicles (excluding plated vehicles) in use will be checked at the beginning of each shift using the Equipment Inspection Form provided by PEC. This is to ensure that the vehicle is in

good working condition. These requirements also apply to vehicle equipment and components such as lights, reflectors, windshield wipers, defrosters, fire extinguishers, and other equipment, where such equipment is necessary.

No repairs will be attempted on power equipment until arrangements are made to eliminate the possibility of injury, caused by sudden movements or operation of the equipment or its parts. All buckets, blades will be placed on the ground prior to any work being performed.

Controls will be in a neutral position, with the engine stopped and brakes set. Trucks with dump bodies will be equipped with a positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering of the body while maintenance or inspection work is being done. In all cases where the body is raised for any work, the locking device will be used.

3.11 Additional Safety Requirements

To protect on-site personnel against hazards associated with materials handling, and to prevent injury due to unsafe heavy equipment operation, only properly trained and authorized personnel will be allowed to operate heavy equipment. All materials handling equipment will be maintained in a safe operating condition and inspected daily prior to use.

Additional heavy equipment safety requirements include:

- Personnel must wear hearing protection, seat belts and restraints when working around heavy equipment. As a rule, if you must raise your voice during normal conversation then hearing protection is required. Cell phone use will not be permitted when operating equipment.
- Personnel will not be allowed to stand or walk under any elevated portion of heavy equipment. Stay out of the Vertical Drop Zone (VDZ) of suspended loads and outside of the swing radius of the equipment.
- Ground personnel will not place arms and legs between pinch or scissor points of the equipment or outside the operator enclosure.
- 5 feet will be maintained from the edge of excavations, ditches, ramps, or platform.
- Heavy equipment must never be used for lifting or transporting personnel.
- The operator is required to look in the direction of, and maintain a clear view of, the path of travel.
- Heavy equipment will not be operated without an overhead guard and roll-over protection to protect the operator against falling objects and equipment rollover.
- Heavy equipment must not be driven up to anyone standing in front of any object.
- Operators will yield the right-of-way to other site vehicles.
- Other heavy equipment traveling in the same direction, at intersections, blind spots, or other dangerous locations must not be passed.
- 5 feet must be maintained from other heavy equipment, and the equipment must be kept under control at all times.
- The heavy equipment operator must slow down for wet and slippery conditions.

- Under all travel conditions the equipment will be operated at a speed that will permit it to be brought to a stop in a safe manner.
- Operators will avoid running over loose objects on operating surfaces.
- Grades and ramps must be ascended and descended slowly.
- On all grades, the load will be tilted back, and raised only as far as necessary to clear the operating surface.
- The operator will slow down and sound the horn at intersections and other locations where vision may be obstructed.
- If the load being carried obstructs forward view, the operator will travel with the load trailing.
- For turns, reduce speed, and use a smooth, sweeping motion to avoid abrupt turns and potential equipment or load upset.
- Equipment will not be left running unattended. All hydraulics will be lowered prior to turning the equipment off and left in a zero energy state.
- Excavators moving debris or involved in demolition will have impact resistant front glass or an impact cage.

3.12 Driving Safety

Work will be scheduled to minimize the potential for employees driving while tired. Drivers and their passengers must always wear seat belts. Drivers will operate the vehicle in accordance within all site requirements and applicable laws. The following safety measures will also be used:

- Use caution when taking any prescription or over-the-counter medication that may cause drowsiness or altered mental state. Any medication used shall be disclosed during the site indoctrination. Do not use illegal drugs or alcohol while driving.
- Headlights on always, even during daylight hours
- Do not talk or text on a cell phone when driving
- Do not drive aggressively or recklessly

3.13 Slips, Trips and Falls

All facilities owned/managed by PEC will be maintained in a safe and healthful manner. Certain environments within the work area may contain a reasonable probability of injury that can be prevented by proper maintenance and supervision.

- All offices, work stations, work areas, passageways, restrooms, and service rooms shall be kept clean, orderly, sanitary, and free of known hazards.
- The work area shall be maintained in a clean and, as much as possible, a dry condition. Where wet processes are used, drainage shall be maintained.
- Sufficient illumination will be provided in all areas always. Employees discovering lighting deficiencies will report them to the HSO for correction.
- All employees are responsible for maintaining their immediate work areas in a clean and orderly manner, and for notifying maintenance of conditions beyond their control.

- Spills will be contained immediately by any employee trained in spill containment and immediately reported to the Project Manager.

3.14 Sanitation

Site sanitation will be maintained under direction of the Health and Safety Officer. If site sanitation is not maintained site personnel are at risk for exposure and ingestion to on-site contaminants. Following are measures that will be taken to eliminate that exposure.

3.14.1 Break Area

Breaks must be taken away from the Exclusion and Contamination Reduction Zones. A separate break area will be established during site preparation activities.

3.14.2 Potable Water

Guidelines for potable water supply for the project site:

- An adequate supply of potable drinking water will be provided at the site. Potable water will be kept away from hazardous materials always.
- Bottled water will be used for drinking water. Recyclable containers will be picked up and placed in their own bag.

3.14.3 Sanitary Facilities and Lavatories

Hand wash stations will be placed strategically around site as well as outside of the break trailer. Employees will be required to wash prior to eating and drinking. In addition, portable toilets will be on-site. They will be cleaned once per week or sooner if required.

3.15 Adverse Weather Conditions

3.15.1 Severe Weather

During threatening weather, the HSO will monitor weather forecasts and take necessary precautions to eliminate exposure to severe weather.

3.15.2 Heavy Rain and Flooding

Work will be suspended during periods of excessive rain. The HSO will determine whether to suspend work and designate the assembly area for site workers during heavy rain events. If weather forecasts indicate torrential rain, work in flood-prone areas will be suspended until it is determined that the area is safe for work.

3.15.3 Lightning

The project will be suspended when lightning is in the area. The HSO/Project Superintendent will determine the need to suspend work. If work is suspended, employees will be instructed to seek shelter in the designated area. When thirty or fewer seconds pass between seeing lightning to hearing thunder, the HSO or Superintendent will order all work to stop and personnel to seek cover. The HSO or Superintendent will determine when work shall resume after a lightning event occurs. Work may resume only after the HSO/Superintendent

determines there have been no lightning/thunder events within the 30 second rule for a period of 30 minutes after the last timed lightning/thunder occurrence.
The following rules apply to lightning when working outdoors:

- When working in open areas, find a low spot away from trees/poles and make sure that you are not in a flood prone area.
- If in the woods, take refuge under the shorter trees.

3.15.4 Heavy Snow or Ice

The project will be suspended for heavy snow/freezing rain events. The HSO/Project Superintendent will determine the need to suspend work. Worker travel to and from the work site will also be a determining factor in the need to cancel work.

4. Air Monitoring & Actions Levels

This will be part of the Community Air Monitoring Plan developed by Arconic.

5. General Safety – Standard Operating Procedures

5.1 Safety Task Assignments (STA)

STA's provide general awareness of specific task related hazards and relevant guidance for safety expectations. Employees are required to understand and comply with all applicable OSHA standards, corporate operating procedures, and site-specific plans, but the STA's will be used to provide further detail regarding the assigned task(s) and their specific task related risk(s) if needed after review of the site-specific Contractor Safety Work Plan.

5.2 Standard Operating Procedures (SOPs)

The activities to be performed at the site involve a variety of general construction tasks which present physical hazards that are not related to the environmental contamination being remediated at the site. The following general safety SOPs are incorporated into this HASP and will be placed in a binder at the site. The Project Manager, Project Superintendent and HSO will review these documents to ensure compliance with the programs.

- ACCIDENT INVIESTIGATION REPORT
- ALCOHOL & DRUG POLICY
- EMERGENCY ACTION PLAN
- EMERGENCY FIRST AID
- EMERGENCY NUMBERS
- EXCAVATION AND GRADING
- FIRE AND FIRE EXTINGUISHERS
- GENERAL WORK RULE GUIDES
- HAZARD COMMUNICATION
- HAZARDOUS WASTE OPERATIONS

- MATERIAL HANDLING
- PERSONAL PROTECTIVE EQUIPMENT
- RESPIRATORY PROTECTION
- RIGGING AND SLINGING
- TRENCHING AND SHORING
- UNDERGROUND UTILITY CLEARANCE – DIG SAFE
- OVERHEAD TRANSMISSION LINE CLEARANCE

5.3 Accident Investigation Report

If an accident occurs, the HSO will be notified immediately and appropriate emergency response measures will be performed to stabilize the situation or victim, as necessary. The HSO will notify the client immediately and complete the "Accident Investigation Report". After the investigation is complete, an assessment of the conditions that caused the accident will be discussed and appropriate preventive measures will be developed to remove or reduce the conditions and factors that led to the accident. The accident, accident conditions, and preventative measures will be discussed with on-site personnel to avert reoccurrence of the incident. The developed countermeasures will be put into place immediately after the accident investigation and discussion with on-site personnel.

6. Training

Personnel associated with remedial activities at the site must participate in a health and safety program that complies with OSHA 29 CFR 1910.120 prior to mobilization. This will guide employees on the standard health and safety principles and procedures, operation of monitoring instruments, use of PPE, decontamination, and site-specific plans.

All personnel will have 40-hour OSHA HAZWOPER training course, an annual 8-hour refresher course, and the annual OSHA physical. The PEC Project Engineer, Project Superintendent, and Health and Safety Officer will be trained in First Aid, CPR, and automated external defibrillator (AED).

Employees will be medically cleared for respirator use and have a current fit test. They will be trained in the maintenance and use of the ½ face respirator. Training on respiratory protection will follow 29 CFR 1910.134.

7. Personal Protective Equipment

This section describes the general requirements of the Levels of Protection (A through D), and the specific levels of protection required for this project. All PPE supplied by PEC will meet the minimum requirements set forth in the Technical Specifications.

7.1 Levels of Personal Protection

Personnel must wear protective equipment when activities involve potential contact with known or suspected contamination, when hazardous vapor, gases, or particulates may be generated by site activities, or when direct skin contact with hazardous substances may occur. The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

Level A

Worn when the highest level of respiratory, skin, and eye protection is needed.

Level B

Worn when the highest level of respiratory protection is needed, but a lesser level of skin protection.

Level C

Worn when the criteria for using air purifying respirators are met, and a lesser level of skin protection is needed.

Level D

Worn only as a work uniform and not in any area with respiratory or skin hazards. It provides minimal protection against chemical hazards.

The Level of Protection selected is based upon the following:

- Type and measured concentration of the chemical substance in the ambient atmosphere and its toxicity.
- Potential routes of exposure to substances by inhalation, dermal contact, ingestion, or other direct contact with material due to work being done.
- Knowledge of chemicals on-site along with properties such as toxicity, route of exposure, and contaminant concentration.

The required levels of personal protection were developed using the SOP provided in the Bid Documents and from past historical practices with the identified contaminants. All on-site personnel will be required to comply with the personal protective levels of protection.

The various levels of protection for this project are defined as follows.

Level D

- High visibility reflective safety vest
- Sleeved shirt
- Full length pants
- Work coveralls or Tyvek as needed and based upon conditions
    - Chemical protective suits
        - White Tyvek (dry work)
        - Polyethylene coated Tyvek (wet work)
- Boots/shoes; chemical resistant over boot, steel toe

  - Disposable boot covers (where appropriate)
- Safety glasses or chemical splash goggles meeting ANSI Z.87.1 requirements
- Hardhat meeting ANZI Z.89.1 requirements
- Earplugs and/or earmuffs (optional as applicable)
- Face shield (where splash or material fragment hazards exist)
- Leather or cloth work gloves
  - Nitrile gloves
- Rain gear (optional as applicable)
- Safety harnesses, lanyards and lifelines (optional as applicable)

Level C

This level of protection applies when the concentration (s) and types (s) or airborne substance(s) are known and the criteria for using air purifying respirators are met. The following constitute Level C PPE, which may be used as appropriate.

- Air purifying respirator (NIOSH approved) with appropriate cartridges as listed below:
  - Half face or full-face respirator with OV/HEPA cartridges for all work where action levels dictate respiratory protection.
  - The HSO shall evaluate the protection factors of both full face and half face respirators with respect to the anticipated concentration of know contaminants and shall direct the employee as to which style shall be utilized.
  - The 15 min Time Weighted Average for Total VOCs and/or results from personal sampling will determine the use of half-face and full-face respirators.
    - Half-Face— if>5 ppm and 50 ppm
    - Full-Face — if >50 ppm and <250 ppm
- Sleeved shirt
- Full length pants
- Boots/shoes; chemical resistant, steel toe
  - Disposable boot covers (where appropriate)
- Safety glasses or chemical splash goggles meeting ANSI Z87.1 requirements
- Hardhat meeting ANSI Z89.1 requirements
- Chemical protective suites
  - White Tyvek (dry work)
  - Polyethylene coated Tyvek (wet Work)
- Gloves
  - Nitrile gloves
- Safety harnesses, lifelines and lanyards (optional as applicable)
- Earplugs and / or earmuffs (optional as applicable

- Face shield (decontamination pad employees)

Level B
Level B PPE is not anticipated for this project. If site hazards require Level B PPE, the HSO will determine the safety protocol and provide a formal amendment to this HASP.

Level A
Level A PPE is not anticipated for this project. If site hazards require Level A PPE, HSO will determine the safety protocol and provide a formal amendment to this HASP.

7.2 PPE Storage and Maintenance

Tyvek protective clothing, Nitrile gloves and respirators, etc. will be stored properly to prevent damage or malfunction due to exposure to dust, moisture, sunlight, damaging chemicals, extreme temperatures, and impact.

Different types and materials of clothing and gloves will be stored separately to prevent issuing the wrong material by mistake. Contaminated clothing for re-use will remain in the contaminant reduction zone.

Air-purifying respirators will be stored in a clean re-sealable plastic bag. Cartridges will be removed from the respirators prior to storage. In general, cartridges will be changed out daily, or if breakthrough is noticed.

PCB Respiratory Protection: This will only be required if air monitoring indicates elevated levels of exposure.

7.3 Training and Proper Fitting

Training: Employees will be trained in the use of protective equipment prior to using any equipment on-site. The purpose of the training will be to:

1) Become familiar with the equipment in a non-hazardous situation;
2) Instill confidence and awareness in the use of the of the equipment and to know the capabilities and limitations the equipment;
3) Increase the operating and protective efficiency of PPE use; and
4) Reduce maintenance expenses.

Respirator Fit Testing: The “fit” of the face piece to face seal of a respirator will be tested on each potential wearer to ensure a tight seal. All personnel who will work in potentially hazardous site conditions will be issued a half-face respirator and will be qualitatively fit tested with saccharin or isoamyl acetate.

8. Medical Surveillance Program

The medical surveillance program is designed to survey pre-employment conditions prior to potential exposures and monitor physical conditions on a regular basis. Post-employment or post-project medical surveillance will also be conducted to determine employee conditions after working at the Unnamed Tributary – Upper Reach site. All HAZMAT workers on this project are required to comply with the medical monitoring program.

Copies of health care practitioner's employee physical reports and authorizations for respiratory protection will be maintained on site with other records.

8.1 Baseline Medical Monitoring

Prior to employment, each employee must receive a baseline medical examination as outlined in the PEC corporate safety program.

The content of the baseline medical examinations will be determined by the employer's medical consultant based upon the potential exposures of the worker and the nature of the duties to be performed. The medical monitoring examinations must certify employees as fit for duty and able to wear respiratory protection and quantify any pre-existing exposures.

8.2 Periodic Medical Monitoring

In addition to a baseline examination for all employees, regular annual examinations shall be performed unless the advising physician or HSO believes a shorter interval is appropriate. Annual exams must fulfill OSHA 29 CFR 1910 and 1926 requirements for working at a hazardous waste site.

The Project Manager or HSO will verify all personnel working in potentially contaminated areas at the site are currently (within 12 months) participating in a medical surveillance program. A current copy of the physician's written opinion form for the medical surveillance and respirator suitability of each employee will be kept in the PEC office at the job site.

8.3 Exposure or Injury Medical Support

As a follow up to an injury or possible exposure above established exposure limits, all employees are entitled to and encouraged to seek medical attention and medical testing. Depending upon the type of exposure, it is critical to perform follow-up testing within 24-48 hours. The medical consultant will advise as to the type of test(s) required to accurately monitor for exposure effects.

8.4 Exit Medical Monitoring

At termination of employment, reassignment, or at the physician's discretion each employee shall complete an exit medical surveillance examination. The content of the examination is to be determined by the employer's medical consultant.

9. Site Control Measures

This section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site *Health and Safety Plan*.

9.1 Site Maps and Work Zones

The Project Superintendent will maintain a copy of all site maps and drawings at the PEC office trailer. Site maps and work zones shall be fully available to all workers and provided to any employee or site visitor upon request.

9.2 Site Security

Entry and exit to and from the site will be limited to authorized personnel only.
Entry and exit to and from the site will be permitted only through designated access points (access road with gate), except during an emergency or as authorized by the Superintendent or HSO. If a visitor does not adhere to the provisions of the HASP, he/she will be requested to leave the work area. All nonconformance incidents will be recorded in the site log.

9.3 Work Zone Definitions

Work zones shall be delineated as described below. Variations to the designation, layout, or configuration of the work zones must be authorized by the HSO, Project Manager, or Project Superintendent. Construction fence, red danger tape, and cones will be placed to identify the Exclusion Zone. Yellow caution tape and cones will be used to identify the Contamination Reduction Zone

9.3.1 Exclusion Zone

Exclusion Zones (EZ) are restricted areas where work activities create a high potential for exposure. Entry into the exclusion zone is limited to authorized personnel only, equipped with the proper PPE as described in the previous section.
Exclusion Zones for this project shall include, but are not limited to, the following areas:

- Active excavation areas where project tasks are intrusive and likely to encounter contaminated materials.
- Waste material processing/staging areas
- Decontamination pads
- Temporary water management equipment and storage areas.

9.3.2 Contamination Reduction Zone

Contaminant Reduction Zones (CRZs) are designated as transition areas between the Exclusion Zone and the Support Zone. Activities in the CRZ will involve the decontamination of personnel or equipment, waste containment, or other activities where the possibility of direct exposure to contaminants is reduced. Authorized personnel entering a CRZ may be required to use PPE as designated in the previous section. The need for PPE shall be determined by the HSO based upon the anticipated tasks to be completed. PPE will be removed before exiting the CRZ.

CRZs for this project shall include the following areas:

- Ingress/Egress areas adjacent to active excavations and Exclusion Zones
- Personnel decontamination sheds
- The equipment decontamination facility
- All other areas within the limits of work, but outside of Exclusion Zones, shall be considered CRZs with respect to authority, training, and PPE requirements

9.3.3 Support Zone

Support zones are all other areas of the project which are active as part of the operation. Support zones do not require special access authority, training, or PPE. All areas of the site not designated as Exclusion Zones or CRZs will be considered Support Zones. The designated smoking areas will be located within the Support Zone. At no time will employees be allowed to smoke within the Exclusion Zone or Contamination Reduction Zone.

9.4 Site Communications

Successful communications between personnel in the various zones is essential. Contact with outside services and agencies are also essential to summon emergency services. Communications equipment for this project shall include the following:

- Two Way Radios
- Portable Cellular Telephones

10. Personal Decontamination Procedures

10.1 Personal Hygiene

- Site personnel must thoroughly wash their hands and faces before eating and smoking.
- Facial hair will not be allowed where the respirator seal contacts the face.
- Personnel will only eat, drink, smoke, or chew tobacco in the support zone.

10.2 Personal Decontamination

Personnel and equipment decontamination varies depending on the level of PPE required at the site. Personnel and equipment decontamination is necessary when they enter and exit an EZ or CRZ.

The following procedures have been established to provide site personnel with minimum guidelines for proper decontamination. These minimum procedures must be followed by all personnel wearing PPE. The decontamination process shall take place at a reasonable distance from any area of potential contamination and designated stations will be established within the CRZ and include, at a minimum, a portable eyewash facility with a minimum water capacity of two quarts. Non-disposable equipment will be cleaned and staged for the next use. Hand wash

stations shall consist of a potable water supply, hand soap and clean towels. Employees will perform self-decontamination. Modifications of the decontamination procedures may be necessary as determined by the HSO. Hand wash, boot wash, and other decontamination solutions will be transferred to the onsite waste water treatment facility.
Hand wash stations and sanitary facilities will be available onsite. The sanitary facilities will be maintained and cleaned on a weekly basis.

10.3 Decontamination Procedures
The following decontamination procedures in the CRZs shall be implemented during site activities for the appropriate level of protection.

10.3.1 Level D Decontamination Procedure

1. Segregated Equipment Drop: Deposit contaminated equipment onto plastic drop cloths.
2. Boot, Outer Glove, and Coverall Wash: Brush over boots, outer gloves and coveralls free of residual materials. If necessary, wash with detergent/water solution and rinse with water.
3. Boot, Outer Glove, and Coverall Removal: Remove over boots, outer gloves, and coveralls in that order. Place disposable over boots, outer gloves, and coveralls into a PPE waste container. Stage non-disposable equipment for decontamination and future use.
4. Inner Glove Wash and Removal: Wash and remove inner gloves and place in PPE container.
5. Field Wash: Wash hands and face thoroughly.

10.3.2 Level C Decontamination Procedure

1. Segregated Equipment Drop: Previously described.
2. Over boot, Outer Glove and Coverall Wash: Over boots, outer gloves and coveralls shall be brushed free of bulk residual materials and scrubbed with a detergent/water solution if necessary.
3. Tape Removal: Remove tape from around boots and gloves and place into container with a plastic liner.
4. Removal of over boots and Outer gloves: Remove over boots and outer gloves in that order. Non-disposable over boots and gloves will be staged for future use and disposable over boots and gloves will be placed into a waste container.
5. Removal of Chemical Resistant clothing: remove chemical resistant suit. The exterior of the suit shall not meet any inner layers of clothing. Place disposable clothing in a waste container.

6. Remove respirator: remove respirator and place on plastic. Keep face/glove contact to a minimum.
7. Inner glove Removal: Remove inner gloves and deposit in a waste container.
8. Field Wash: Wash hands and face thoroughly.

10.4 Emergency Decontamination Procedures

Should an injured person have an excessive exposure to contaminated soil, groundwater, or other materials, they will be decontaminated, if appropriate, and brought immediately to the hospital. The HSO and/or Emergency Responder will decide whether to decontaminate an affected employee, and the decision will be based upon the type and severity of the illness or injury and the nature of the contaminant.

For some emergency victims, immediate decontamination may be an essential part of life-saving first aid. For others, decontamination may aggravate the injury or delay lifesaving treatment. If decontamination does not interfere with essential treatment, it may be performed by any employee trained in the appropriate decontamination procedures, including respiratory protection and personal protective clothing. Emergency Responder personnel will be made aware of any potential contamination on the injured person.

While performing the decontamination procedures, the protective clothing of the affected employee will be washed, rinsed, and/or cut off. If decontamination cannot be performed, then the victim will be wrapped in blankets or plastic to reduce contamination of other personnel. If the person cannot be decontaminated on-site, coordination will be performed with the local hospital and Emergency Responders. The Emergency Response and off-site medical personnel will be alerted to potential contamination, and they will be instructed in specific decontamination procedures. At least one-person familiar with the incident will be sent along with the victim during emergency treatment and make hospital officials aware of the contamination.

11. Equipment Decontamination Procedures

11.1 Equipment Decontamination Pad

The equipment decontamination pad will be installed as indicated on the Site Layout Drawing given separately. The decontamination pad will be sufficiently sized to allow for decontamination of the largest equipment.

The decontamination pad will be utilized for vehicles which have come into contact with impacted materials (i.e. excavators, loaders, off-road dumps, etc.). Decontamination water collected in the sump during equipment/truck decontamination will be transferred to the on-site waste water treatment system.

11.2 Equipment Decontamination

PEC's equipment will be decontaminated prior to removal from the site. Equipment decontamination will be performed as follows:

- No Contact with impacted material – power washed as needed and a visual inspection
- Contact with non-TSCA Material only – power washed with industrial cleaner and a visual inspection
- Contact with TSCA Material – power washed with PCB decontamination detergent and wipe sampling per TSCA regulations

Decontamination of small reusable equipment will be performed at a designated location within the CRZ. Decontamination of equipment will consist of soap and water brush washing and a water rinse. A third party will be responsible for inspecting all equipment leaving the site for adequacy of decontamination.

Small tools and equipment which cannot be safely pressure washed will be hand washed with a warm detergent solution and brush within the decontamination pad. This will be performed 3 times to meet the triple wash and rinse requirements.

Non-disposable equipment cleaning shall be deemed complete based on visual inspection. Personnel engaged in vehicle decontamination will wear protective clothing including face shields and equipment as determined in this HASP.

11.3 Disposal of Decontamination Wastes

Personal protective equipment will be co-disposed with bulk solid waste and disposed of at the Secure Landfill. Decontamination water will be collected in a designated sump, pumped to an on-site frac tank for storage, and treated at the on-site treatment facility. Solid material generated from the decontamination of the equipment shall be co-disposed on-site.

12. Emergency Response Plan (ERP)

12.1 Emergency Planning

Proper planning for emergencies is necessary to minimize employee injury and property damage.

In addition to the specialized training for Emergency Response Team Members, all employees will be trained in the following:

- Evacuation plans (to be posted at the Contractor Trailer, the Engineering Trailer and the Entrance to the site)
- Alarm systems (radio and telephone communications, air horn sounding)
- Reporting procedures for personnel
- Shutdown procedures
- Types of potential emergencies

- Meeting Point

In an emergency, PEC will communicate with other PEC personnel using PEC's two-way radios. The Site Superintendent and HSO will communicate with the Site Manager and the Site Engineer using two-way radios.

Following is the chain-of-command in the event of an emergency:

1. Site personnel will notify a PEC foreman.
2. PEC foreman will notify the Site Superintendent and the HSO.
3. The HSO will notify the Site Manager.
4. PEC will contact emergency services through 911 and notify Gate 1 at (315)764-4500.
5. The HSO will notify all site employees and subcontractors, as necessary.
6. The HSO will notify the proper authorities and implement additional safety measures as needed.
7. Owner will notify the appropriate regulatory agencies, if necessary.

All employees have the authority to stop work with respect to safety and are responsible for assisting the HSO within the parameters of their scope of work. Selected PEC staff have current First-Aid / CPR / AED training. These individuals shall assist in the event of a medical emergency, until Emergency Responders arrive.

12.2 Emergency Meeting Place and Signals

An exit route and assembly area will be set up for personnel to meet should an emergency occur. All personnel will be informed about the routes from the Work Area to the Assembly Area during site orientation. Air horns will be placed at each Work Zone and will indicate a release has occurred.

13. Medical Emergency

All employee injuries must be promptly reported to the HSO, who will institute the following procedures:

- Verify that the injured employee receives prompt first aid treatment by appropriately trained PEC personnel;
- Contact Arconic Site Manager
- Determine the extent of the injury and need for professional medical attention;
- Confirm that the individual is transported by appropriate means to the nearest hospital;
- Notify the Site Manager of the condition, cause, and extent of injury; the on-site treatment, if any; and on- and off-site medical attention given to the victim.

13.1 First Aid

All persons must report any near-miss incident, accident, injury, or illness to their immediate supervisor or the HSO. First aid will be provided by trained personnel. PEC supervisors and foremen are required to keep their first aid and CPR training up-to-date. Injuries and illnesses requiring medical treatment must be documented. The HSO must conduct an accident investigation as soon as emergency conditions no longer exist and first aid and/or medical treatment has been administered. The report must be completed and submitted to the Project Manager and HSO within 24 hours after the incident. If first aid treatment is required, first aid kits are kept in all PEC vehicles and in the office trailers. If treatment beyond first aid is required, the injured employee will be transported to a medical facility. If the injured shows any sign of not being in a comfortable and stable condition for transport, then an ambulance will be summoned.

13.2 Emergency Care Steps

The steps listed below must be followed in the event of an emergency at the work area:

- **Survey the scene**. Determine if it is safe to proceed. Try to determine if the conditions that caused the incident are still a threat. Protect yourself from exposure before attempting to rescue the victim. Assess whether the victim or the accident scene is contaminated.
- **Perform a primary survey of the victim**. Check for airway obstruction, breathing, and pulse. Assess likely routes of chemical exposure by examining the eyes, mouth, nose, and skin of the victim for symptoms. Treat for shock.
- **Contact the Project Superintendent or HSO via PEC Radio, cellular phone, or other means**.
- **The Superintendent or HSO will contact 911 and then Arconic Security**. Give the location, telephone number used, caller's name, what happened, number of victims, victims' condition, and First-Aid being administered.
- **Maintain airway and perform rescue breathing** as necessary.
- **Perform CPR** as necessary.
- **Perform a secondary survey of the victim.** Check vital signs and do a head-to-toe exam.
- **Treat other conditions** as necessary. Comfort the victim. If the victim can be moved, take him to a location away from the work are where EMS can gain access and continue to treat for shock.

13.2.1 Inhalation

Any employee complaining of symptoms of chemical exposure will be removed from the work area and transported to the designated medical facility for examination and treatment.

13.2.2 Ingestion

Call EMS and consult a poison control center for advice. If available, refer to the MSDS/SDS for treatment information, if recommended. If unconscious, keep the victim on his/her side and clear the airway if vomiting occurs.

13.2.3 Skin Contact

Personnel who have had skin contact with work area COCs will, unless the contact is severe, proceed through the decontamination zone to the wash-up area. Personnel must remove any contaminated clothing, and then flush the affected area with water for at least 15 minutes. The individual must be transported to a medical facility if he/she show any sign of skin reddening or irritation, or if he/she requests a medical examination.

13.2.4 Eye Contact

Field personnel who have had work area COCs splashed in their eyes or who have experienced eye irritation while in the contaminated zone must immediately proceed to the eyewash station, set up in the CRZ. Do not decontaminate prior to using the eyewash. Remove whatever protective clothing is necessary to use the eyewash. Flush the eye with clean running water for at least 15 minutes. Arrange prompt transport to the designated medical facility.

13.3 Emergency Contacts

The means to summon local public response agencies such as police, fire, and ambulance will be reviewed in the daily safety meeting. These agencies are identified in Section 2.1.

14. Recordkeeping

The implementation of the *Health and Safety Plan* will be completely documented. The HSO must set up a file to receive health and safety related records and activity reports. This file should contain the following records:

- Copy of the site-specific HASP.
- Safety Data Sheets (SDS) and Material Safety Data Sheets (MSDS).
- Daily Safety Logs and Audits.
- A list of personnel engaged in site activities and proof of the required training and medical monitoring.
- Employee injury/exposure incident reports.
- Safety violation records and remedial actions taken.
- Air sampling instrumentation records, sampling data sheets, and chain of-custody forms. (Supplied by others)
- Accident/Incident Reports.

15. Safety Data Sheets

PEC has implemented the Hazard Communication Standard (29 CFR 1910.1200; revised 2012) for Safety Data Sheets (SDS) and product labels with all site employees. SDS for the various products to be used on-site will be reviewed by the HSO and personnel prior to working with the material. The recommended handling and PPE requirements prescribed on the SDS will be adhered to. SDS and MSDS will be maintained in a binder in the PEC office trailer on site. SDS and older MSDS sheets will be made readily available, upon request, and will be in the PEC field office.

Appendix C

Community Air Monitoring Plan (CAMP)

Arconic Inc.

Community Air Monitoring Plan

Unnamed Tributary Area III
Upper and Lower Portions Operable Unit 2
Massena, New York

April 2018

Table of Contents

1. Introduction

This Community Air Monitoring Plan (CAMP) describes the real-time air monitoring to be implemented during the 2018 remedial action in Area III, Upper Portion Operable Unit 2 (UPOU-2) and Lower Portion Operable Unit 2 (LPOU-2) of the Unnamed Tributary (UNT) in Massena, New York (Figure 1). UPOU-2 extends from Station 46+00 to a beaver dam at approximately Station 53+50, and LPOU-2 extends downstream of Station 53+50 to County Route 42 (Figure 2). The UNT remedial action includes removal of polychlorinated biphenyl (PCB)-impacted sediment and streambank soils, backfilling to original grades, and site restoration.

A CAMP was prepared in September 2017 to define the air monitoring to be performed for the 2017 UPOU-2 construction activities. The UPOU-2 2017 construction activities included site access road upgrades and installation of temporary erosion and sediment controls, clearing of brush for access to removal areas, and location and construction of the solidification area. Air monitoring was performed in October 2017 concurrent with the UPOU-2 ground intrusive activities. This CAMP incorporates the air monitoring components described in the September 2017 CAMP and identifies the air monitoring efforts and locations specific to the 2018 construction.

UPOU-2 and LPOU-2 remedial activities are anticipated to be performed in summer/fall 2018. The remedial construction activities are described in the Remedial Action Work Plans (CDM Smith 2018a and 2018b), and will generally include the following components:

- Mobilizing equipment and personnel
- Installing erosion/sediment control features, temporary storm water diversion features, and water treatment equipment
- Upgrading access roads and culverts
- Clearing brush
- Dewatering and treatment of water within the removal areas
- Excavating impacted sediments and streambank soils
- Solidifying excavated materials as needed
- Performing verification sampling
- Transporting and disposing solidified material
- Backfilling excavated areas and site restoration
- Decontaminating vehicles/equipment and demobilizing equipment and personnel

Community air monitoring for volatile organic compounds (VOCs) and particulate matter less than 10 micrometers in size (PM_{10}) will be initiated at the start of ground intrusive activities, which will include access road upgrades, and will continue through backfilling activities to restore pre-remediation grades. Air monitoring for PCBs will be performed during removal and/or handling of contaminated materials or potentially contaminated sediment, soil, and other materials. The CAMP has been developed to provide a measure of protection for the downwind community (i.e., off-site receptors including residences, businesses, and off-site workers not directly involved with construction activities) from potential airborne contaminant releases as a direct result of the remedial work activities. Additionally, the CAMP will provide

the necessary data to help confirm that construction activities did not result in releases through the air to the off-site receptors.

The CAMP has been prepared in accordance with New York State Department of Environmental Conservation (NYSDEC) Technical Guidance for Site Investigation and Remediation (DER-10; NYSDEC 2010), specifically including the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan in Appendix 1A and the Fugitive Dust and Particulate Monitoring in Appendix 1B. The NYSDOH Generic Community Air Monitoring Plan is included in Appendix A.

1.1 Site Description

The UNT is located east of the Arconic Massena Operations aluminum production facility (Figure 1) and is approximately 7,400 feet in length. The UNT consists of a 60-inch reinforced concrete pipe and an open stream. Beaver dams have altered channel flow and water levels.

The immediate vicinity surrounding the site is primarily wooded and heavily vegetated. Additionally, state and federal wetlands were identified within a half mile of the UNT. To the east of the UNT is agricultural land use, to the south is County Road 42, residential houses and ultimately the Grasse River, and to the west and north of the UNT is undeveloped wooded land until Route 131. Overhead transmission power lines cross the northern portion of UPOU-2.

Arconic has a right of way along the UNT. Abutting properties along the UNT are not owned by Arconic, however access will be secured prior to implementation of the remedial action and associated air monitoring program.

1.2 Remedial Action Schedule

Construction activities for are targeted for June to October 2018. Construction is anticipated to be performed 5 days per week (Monday through Friday); work activities may be performed on Saturday if needed. There are no night construction activities planned.

2. Air Monitoring Program

The air monitoring program for the UNT UPOU-2 and LPOU-2 will include monitoring for VOCs, PM_{10} and PCBs. Air monitoring for VOCs and PM_{10} will be initiated at the start of ground intrusive activities which includes access road upgrades continuing through backfilling activities to restore pre-remediation grades. Air monitoring for PCBs will be performed during removal and/or handling of contaminated materials or potentially contaminated sediment, soil, and other materials. This will include excavation of impacted sediments and streambank soils, solidification of excavated materials, verification sampling and additional removal as needed, and loading for transportation and disposal at the Arconic Secure Landfill of the solidified materials. Note that no work will be performed within 20 feet of potentially exposed individuals or structures. Potential emissions from these activities will be controlled through dust suppression techniques including the use of water to wet surfaces such as driving areas or excavation faces as needed and use of tarps on loaded dump trucks. Additional measures may also include restricting truck speeds, covering excavated areas and materials, and reducing the size or number of excavations as needed. Visual air monitoring will be performed concurrent with remediation activities with dust suppression measures implemented proactively as needed.

Monitoring will be performed continuously (24 hours, 7 days per week) during these construction activities as directed by NYSDEC/NYSDOH. Air monitoring results will be evaluated against corrective action levels to determine the need for corrective actions.

A summary of the air monitoring locations is provided in Section 2.1, details on specific monitoring activities are provided in Sections 2.2 and 2.3, and the corrective action levels are summarized in Section 2.4. Section 2.5 describes odor monitoring, and Section 2.6 summarizes the reporting approach.

2.1 Air Monitoring Stations

Fixed air monitoring stations will be established based on the location of construction activities (primarily removal and processing activities), potential receptor locations, and considering the historic predominant wind direction. In addition, portable station setups will be established for use on days when the fixed stations are not in a downwind direction. Up to 12 fixed stations and two portable stations will be used considering the construction location (i.e., staging area, UPOU-2, and upper/lower stretches of LPOU-2). Figure 2 provides the approximate location of the air monitoring stations along with an overlay of the remedial areas and materials processing location. The actual locations will be sited in the field based on topographic considerations, site conditions, and access agreements with surrounding property owners.

Data from the local Massena/FAA Airport Meteorological Station #94725 will be used to determine the upwind and downwind locations daily based on the predominant wind through observation of meteorological conditions/data (e.g., wind speed/direction and wind gust). A wind sock located in proximity to the UNT will be used to ground truth these data in real time. Based on the station at the airport, the historic prevailing wind direction has been determined to be from the southwest. The station at the airport is located less than approximately 1.5 miles south of the UNT.

As requested and consistent with monitoring being performed at Arconic's Secure Landfill site, the portable stations will be turned on at the start of the day and turned off at the end of the working day.

Table 1 summarizes the downwind station in consideration of wind direction at 22.5 degree intervals.

2.2 Polychlorinated Biphenyls

PCB monitoring for all stations will include low-volume PCB sampling in accordance with USEPA Method TO-10A. PCB samples will be collected using a low-volume personal sampling pump equipped with a glass cylinder containing a polyurethane sorbent (i.e., PUF plug). Samples will be collected at a flow rate of approximately 5 L/min with a sampling period of approximately 10 hours (i.e., duration of the work day). Low volume stations will run on battery and will not require a continuous power source.

Samples from all fixed stations will be submitted for PCB (Aroclor) analysis using Method SW846-8082 as directed by NYSDEC/NYSDOH. The hourly wind direction as reported on www.wunderground.com will be reviewed at the end of each working day to determine if, at any point during the working day, the wind blew from the directions noted in Table 1 that are associated with the downwind direction for the portable monitors. If, at any point during the working day, the wind blew from these directions, the low-volume PCB samples associated with the portable monitoring station(s) will be analyzed for PCBs (Aroclor) using Method SW846-8082, otherwise they will be discarded. Results will be requested on an accelerated analytical turn-around-time (48 hours).

2.3 Volatile Organic Compounds and Particulates

VOC and particulate monitoring will be conducted using real-time meters. VOC monitoring will be performed using real-time meters to record total VOC levels (i.e., MiniRAE 3000 by RAE Systems, Inc. or equivalent with a 10.6 eV ionization potential), and particulate monitoring will be performed using real-time meters for PM_{10} (i.e., DustTrak II Aerosol Monitor Model 8530 by TSI, Inc. or equivalent). The meters selected for use during these monitoring activities will be capable of calculating 15-minute running average concentrations. The meters will be equipped with alarms that will indicate if concentrations exceed an established level. Data from these meters will be transmitted to the construction management team using telemetry with results checked at a minimum of once daily during activities. In addition to the alarms, the telemetry system will notify on-site personnel of exceedances of established levels via text or email message. This will allow any potential exceedances to be investigated as quickly as possible. If visible dust is observed leaving the work area, the appropriate meters will be checked as soon as possible after the dust has been observed and corrective actions taken in accordance with NYSDEC's Generic CAMP (2010).

2.4 Corrective Action Levels and Actions

Corrective action levels have been established for each air monitoring parameter. These levels have been developed in consideration of the New York State Department of Health Generic Community Air Monitoring Plan provided in DER-10 (NYSDEC 2010) and other Massena projects. The corrective action levels will apply at the downwind location only. A summary of the corrective action levels is provided below.

- PCB (Aroclor) – 0.100 microgram per cubic meter ($\mu g/m^3$)

- Particulate (PM_{10}) – 0.100 milligrams per cubic meter (mg/m^3) above upwind station for a 15-minute period:
    - If the downwind PM_{10} level is 0.100 mg/m^3 above the upwind station for the 15-minute period or if airborne dust is observed leaving the work area, then dust-suppression techniques must be employed. Work may continue with dust-suppression techniques provided that downwind PM_{10} particulate levels do not exceed 0.150 mg/m^3 above the upwind level and no visible dust is migrating from the work area.
    - If, after implementation of dust-suppression techniques, the downwind PM_{10} levels are greater than 0.150 mg/m^3 above the upwind station, work must be stopped and site activities must be evaluated. Work may resume only if dust-suppression measures and other controls are successful in reducing PM_{10} levels to less than 0.150 mg/m^3 above the upwind levels and if no visible dust is observed leaving the site.
    - An initial level of 0.100 mg/m^3 (15-minute average) at any of the monitoring stations will be established as a conservative assessment level. Readings greater than this conservative assessment level will result in on-site personnel performing a review of the background (upwind perimeter) site level. If the downwind level is determined to be greater than 0.100 mg/m^3 above the upwind level, dust-suppression techniques will be employed to avoid an exceedance of the corrective action level.

- VOC – 5 parts per million (ppm) at the downwind station for a 15-minute period:
    - If the downwind VOC level is 5 ppm above the upwind station for the 15-minute period, then work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can proceed with continued monitoring.
    - If the downwind VOC levels persist at 5 ppm over the upwind station, but are less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the VOC levels 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less (but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.
    - If the VOC level at any station is above 25 ppm, activities must be shutdown.

Exceedances of any of these criteria will result in an immediate review of construction activities with adjustments made as needed in consultation with the selected contractor. For the real-time meters, the first step of this review will be to evaluate the result to assess whether it is site related or an issue with the meter (e.g., high humidity impacting the meter and readings) or local conditions (e.g., mowing in the vicinity of the meter). Once an exceedance has been verified to be site related, the Construction Manager will immediately be notified and an investigation will be performed to identify the conditions causing the exceedance. For the PCB monitoring, an exceedance of the corrective action level will result in developing an exceedance report that assesses site conditions, contractor site activities, and weather conditions. The Construction Manager

will evaluate these factors and identify the likely cause of the exceedance in order to appropriately respond to the issue. As noted in the introduction to Section 2, such response actions may include additional dust suppression through watering, additional site work observations, and/or evaluation/modification of truck tarping procedures. Additional measures such as poly sheeting will be considered if other response actions are not successful. The exceedance report will be submitted to NYSDEC and NYSDOH as soon as possible after the exceedance. Should the exceedance occur after hours or on weekends, submittal will occur the next business day.

If initial monitoring results indicate no exceedances of the corrective action triggers listed above, Arconic may work with the Agencies to modify the frequency or duration of monitoring at certain locations.

2.5 Odors

Odors will be monitored by the on-site construction management team and air monitoring personnel. Any noticeable odors or exceedances will be addressed through modifications to construction operations as described in the introduction to Section 2 and potentially application of odor masking agents if needed. If any community complaints regarding odors are received, the issue will be investigated and appropriate mitigation measures employed.

2.6 Reporting

A summary of the air monitoring results will be provided to NYSDEC and NYSDOH personnel as results are available (typically daily) via email distribution. The report will include the monitoring period, predominant wind direction, identification of the upwind and downwind stations, daily wind rose, daily maximum 15-minute levels for VOC and PM_{10} at each station, PCB analytical result at each station, an assessment of the corrective action level, and any comments or notes. Figure 2 illustrating the air monitoring stations will also be provided for reference.

3. References

CDM Smith. 2018a. *Remedial Action Work Plan (RAWP), Unnamed Tributary Remediation Area III, Upper Portion Operable Unit 2*. August 1, 2017.

CDM Smith. 2018b. *Remedial Action Work Plan (RAWP), Unnamed Tributary Remediation Area III, Lower Portion Operable Unit 2*. April 6, 2018.

NYSDEC. 2010. *DER-10, Technical Guidance for Site Investigation and Remediation. Division of Environmental Remediation*. *Appendix 1A – New York State Department of Health Generic Community Air Monitoring Plan; Appendix 1B – Fugitive Dust and Particulate Monitoring.* May 2010.

Table

Table 1: Summary of Wind Direction and Associated Downwind Station
Community Air Monitoring Plan, Unnamed Tributary Area III, Upper and Lower Portions Operable Unit 2, Massena, New York

Wind Direction	Fixed Station												Portable Station	
	UNT-AIR2	UNT-AIR3	UNT-AIR4	UNT-AIR5	UNT-AIR6	UNT-AIR7	UNT-AIR8	UNT-AIR9	UNT-AIR10	UNT-AIR11	UNT-AIR12	UNT-AIR13	UNT-AIR-PY	UNT-AIR-PZ
Staging Area (Decontamination Pad, Solidification Pad, and Water Treatment Pad)														
N	X													
NNE						X								
NE						X								
ENE						X								
E													X	
ESE														X
SE														X
SSE				X										
S			X											
SSW			X											
SW			X											
WSW		X												
W		X												
WNW					X									
NW							X							
NNW	X													
UPOU-2														
N	X													
NNE	X													
NE						X								
ENE													X	
E														X
ESE														X
SE				X										
SSE				X										
S			X											
SSW			X											
SW			X											
WSW			X											
W		X												
WNW		X												
NW		X												
NNW	X													
Upper Segment of LPOU-2														
N	X													
NNE	X													
NE								X						
ENE								X						
E						X								
ESE													X	
SE														X
SSE			X											
S			X											
SSW					X									
SW					X									
WSW							X							
W							X							
WNW							X							
NW									X					
NNW	X													

Table 1: Summary of Wind Direction and Associated Downwind Station
Community Air Monitoring Plan, Unnamed Tributary Area III, Upper and Lower Portions Operable Unit 2, Massena, New York

Wind Direction	Fixed Station												Portable Station	
	UNT-AIR2	UNT-AIR3	UNT-AIR4	UNT-AIR5	UNT-AIR6	UNT-AIR7	UNT-AIR8	UNT-AIR9	UNT-AIR10	UNT-AIR11	UNT-AIR12	UNT-AIR13	UNT-AIR-PY	UNT-AIR-PZ
Lower Segment of LPOU-2														
N												X		
NNE												X		
NE												X		
ENE												X		
E	X													
ESE						X								
SE													X	
SSE							X							
S									X					
SSW									X					
SW									X					
WSW									X					
W										X				
WNW										X				
NW											X			
NNW											X			

Notes:
1. Table identifies downwind air monitoring station considering construction location (i.e., the staging area, UPOU-2, and upper/lower stretches of LPOU-2). Air monitoring at UPOU-2 also considers the upper-most removal area in the upper stretch of LPOU-2.
2. Approximate station locations are provided on Figure 2. Actual locations will be determined in the field.
3. Shaded cells indicate stations to be monitored during construction in a particular area.

Figures

UNNAMED TRIBUTARY

MASSENA-WEST PLANT

ROUTE 131 BRIDGE

POWER CANAL

ROUTE 37 BRIDGE

AREA LOCATION

3,000' 0 3,000'

Approximate Scale: 1" = 3,000'

UNNAMED TRIBUTARY REMEDIATION PROJECT
MASSENA, NEW YORK
COMMUNITY AIR MONITORING PLAN

UNNAMED TRIBUTARY LOCATION MAP

FIGURE
1

10/02/2013 SYRACUSE, DIV/GROUP: ENV/IM-DV DJHOWES:
B0010886/0000/00001/CDR/10886N01.CDR - SH update

REFERENCE: MASSENA, NEW YORK-ONTARIO USGS QUAD. 1964 RAQUETTE RIVER, NEW YORK-ONTARIO USGS QUAD. 1964

UNT-AIR5
UNT-AIR4
UNT-AIR-PZ
ACCESS ROAD
AREA III UPPER PORTION OPERABLE UNIT 2 (UPOU-2)
UNT-AIR3
AREA III LOWER PORTION OPERABLE UNIT 2 (LPOU-2)
DONAGHUE ROAD
UNT-AIR-PY
DECONTAMINATION AREA
SOLIDIFICATION PAD
WATER TREATMENT PAD
UNT-AIR6
UNT-AIR8
UNT-AIR7
UNT-AIR10
NY 131
UNT-AIR9
UNT-AIR2
UNT-AIR11
UNT-AIR12
UNT-AIR13
HORTON ROAD
COUNTY ROUTE 42
GRASSE RIVER

LEGEND:

- APPROXIMATE AIR MONITORING STATION
- APPROXIMATE EXCAVATION AREA

NOTE:

1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH, DATED MAY, 2015.

0 200' 400'
GRAPHIC SCALE

GRASSE RIVER STUDY AREA
MASSENA, NEW YORK
COMMUNITY AIR MONITORING PLAN

UNNAMED TRIBUTARY CONSTRUCTION PLAN AND AIR MONITORING

ARCONIC

FIGURE
2

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. FORAKER T. RITSCHEL L. FORAKER LD: PIC: H. VANDEWALKER PM: H. VANDEWALKER TM: S. HILL LYR: ON=*;OFF=*REF*
C:\Users\cmckeough\OneDrive - ARCADIS\BIM 360 Docs\ALCOA USA CORP\UNT CAMP\2018\B0010886.1001\01-DWG\B0010886-Area3.DWG LAYOUT: 2 SAVED: 4/18/2018 11:25 AM ACADVER: 21.0S (LMS TECH) PAGESETUP: PDF-LD2B-TRANS PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/18/2018 11:29 AM BY: MCKEOUGH, CAROL
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Appendix A

NYSDOH Generic Community Air Monitoring Plan

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

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