Arconic Remediation
45 County Route 42
PO Box 150
Massena, NY 13662

January 15, 2020

Ms. Kelly Hale
Environmental Program Specialist Trainee 2
NYSDEC Region 6
Division of Environmental Remediation
317 Washington Street
Watertown, NY 13601

Subject: Arconic Inc. - Massena Operations
Site # 645019, Unnamed Tributary
Area III Operable Unit 3 Construction Completion Report

Dear Ms. Hale:

Arconic has prepared the attached Construction Completion Report (CCR) for the above-referenced site. This CCR was prepared in accordance with DER-10, and under the review and supervision of a New York State registered professional engineer.

If you have any questions, please contact me at (315) 764-4916.

Very truly yours,

Todd J. Furnia
Environmental and Security Manager
Arconic, Inc.

TF:tmp

cc: Peter Taylor, NYSDEC
Dan Tucholski, NYSDOH
Wendy Kuehner NYSDOH
Maureen Schuck NYSDOH
Ron Morosky, Alcoa
Jason Mibroda, Alcoa
Adrianne Constant, Anchor
Kirk Gribben, Arconic
Ernest Ashley, CDM Smith
Mike Schultz, CDM Smith
Jon Welch, CDM Smith
Paul Rodrigue, CDM Smith
Sara Hill, Arcadis

PW No. 223548

REPORT

Construction Completion Report

Unnamed Tributary
Area III Operable Unit 3

Prepared by:
Anchor QEA
Arcadis
CDM Smith

January 13, 2020

PW:233548

ARCONIC

Certification

Construction Completion Report

CERTIFICATION WITH SUBMITTAL OF THE

CONSTRUCTION COMPLETION REPORT

FOR THE UNNAMED TRIBUTARY AREA III OU3 REMEDIATION

I, Michael S. Schultz certify that I am currently a NYS registered professional engineer, I had primary direct responsibility for the implementation of the subject construction program, and I certify that the Remedial Work Plan was implemented and that all construction activities were completed in substantial conformance with the DER-approved Remedial Work Plan.

Signature:

Michael S. Schultz, P.E.
CDM Smith

Date: January 13, 2020

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Acronyms and Abbreviations

Alcoa	Alcoa USA Corp.
APE	Area of Potential Effect
AQ	Anchor QEA
Arconic	Arconic, Inc.
BMP	best management practice
Brennan	J.F. Brennan Co., Inc.
CAD	Computer-Aided Design
CCR	Construction Completion Report
CDM Smith	CDM Smith, Inc.
CHASP	Community Health and Safety Plan
CM	Construction Manager
CQA	Construction Quality Assurance
CQAP	Construction Quality Assurance Plan
CRA	cultural resource assessment
CSWP	Contractor Safe Work Plan
CY	cubic yard
DUSR	data usability summary report
ECN	Engineering Change Notice
EMP	Environmental Monitoring Plan
FDR	Final Design Report
GPS	Global Positioning System
HASP	Health and Safety Plan
HP	horsepower
ISA	International Society of Arboriculture
NYSDEC	New York State Department of Environmental Conservation
NYSOPRHP	New York State Office of Parks, Recreation and Historic Preservation
OU	Operable Unit
L/min	liters per minute
MS/MSD	matrix spike/matrix spike duplicate

Pace	Pace Analytical Services, LLC
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PM10	particulate matter less than 10 microns
PPE	Personal Protective Equipment
ppm	parts per million
psi	pounds per square inch
PUF	polyurethane foam
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance and quality control
RAWP	Remedial Action Work Plan
ROD	Record of Decision
SLF	Secure Landfill
SRMT	St. Regis Mohawk Tribe
SWPPP	Stormwater Pollution Prevention Plan
TAT	turnaround time
TSS	total suspended solids
UNT	Unnamed Tributary
USEPA	United States Environmental Protection Agency
USLS	United States Lake Survey
VOC	volatile organic compound
WF-Mouth	water column Grasse River mouth
WC-NF	water column near field
WC-SLF	water column St. Lawrence River
WC-UP	water column upstream

Section 1
Introduction

This Construction Completion Report (CCR) documents the scope of work completed as part of the remedial action for the Unnamed Tributary Area III Operable Unit 3 (UNT Area III OU3) at its confluence with the Grasse River, located downstream of UNT Area III Operable Unit 1 (UNT Area III OU1) and UNT Area III Operable Unit 2 (UNT Area III OU2). A site locus plan and site plan are provided in **Figure 1-1** and **Figure 1-2**, respectively.

1.1 Background and Regulatory Setting

The UNT is subject to the conditions of the March 1991 Record of Decision (ROD) between Alcoa Inc., and the New York State Department of Environmental Conservation (NYSDEC). Since that time Alcoa Inc. has formed two companies, Arconic Inc. (Arconic) (formally Alcoa Inc.) and Alcoa USA Corp. (Alcoa). Arconic implemented the remediation 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), polycyclic aromatic hydrocarbons (PAHs), and cyanide. The post-excavation verification sampling results for remediation of UNT Areas I and II ("Cleanup Verification Sampling and Analysis Report", prepared for Alcoa, Inc. by Camp, Dresser & McKee [CDM], February 5, 1999) upstream of UNT Area III demonstrated that remediation to address the PCB contamination also met the ROD-specified cleanup levels for PAHs and cyanide. Based on this prior demonstration for upstream UNT segments Areas I and II, delineation and remediation with respect to PCBs was accepted by the NYSDEC for Area III. Therefore, the site-specific cleanup goal for UNT Area III OU3 was limited to total PCBs in sediments/soils at a concentration of less than or equal to one (1) part per million (ppm).

The remedial action for UNT Area III OU1 and OU2, which extends from the terminus of UNT Area II at approximately Sta. 46+00 to Sta. 72+00 where the UNT enters a culvert under County Road 42, was completed between June 2018 and November 2018. This work was documented in the *UNT Area III OU2 Upper and Lower Portions Construction Completion Report* submitted to NYSDEC on February 26, 2019. It should be noted that UNT Area III OU1 and OU2 were previously designated as UNT Area III Upper Portion OU2 and Area III Lower Portion OU2, respectively.

This CCR presents a description of the work completed for UNT Area III OU3 including the remedial construction means and methods and the Construction Quality Assurance (CQA) procedures and results to certify that the work was completed in accordance with the agency-approved *UNT Area III OU3 Remedial Action Work Plan* (RAWP) (CDM Smith, 2019) as well as the DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, May 2010).

The UNT Area III OU3 is the area downstream of Sta. 73+00 (culvert exit beneath County Road 42) to the confluence of the UNT and the Grasse River at Sta. 78+50. Sediment was not present and/or PCBs were not detected in samples collected on the steep streambed surface that cascades from County Road 42 to Sta. 76+00. Therefore, the work area addressed specifically by this CCR is comprised of the lower-most portion of UNT Area III OU3, from Sta. 76+00 to Sta. 78+50, at the confluence with the Grasse River.

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Arconic - Massena, New York

UNNAMED TRIBUTARY (UNT) AREA III
SITE LOCUS PLAN
FIGURE 1-1

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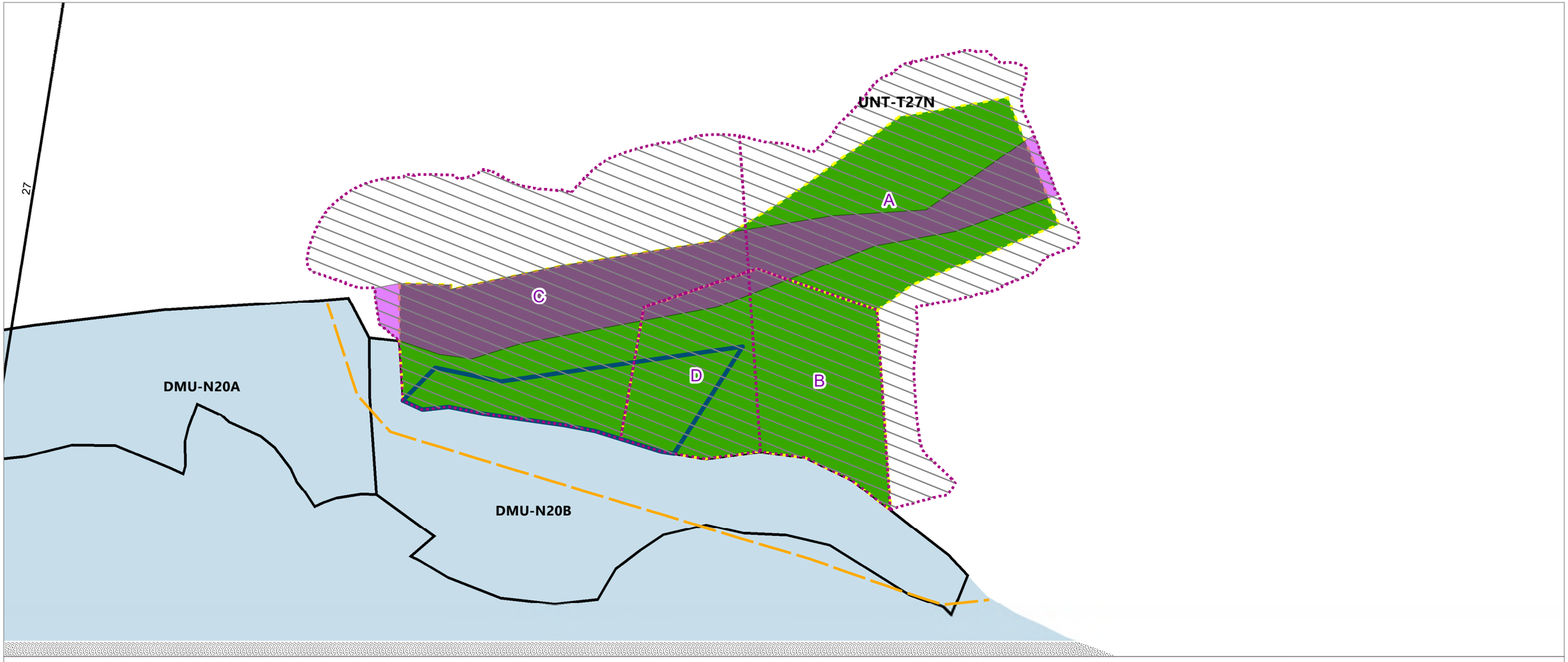

LEGEND:

- Silt Curtain (Approximate)
- Wetland Boundary
- Unnamed Tributary Stream Bed
- UNT Remedial Extent
- UNT Design Grading Limits
- Grasse River DMU Boundary
- Grasse River
- Grasse River Transects

NOTES:
The silt curtain is a 2-foot impermeable Type 3 turbidity curtain. Alignment is approximate and represents the positioning during construction in the Unnamed Tributary OU3.

CONSTRUCTION SEQUENCE	
1	DREDGE AREA A (2-FOOT DEPTH)
2	DREDGE AREA B (4.5 FOOT DEPTH)
3	BACKFILL AREA B
4	BACKFILL AREA A
5	DREDGE AREA C (2-FOOT DEPTH)
6	DREDGE AREA D (4.5 FOOT DEPTH)
7	BACKFILL AREA D
8	BACKFILL AREA C

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0 20
Feet

Figure 1-2
UNT Area III OU3 Site Plan

UNT OU3 III Construction Completion Report
Arconic

The selected remedial action included the excavation of PCB-contaminated sediments/soils and subsequent placement of removed material within the Secure Landfill (SLF) Cell 3 located at Arconic's Massena West facility. Remediation of PCB-impacted sediment in the Grasse River is being performed under the Superfund program managed by the United States Environmental Protection Agency (USEPA), subject to the ROD issued by USEPA in April 2013. Due to access considerations and the location of the area to be remediated adjacent to the Grasse River, the remediation of the UNT Area III OU3 was performed at the same time as the Grasse River remediation project. However, the UNT remains a separate and distinct remediation project, and NYSDEC retains authority over the portion of work above the mean high-water level of the river (i.e., elevation 155.5 United States Lake Survey [USLS] 1935), as stated in letters to Arconic from NYSDEC, dated March 19, 2018 and August 24, 2018. Accordingly, this CCR provides the necessary information for review and approval by NYSDEC and associated regulatory entities.

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 were required to reduce the generation of turbidity to the maximum extent practicable.

Implementation of the remedy required permits and approvals from regulatory agencies was conducted. Site activities were conducted in such a manner as to satisfy the permit conditions and the substantive regulatory and technical requirements applicable to the activity.

1.2 Intent of UNT Area III OU3 Remediation

The remedial action for Area III OU3 was completed between August 2019 and November 2019 and coincided with the dredging portion of the Grasse River remediation work. The project objectives were as follows:

1. Regulatory requirements: Remedial action implemented as per the ROD, approved UNT Area III OU3 RAWP, the Final Design Report (FDR) for the Grasse River (Arconic, October 2019), and Nationwide and Water Quality Certification Permits.

2. Cleanup: The primary focus of the project was to remove sediment/soil impacted with total PCBs greater than 1 ppm from the site and place the removed material within the SLF Cell 3 located at Arconic's Massena West facility.

3. Restoration: The work area was restored to the pre-excavation condition, re-establishing native habitat to the extent practical. Disturbed areas were restored in-kind with no loss to Waters of the United States Stream bed and banks were restored to pre-construction grades and replanted in accordance with regulatory requirements. Upland areas were also restored at the conclusion of the work.

1.3 Intent and Organization of the Construction Completion Report (CCR)

The intent of this CCR is to demonstrate that the remedial action objectives were met consistent with the procedures defined in DER-10 and the remedial action complies with applicable

standards, criteria, and guidance. This document describes the activities completed in accordance with the approved UNT Area III OU3 RAWP and provides data to document the successful completion of construction activities. This CCR includes:

- A description of the remedy, as constructed, pursuant to the RAWP;
- A description of any problems encountered during construction and a description of resolution;
- Quantities and concentrations of soil/sediment removed;
- Quantities and locations of materials disposed; and
- Restoration actions.

The CCR has been 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.

The report is organized into the following sections:

- Section 1 – Introduction: This section includes an overview of the regulatory framework, project objectives, and document organization.
- Section 2 – UNT Area 0U3 Remediation Work: This section details the work, Contractor Means and Methods, and actual schedule to complete the work.
- Section 3 – Construction Quality Assurance Program: This section details the verification process which demonstrates the remedial action was completed in accordance with the UNT Area III OU3 RAWP.
- Section 4 – References: This section presents references cited in the UNT Area III OU3 CCR.
- Appendices:
  - Appendix A – Photo documentation log
  - Appendix B – Pre-remediation and post-remediation surveys
  - Appendix C – Air and water monitoring reports
  - Appendix D – Regulatory agency correspondence
  - Appendix E – Sediment/soil sampling laboratory reports and data validation report

Section 2

UNT Area III OU3 Remediation Work

This section provides a summary of the pre-construction and construction activities performed as part of the project.

Arconic formed a team of professionals and contractors to complete the UNT Area III OU3 project in coordination with the Grasse River remediation project. The project team included the following:

- Mr. Michael Elsner (Arconic) served as the overall UNT Manager of Construction and was ultimately responsible for delivering the project.
- J.F. Brennan Co., Inc. (Brennan) was the primary contractor responsible for completing the construction work in accordance with agency-approved drawings and technical specifications for the Grasse River and UNT Area III OU3 remediation projects. Mr. Tyler Lee served as Project Director.
- Anchor QEA (AQ) provided field engineering services. Primary AQ personnel included Mr. Paul LaRosa (Engineer of Record for the Grasse River remediation project), Mr. Charles Guest (Project Engineer), Mr. Kevyn Bollinger (Construction Quality Assurance (CQA), Field Engineer), and Ms. Adrianne Constant (Field Data Manager).
- CDM Smith, Inc. (CDM Smith) provided Health and Safety services, CQA oversight, and field engineering services. Primary CDM Smith personnel included Mr. Michael S. Schultz, P.E. (Geotechnical Engineer of Record for the UNT Area III OU3 remediation), Mr. Matthew Millias (CQA Manager, Project Engineer) and Mr. Toby Topa (Safety Manager).
- Mr. Daniel Casey (Arcadis) and Mr. John Whalen (CDM Smith) served as Construction Manager (CM) and Assistant Construction Manager, respectively, for the UNT Area III OU3 and Grasse River Remediation projects.
- Arcadis provided environmental monitoring services including continuous site air monitoring and water monitoring. Ms. Sarah Hill served as the Environmental Monitoring and Sampling Manager.

2.1 Pre-Construction Activities

2.1.1 Construction Plans and Permits

Prior to mobilization, a number of construction plans and permits were prepared by the Arconic project team. Some governing documents that extended to the UNT Area III OU3 remedial action were developed under the Grasse River remediation project. The documents were submitted to the agencies for approval and/or acknowledgement where required. **Table 2-1** summarizes these documents and provides the agency submittal and approval date.

Table 2-1 – List of Construction Plans and Permits

Document Name	Submittal Date	Approval Date	Agency Approved
RAWP Area III OU3	6/11/19	7/18/19	NYSDEC
Final Design Report, Grasse River[1]	9/28/18	3/4/19	USEPA
Community Health and Safety Plan (CHASP)[2]	3/28/19	4/4/19	USEPA
Joint Application for Permit – (NWP #38)	11/9/18, 7/9/19 (Arconic Project Area Modification Letter)	3/1/19 (conditional), 8/8/19 (final addendum)	U.S. Army Corps of Engineers
Joint Application for Permit – (401 WQ Cert)	11/9/18	7/29/19	NYSDEC
Miscellaneous Wastewater Management Plan Revision (under Arconic SPDES #NY 000 1732)	4/23/18	6/11/18	NYSDEC
Grasse River Remediation Project: Tree Trimming, Chipping and Removal Work Plan Addendum Transects T1-T72	6/18/19	6/28/19	USEPA/NYSDEC
Phase I Cultural Resources Assessment Addendum – Unnamed Tributary Confluence (Area III Operable Unit 3) Area of Potential Effect	1/22/19	1/23/19	NYSOPRHP

Notes:
1. A draft FDR was submitted on 9/28/18, which was conditionally approved by USEPA on 3/4/19 and formally approved on 9/30/19. The final FDR was submitted on 10/10/19.
2. A draft CHASP was submitted on 3/28/19, which was formally approved by USEPA on 4/4/19. The final CHASP was submitted on 4/15/19.

2.1.2 Submittal Review

Submittals applicable to the UNT Area III OU3 remedial action will be included in the submittal register for the 2019 Construction Completion Report for the Grasse River (targeted for early 2020). This list will be based on the technical specifications within the FDR (Arconic, October 2019) for the Grasse River remediation. Technical submittals were approved by the Arconic CQA team prior to use on the site. Certain technical submittals were reviewed and approved by USEPA as part of the Grasse River remediation project prior to the start of in-river construction in 2019.

2.1.3 Habitat Assessment and Wetland Delineation

In September 2018, Arcadis inspected and delineated wetland resource areas in the vicinity of UNT Area III OU3. Existing field-delineated wetlands resource boundaries were evaluated for conformance with the U.S. Army Corps of Engineers 1987 Wetlands Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (v 2.0) (ERDC/EL TR12-1, dated January 2012). The full Habitat Assessment and Wetland Delineation Reports were included as appendices to the UNT Area III OU3 RAWP.

2.1.4 Cultural Resource Assessment

A cultural resource assessment (CRA) was performed by Arcadis for the UNT Area III OU3 Area of Potential Effect (APE). Efforts included documentary research and a Phase IB sub-surface investigation. A total of 10 archaeological shovel tests were performed November 12 and

November 13, 2018 in the APE. Results of the CRA efforts are documented in the *Phase I CRA Addendum – UNT Confluence APE (*Arcadis, 2019). In summary, based on documentary research and the sub-surface investigation, it was determined that cultural resources will not be impacted by remedial activities within the APE. New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) concurred with these findings.

2.1.5 Safety and Security Program

Arconic considers safety their number one priority for all projects and maintains a rigorous safety program. A comprehensive Arconic safety and security program was implemented prior to the start of work and included the following elements:

- The Arconic project team completed the Fatality Safety Index process which develops a risk profile for the project and attempts to plan for each risk.
- An Arconic Safety Officer was established for the project to review the program, conduct audits, and lead on-site discussions (e.g., Contractor Safe Work Plan Meetings, tool-box talks, and safety moments). The Arconic project team established their Safety Officer to conduct weekly audits and implement the Personal Protective Equipment (PPE) program.
- Arconic Safety Orientation was conducted for every regular site worker. Visitors were escorted.
- Clear lines of communication were established for emergency circumstances, standard safety issues, and site security access.
- The Arconic project team completed the Contractor Safe Work Plan (CSWP) implementation including the written, reviewed, and approved plan, CSWP meetings, and follow-up inspections. In addition to the overall project CSWP, each major work task required a separate amendment developed specifically for that task.
- Direct communication was established between the site's chain-of-command and the Arconic West Plant Security Staff for unforeseen emergencies and incidents.
- A Health and Safety Plan (HASP) was prepared and reviewed by field staff.
- Each field worker had the appropriate PPE including a high visibility hard hat with the Arconic Emergency Number, which is called first during emergencies at the site. The Arconic West Plant Main Gate #1 staff initiates emergency response.

2.2 Construction Activities

As stated earlier, remedial activities for the UNT Area III OU3 were performed in conjunction with the Grasse River remediation project. The Route 131 Staging Area constructed for the Grasse River remediation was used as a support area for material storage and processing for the UNT Area III OU3 construction activities. Construction equipment accessed the excavation area from barges on the Grasse River. Since the work was performed from the water, no temporary

stormwater diversion activities were necessary. Temporary fence posts and rope were placed in the upland area to demarcate the work zone. A photo log of construction activities is included in **Appendix A**.

2.2.1 Mobilization

Dredge equipment was mobilized to the site on August 14, 2019 to prepare the site for the amphibious excavator, which was mobilized on August 17, 2019. Other equipment including transport barges and excavators for unloading of excavated material at the Route 131 Staging Area were utilized throughout the UNT Area III OU3 work.

2.2.1.1 Support Area

The Route 131 Staging Area was a support area designated for the Grasse River remediation and used during the UNT Area III OU3 remediation activities. The Route 131 Staging Area included sediment processing, borrow source material storage, water pretreatment, field trailers, support facilities, and parking areas for worker vehicles.

2.2.2 Survey Control

Prior to construction, the site was surveyed for investigation and design purposes. The resulting wetland delineation, topography, and site features are documented on figures within the RAWP.

Upon mobilization, the surveyor re-established bench marks, wetland delineation stakes, and verified the design survey. The design drawings were converted to a Global Positioning System (GPS)-based modeling program so that vertical and horizontal coordinates could be downloaded to heavy equipment. A satellite receiver was set-up to maintain day-to-day survey control. Throughout the project, the on-site survey team and the equipment operators performed calibration checks on the satelite receiver, rod, and equipment. The excavator and backfill placement machines were equipped with GPS, inclinometers, and an onboard computer to track, record and display the excavation and placement of material. Survey control checks and as-built survey information was collected and sent into the surveyor for conversion back to Computer-Aided Design (CAD) format.

Each remediation area was surveyed and marked prior to excavation activities. As-built survey points were collected after each remediation area completion to verify that the horizontal and vertical extent of excavation met the intent of the design. Likewise, the post-excavation backfill was surveyed to confirm final grades matched pre-excavation grades. The final survey is included in **Appendix B**.

2.2.3 Site Preparation

2.2.3.1 Site Signage

Construction signs related to both the Grasse River and UNT Area III OU3 remediation projects were placed along County Route 42 and State Route 131 to alert public traffic as well as site delivery trucks where the main entrance was located.

2.2.3.2 Turbidity and Sediment Control Practices

Turbidity and sediment control were conducted in accordance with the FDR (Arconic, October 2019) for the Grasse River. After the excavator was moved into the excavation area, a 2-foot impermeable turbidity curtain was deployed from shoreline to shoreline (Figure 1-2). All material excavation and placement occurred within the turbidity curtain.

2.2.3.3 Tree Removal and Brush Cutting

Tree trimming and removal activities were conducted in accordance with the *Grasse River Remediation Project: Tree Trimming, Chipping and Removal Work Plan Addendeum Transects T1-T72* (Brennan, January 2019) and Addendum No. 2 to that work plan (Brennan, June 2019). These work plans identified trees located adjacent to the UNT Area III OU3 that would require removal or trimming. Brennan contracted an International Society of Arboriculture (ISA) certified arborist to assist with conducting a tree survey and preparing the work plan.

A total of 33 trees were identified for removal (23) or trimming (10) to support excavation in the UNT Area III OU3. Tree trimming and removal was performed by Brennan using chainsaws and/or a dredge excavator to fell the trees. Once the trees were felled, the dredge excavator placed the trees onto the hopper barges for transport to the Route 131 Staging Area. At the Route 131 Staging Area the Sennebogen material handler removed tree sections from the hopper barges for transport to the SLF. As necessary, Brennan used chainsaws to size trees into shorter lengths at the Route 131 Staging Area prior to shipping to the SLF. A wheel loader and/or excavator with clamshell bucket was used to load trees into dump trucks for transport to the SLF.

2.2.3.4 Abandoned Boat Removal

An abandoned boat was removed from the Unnamed Tributary on July 13, 2019 and processed through the Route 131 Staging Area as debris. Prior to removal of the boat from the shoreline, a refrigerator and fuel tanks were removed from the boat and disposed at the Massena Transfer Station. A backfill placement plant pulled the abandoned boat closer to the north shoreline of the Grasse River on the downstream side of the Unnamed Tributary mouth and onto a waiting backfill material barge which had a large flat open deck. The abandoned boat was transported to the Route 131 Staging Area, crushed into smaller parts, and added to the debris pile in the sediment processing area. Debris from the boat was handled in the same manner as other debris from in-river dredging operations, with oversized pieces being cut down as needed and debris mixed in with processed sediment going into dump trucks for transport to the SLF.

2.2.4 Air Monitoring Program

Air quality monitoring was conducted in accordance with the CHASP (Arconic, March 2019) and Environmental Monitoring Plan (EMP; Appendix C to the FDR; Arconic, October 2019) to assess impacts to the surrounding community due to potential emissions from equipment, sediments, and dust. Monitoring included continuous particulate and volatile organic compound (VOC) measurements and continuous air sampling for PCB analysis. Air monitoring results were evaluated against corrective action levels to determine potential community exposure and the need for corrective actions.

Particulate monitoring was performed using real-time meters for particulate matter less than 10 microns (PM10), and VOC monitoring was performed using real-time meters to record total VOC levels. The meters selected for use during these monitoring activities calculated 15-minute running average concentrations for comparison against the corrective action levels. The corrective action levels included early warning levels and action levels. Meters were checked periodically during the day by on-site personnel and were also equipped with alarms to notify personnel if concentrations exceeded the established levels. Data from these meters were continuously transmitted using telemetry.

PCB monitoring included high volume and low volume sampling. High-volume sampling was conducted in accordance with USEPA Method TO-4A. PCB samples were collected using high-volume air samplers fitted with quartz fiber filters and sorbent cartridges. The high-volume polyurethane foam (PUF) sampler at each monitoring station was operated at a flow rate of 200 to 300 liters per minute (L/min) with a sampling period of approximately 24 hours. High-volume samplers were established in fixed locations with a continuous power source available. Low volume PCB monitoring was performed in accordance with USEPA Method TO-10A. PCB samples were collected using a low-volume personal sampling pump equipped with a glass cylinder containing a PUF plug. Samples were collected at a flow rate of approximately 5 L/min with a sampling period of approximately 24 hours. Low-volume samplers were used for mobile stations and in areas without a continuous power source. All samples were submitted for PCB (Aroclor) analysis using Method SW846-8082. High-volume samples were submitted to Eurofins Test America, Burlington and low-volume samples were submitted to Alpha Analytical Laboratories with results requested on an accelerated analytical turnaround time (TAT).

Air monitoring stations were established around UNT Area III OU3, as well as the SLF and Route 131 Staging Area – see Figures C-1 and C-2 in **Appendix C**. Details on each of these areas and associated stations are provided in the bullets below. Note that the SLF and Route 131 Staging Area stations were established at the start of the Grasse River remediation to support the overall project, whereas the UNT Area III OU3 stations were identified in the field at the start of excavation activities in this particular area and were removed (and relocated to monitor other Grasse River remediation components) upon completion of excavation in the UNT Area III OU3.

- UNT Area III OU3: A total of 3 monitoring stations were established around the UNT Area III OU3 excavation area (Figure C-1, Appendix C). These stations were identified as dredge corridor stations and were placed between potential receptors and removal activities. Air monitoring at these stations was performed only during days of active operations for PCBs.
- SLF: A total of 6 monitoring stations were established at the SLF, with 4 fixed stations and 2 mobile stations (Figure C-2, Appendix C). Monitoring included PM10, VOCs, and PCBs. Air monitoring was performed 7 days per week for PM10 and VOCs at all stations and PCBs at the fixed stations only. The mobile stations were monitored for PCBs only during days of active operation. The fixed stations included high volume PCB sampling, and the mobile stations included low volume sampling.

- Route 131 Staging Area: A total of 4 monitoring stations were established around the Route 131 Staging Area (Figure C-2, Appendix C). Air monitoring was performed 7 days per week and included PM10, VOCs, and PCBs during excavated material processing. PM10 only was required during material handling for backfill activities. There were 2 high volume stations and 2 low volume stations.

Data from the local Massena/FAA Airport Meteorological Station #94725 were used to determine the upwind and downwind locations daily based on the predominant wind through observation of meteorological conditions. Wind roses were developed using these data (see Appendix C).

UNT Area III OU3 excavation activities were performed between August 16, 2019 and September 9, 2019. The corresponding air monitoring data for this same time period is provided in Appendix C. Note that excavation activities were not performed continuously during this timeframe, and therefore the dredge corridor results are provided only during periods of active remediation at the UNT. All data are provided for this timeframe for the SLF and Route 131 Staging Area. In addition, PM10 data for the Route 131 Staging Area is provided through September 25 to coincide with the completion of backfill activities at UNT Area III OU3. All PCB results were at least an order of magnitude below the corrective action level. The dredge corridor PCB results were all below detectable limits. All PM10 and VOC readings were below the corrective action levels. There were readings on 4 days at the Route 131 Staging Area that exceeded the specified warning levels, but investigations by field staff indicated that the meters were affected by weather or other site conditions (e.g., rain, mowing adjacent to stations, etc.) and did not result from construction operations.

2.2.5 Water Monitoring

Water quality monitoring was conducted in accordance with the CHASP (Arconic, March 2019) and EMP (Appendix C to the FDR; Arconic, October 2019) to assess potential impacts from sediment resuspension during excavation to downstream communities.

Water column and water intake monitoring was performed to measure solids and PCB levels. Water monitoring results were evaluated against advisory and corrective action levels to determine potential community exposure and the need for corrective actions.

River water column monitoring stations were established at three locations throughout the Grasse River at the midpoint across the river and one location in the St. Lawrence River as described in the bullets below (see Figure C-3 in Appendix C).

- Upstream (WC-UP): Fixed station established upstream of all in-water Grasse River activities at approximately T0.
- Near field (WC-NF): Mobile station established approximately 1,000 feet downstream of the collective in-water activities during each monitoring event (i.e., downstream of the farthest downstream work activities). During UNT Area III OU3 excavation, this station was located between approximately T50.5 and T68.5.
- Mouth (WC-Mouth): Fixed station established just upstream of the Grasse River mouth at approximately T71.

- St. Lawrence River (WC-SLR): Fixed station established in the St. Lawrence River along the southern shoreline immediately downstream of the Grasse River mouth.

Water column sampling was performed daily during excavation (in-river) activities for total suspended solids (TSS) sampling using Method SM2540D and PCB sampling using the project-specific modified SW-846-8082A. Grab samples were collected at 0.5 times the total water depth at the upstream station (less than 5 feet of water). TSS only was required during material placement for backfill activities. Grab samples were collected at 0.2 and 0.8 times the total water depth and composited to form one sample from each of the near field, mouth, and St. Lawrence River stations. Stratification checks (temperature and conductivity) were performed daily at the near field and mouth stations. Stratification occurs when colder water with greater specific conductivity from the St. Lawrence River enters and moves upstream along the Grasse River. If stratification was present, only the grab sample above the stratification (i.e., Grasse River water only) was collected and submitted for analyses.

Intake water monitoring water performed at the Alcoa East Plant and St. Regis Mohawk Tribe (SRMT) water intakes (see Figure C-4 in Appendix C). Monitoring was performed at the raw (untreated) sampling port inside the Alcoa East Plant and the raw and treated ports inside the SRMT treatment building. Monitoring was performed daily during excavation and included turbidity measurements using a real-time meter and PCB sampling using the project-specific modified SW-846-8082A. All water samples were submitted to the on-site Pace Analytical Services, LLC (Pace) mobile laboratory for testing on an accelerated analytical TAT. Turbidity only was required during material placement for backfill activities.

All water results during the period of UNT Area III OU3 excavation (between August 16, 2019 and September 9, 2019) are provided in Appendix C. Note that excavation activities were not performed continuously during this timeframe, but all data have been provided for this time period for purposes of completeness. In addition, solids (TSS and turbidity) data and are provided through September 25 to coincide with the completion of backfill activities at UNT Area III OU3. Water column TSS and PCB results were all below advisory and corrective action levels, with PCB ranging from non-detectable levels to 0.11 micrograms per liter and TSS results ranging from non-detectable levels to 6.4 milligrams per liter. Similarly, the intake turbidity and PCB results were all below corrective action levels, with all PCB results below detectable levels and turbidity values ranging from 0 to 3.7 Nephelometric turbidity units.

2.2.6 Excavation

Debris removal and excavation activities commenced on August 16, 2019. The UNT Area III OU3 sediment and streambank soil excavation limits were established based on previously collected delineation soil sample results presented in the RAWP. Pre-remediation sampling locations and results are shown on **Figure 2-1**.

Potential slope stability and geotechnical considerations in the confluence area of the UNT and Grasse River required excavation areas to be backfilled as soon as practicable. This proposed approach to dredge and then immediately backfill, rather than backfilling upon receipt of verification sample results, was discussed with and reviewed by NYSDEC. In a letter from NYSDEC to Arconic, dated July 18, 2019, NYSDEC approved this approach under the condition that if

Location: UNT-A3-T76.25	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	1.2
0.5-1	0.620
1-1.5	0.590
1.5-2	0.130

Location: UNT-A3-FP15	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.450

Location: UNT-A3-SED-T76	
Sample Depth (ft)	TPCB (mg/kg)
0-0.1	0.434

Location: UNT-A3-T76.5a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.790 (1.4)
0.5-1	0.370
1-1.5	0.470
1.5-2	0.450
2-2.5	0.058
2.5-3	ND

Location: UNT-A3-FP16	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	3.9
0.5-1	3.7
Location: UNT-A3-FP16a	
1-1.5	4.1
1.5-2	0.2
2-2.5	0.03

Location: UNT-A3-T76.75a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	1.2
0.5-1	0.410
1-1.5	0.630
1.5-2	1.4
Deeper sections attempted, not recovered	

Location: UNT-A3-T77	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	ND
0.5-1	ND

Location: UNT-A3-END	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.3

Location: UNT-A3-T77.5a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.160 (0.230)
0.5-1	0.130
1-1.5	0.026
1.5-2	ND
2-2.5	ND
2.5-3	ND
3-3.5	ND
3.5-4	ND

Location: UNT-A3-T78d	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	ND
0.5-1	ND
1-1.5	0.057

Location: UNT-A3-T78b	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.680
0.5-1	1.2
1-1.5	0.071
1.5-2	0.490

Location: UNT-A3-T76b	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.037
0.5-1	0.027
1-1.5	0.022
1.5-2	ND

Location: UNT-A3-T76.5b	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	1.1
0.5-1	3.0
1-1.5	0.021
1.5-2	ND
2-2.5	ND
2.5-3	ND

Location: UNT-A3-T77b	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	2.6
0.5-1	3.2
1-1.5	1.9
1.5-2	1.9
Deeper sections attempted, not recovered	

Location: UNT-A3-T77.25a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	2.9
0.5-1	4.0
1-1.5	1.2
1.5-2	1.1
Location: UNT-A3-T77.25a2	
2-3	Void
3-3.5	5.1
3.5-4	7.0

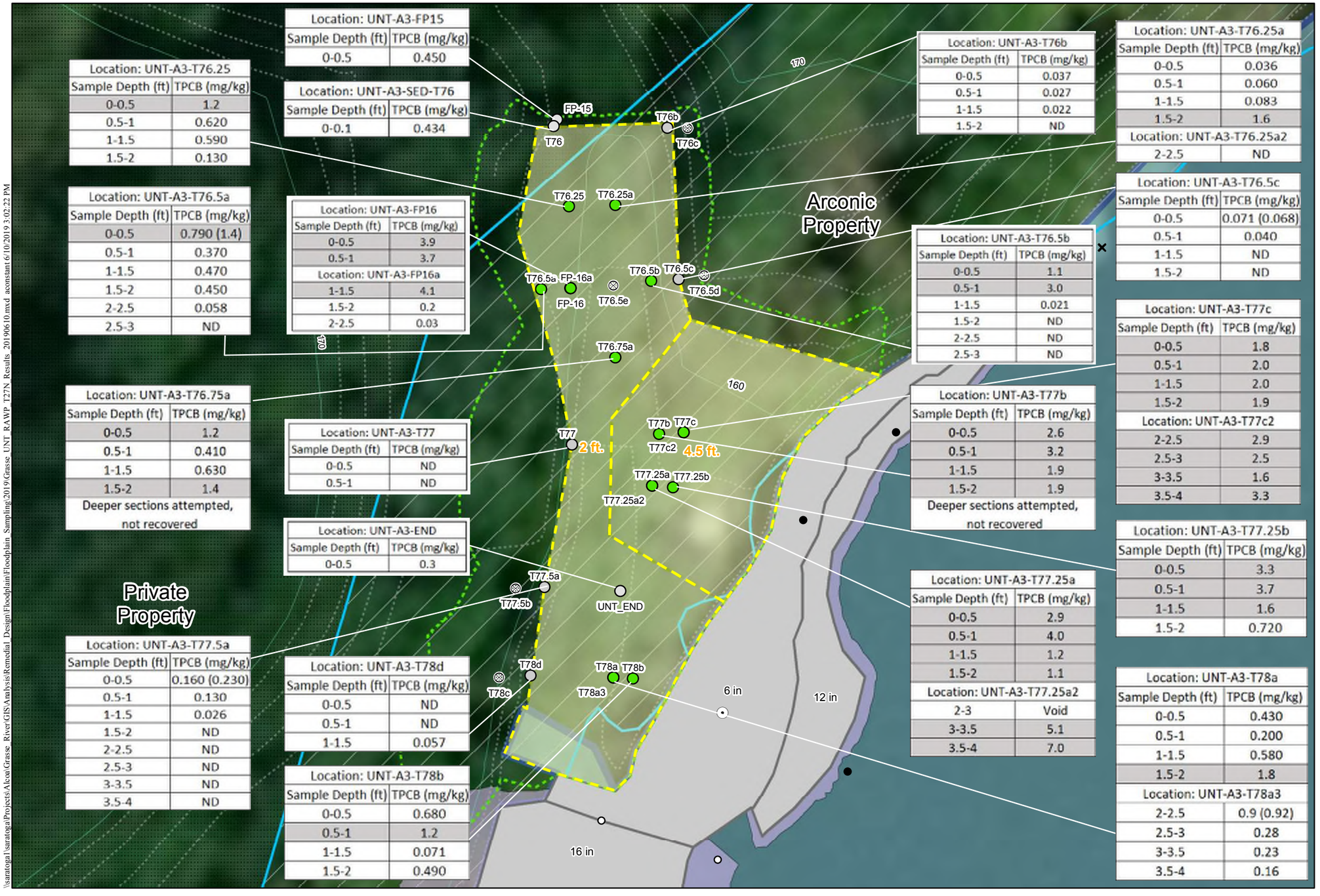
Location: UNT-A3-T76.25a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.036
0.5-1	0.060
1-1.5	0.083
1.5-2	1.6
Location: UNT-A3-T76.25a2	
2-2.5	ND

Location: UNT-A3-T76.5c	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.071 (0.068)
0.5-1	0.040
1-1.5	ND
1.5-2	ND

Location: UNT-A3-T77c	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	1.8
0.5-1	2.0
1-1.5	2.0
1.5-2	1.9
Location: UNT-A3-T77c2	
2-2.5	2.9
2.5-3	2.5
3-3.5	1.6
3.5-4	3.3

Location: UNT-A3-T77.25b	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	3.3
0.5-1	3.7
1-1.5	1.6
1.5-2	0.720

Location: UNT-A3-T78a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.430
0.5-1	0.200
1-1.5	0.580
1.5-2	1.8
Location: UNT-A3-T78a3	
2-2.5	0.9 (0.92)
2.5-3	0.28
3-3.5	0.23
3.5-4	0.16



Locator Map

NOTES:
Remedial extents are labeled with their target excavation depths in orange. Shaded rows indicate Total PCB concentrations greater than or equal to 1 mg/kg. Duplicates are shown in parentheses. ND = non-detect Grasse River shoreline extent is based on the high-water elevation of 155.5 feet (USLS 1935). In-river dredge areas are labeled with their associated design target dredge depth (inches).

LEGEND

UNT Sampling Locations

Maximum Total PCB (mg/kg)

- < 1
- > 1
- Location Sampled but Archived
- Target UNT Remedial Extent
- UNT Dredge Grading Limits

Grasse River Sediment Locations

- Above Remedial Criteria
- Below Remedial Criteria
- No Recovery
- Grasse River Dredge Areas
- Grasse River Dredge Grading Limits
- Current Topo Contours (2ft)
- Current Topo Contours (10ft)
- Grasse River

Parcels Along the Grasse River

- Non-Arconic Properties
- Arconic Property

ARCONIC

GRAPHIC SCALE
0 10 20 40 Feet

Figure 2-1
UNT Area III OU3 Pre-Remediation Sampling Locations and Results
UNT OU3 III Construction Completion Report

verification results did not meet cleanup goal, Arconic would discuss with NYSDEC the need for, or feasibility of, redredging which may include a geotechnical engineering evaluation. Arconic accepted these conditions in a letter dated July 23, 2019 and appropriate modifications were made to the UNT Area III OU3 RAWP. This corresondence is included in **Appendix D**. Associated design changes were documented in Engineering Change Notice (ECN) 2019-011, included along with USEPA approval in Appendix D.

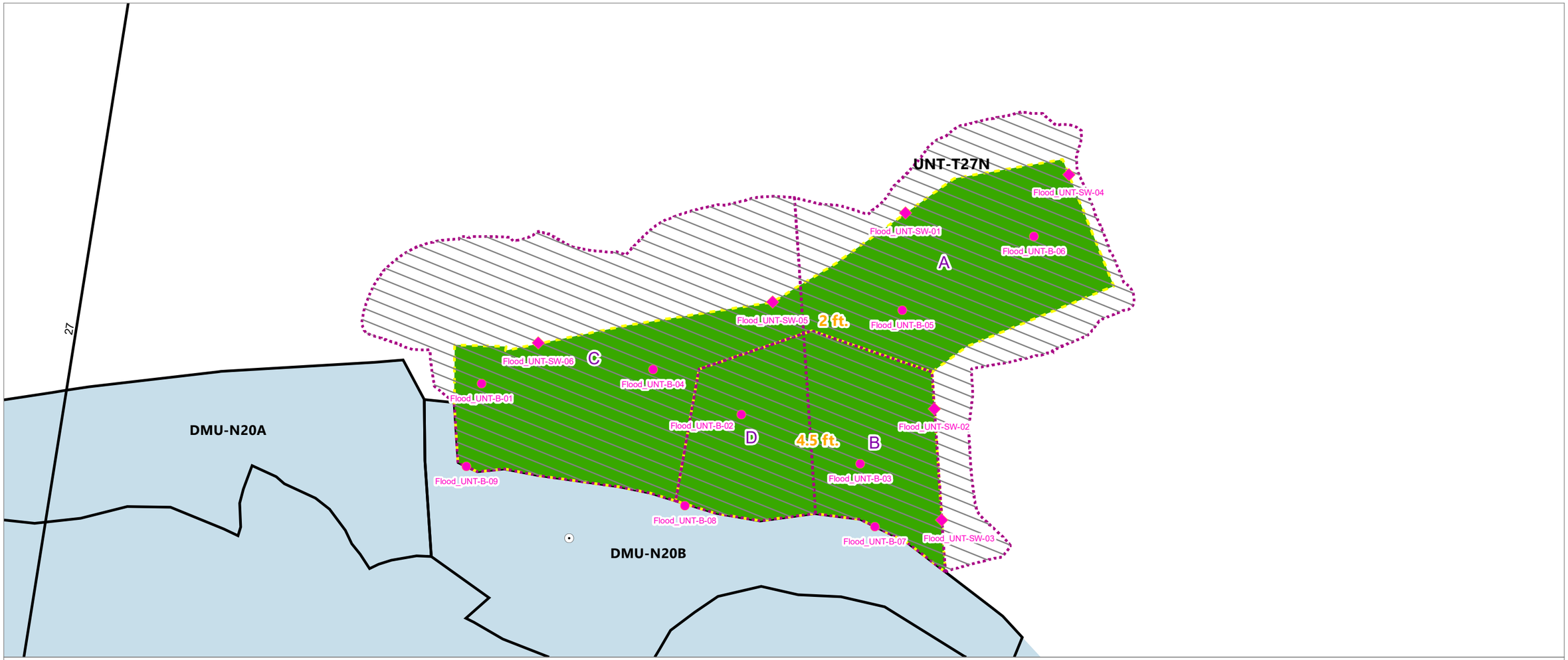
Given the geotechnical requirement to backfill as soon as practicable, the planned excavation area was divided into four dredge areas (A, B, C and D) for construction sequencing as presented in **Figure 2-2**. Construction was sequenced to allow for excavation and backfill in areas A and B prior to proceeding with excavation in areas C and D. Target depths ranged from 2.5 feet to 4.5 feet (including the 6-inch over-dredge allowance).

Excavation was performed using an amphibious excavator (i.e., a Cat 324E excavator mounted on a Marsh Buggy, Inc. undercarriage). This machine has an operating weight of 91,000 pounds and has a 204 horsepower (HP) engine and uses a standard 2.5 cubic yard (CY) bucket without a lid. With 58'-6" of reach, the amphibious excavator only produces 1.5 pounds per square inch (psi) of ground pressure supporting the protection of wetland and shoreline areas it tracks onto. The amphibious excavator is capable of floating, and as such the machine was towed by a pushboat, then tracked into the work area. On August 16, 2019 approximately 41 CY of soil and debris was removed from the planned UNT excavation area to allow placement of a 6-inch sacrificial sand layer to create a level surface for the amphibious excavator to track across. Brennan moved the amphibious excavator into the shallow areas with minimal turning and on the shortest path possible to minimize disturbance to the river bed and shoreline. After the excavator was moved into the excavation area on August 17, the turbidity curtain was deployed. Excavation via the amphibious excavator commenced on August 19, 2019 at the farthest inland location and then worked toward the river to remove the target soil/sediments and the sacrificial sand layer. In this manner, the tracks on the amphibious excavator only came in contact with the clean sand layer material.

After excavation was performed to the survey-verified target extents for each area, the excavated surfaces were sampled to document the removal of contaminated material to meet the cleanup goal. Verification sample locations are shown on Figure 2-2. A more detailed discussion of the verification sampling and required re-excavation performed is provided in Section 2.2.7.

2.2.7 Sediment/Soil Verification Sampling and Re-Excavation

Verification sampling was performed in accordance with DER-10 guidance, which states that one sample per 30 linear feet of sidewall and one sample per 900 square feet of excavation bottom be collected. The excavation limit for UNT Area III OU3 was delineated using previous soil sampling locations that achieved the cleanup goal. These samples were collected at approximately 30-foot intervals, and therefore samples that met the cleanup goal served as excavation sidewall samples along the upland excavation limit. Additional sidewall samples were collected landward of existing samples above 1 ppm total PCBs, landward of existing sample depths not as deep as the planned excavation, and along the eastern excavation sidewall. Verification sample results are shown on **Figure 2-3** and summarized in **Table 2-2**.



LEGEND:

Proposed Post-Constuction Sample
- UNT Bottom Sample Location
- UNT Sidewall Sample Location
- UNT Remedial Extent
- UNT Design Grading Limits

- Grasse River Verification Location
- Grasse River DMU Boundary
- Grasse River
- Grasse River Transects

NOTES:
Remedial extents are labeled with their target excavation depths in orange.
Post-excavation floodplain verification sampling locations are labeled with their location ID.

CONSTRUCTION SEQUENCE	
1	DREDGE AREA A (2-FOOT DEPTH)
2	DREDGE AREA B (4.5 FOOT DEPTH)
3	BACKFILL AREA B
4	BACKFILL AREA A
5	DREDGE AREA C (2-FOOT DEPTH)
6	DREDGE AREA D (4.5 FOOT DEPTH)
7	BACKFILL AREA D
8	BACKFILL AREA C

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ARCONIC

0 20
Feet

Figure 2-2
UNT Area III OU3 Post-Remediation Sediment/Soil Verification Target Sampling Locations

UNT OU3 III Construction Completion Report
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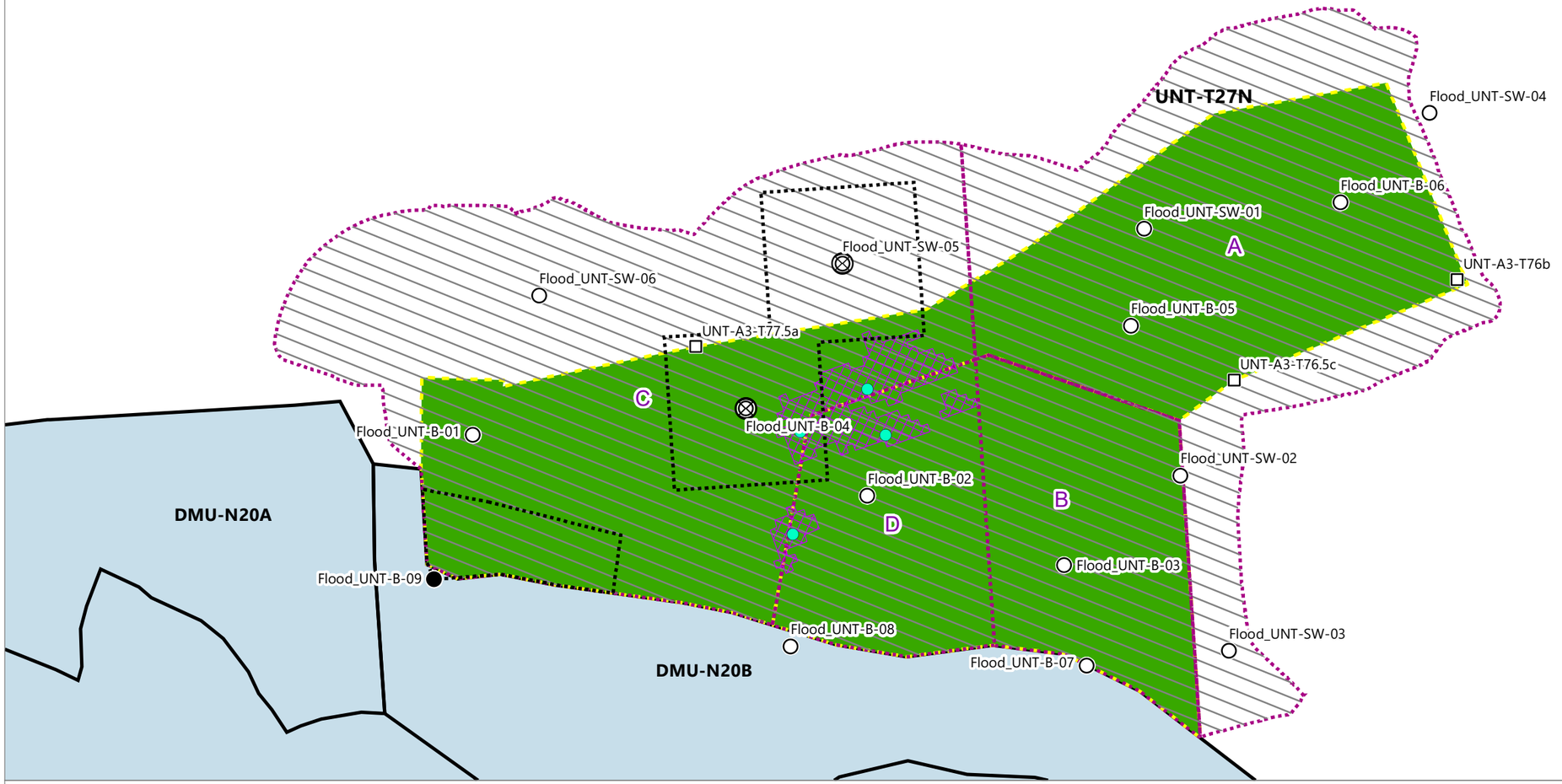

LEGEND:

Post-Excavation Verification Sampling Locations
- Below 1 mg/kg
- Above 1 mg/kg
- Location Re-Dredged but not Re-Sampled
- Design Sampling Locations/Sidewall Locations
- UNT Remedial Extent
- UNT Design Grading Limits
- Field Verified High Subgrade
- High Subgrade
- Re-Dredged Extent
- Grasse River DMU Boundary
- Grasse River
- Grasse River Transects

NOTES:
Verification sampling locations are labeled with their location ID. Select design sampling locations below the cleanup goal served as excavation sidewall samples along the upland excavation limit (squares).
Re-dredged locations were backfilled upon confirmation that the target re-dredge elevation was achieved. Samples were not collected at re-dredged locations B-04 and SW-05 after the re-dredge pass. PCB levels in the surface interval (top 6 inches) at location B-09 were 1.2 mg/kg after the second excavation pass; however, geotechnical conditions required the immediate placement of backfill material.
ND = non detect

CONSTRUCTION SEQUENCE	
1	DREDGE AREA A
2	DREDGE AREA B
3	BACKFILL AREA B
4	BACKFILL AREA A
5	DREDGE AREA C
6	DREDGE AREA D
7	BACKFILL AREA D
8	BACKFILL AREA C

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ARCONIC

0 20
Feet

Figure 2-3
UNT Area III OU3 Post-Remediation Sediment/Soil Verification Sampling Results

UNT OU3 III Construction Completion Report
Arconic

Table 2-2 Post-Excavation Verification Sampling Results

Location	Sample Depth	Type	Northing	Easting	Elevation (USLS 1935)	Sample Date	Total PCB (ppm)	Field Notes
Flood_UNT-B-01	0-6"	Bottom Sample	2231973.279	406013.550	151.9	8/28/2019	0.068	
Flood_UNT-B-01	6-12"	Bottom Sample	2231973.279	406013.550	151.9	8/28/2019	0.087	Hard Bottom
Flood_UNT-B-02	0-6"	Bottom Sample	2232018.948	406038.636	156.2	8/28/2019	0.12	Hard Bottom
Flood_UNT-B-03	0-4"	Bottom Sample	2232039.935	406055.894	154.3	8/23/2019	ND	Till at 0"
Flood_UNT-B-04	0-6"	Bottom Sample	2232007.941	406022.490	152.1	8/28/2019	1.2	Till at 3"
Flood_UNT-B-04	6-11"	Bottom Sample	2232007.941	406022.490	152.1	8/28/2019	ND	
Flood_UNT-B-05	0-4"	Bottom Sample	2232058.852	406029.533	151.0	8/23/2019	0.40	Hard Bottom
Flood_UNT-B-06	0-4"	Bottom Sample	2232090.027	406023.755	157.2	8/23/2019	0.36	Hard Bottom
Flood_UNT-B-07	0-6"	Bottom Sample	2232038.241	406069.238	151.5	8/23/2019	0.15	Till at 5"
Flood_UNT-B-07	6-9"	Bottom Sample	2232038.241	406069.238	151.5	8/23/2019	ND	
Flood_UNT-B-08	0-6"	Bottom Sample	2232002.817	406053.694	156.2	8/28/2019	0.51	
Flood_UNT-B-09	0-6"	Bottom Sample	2231962.128	406029.536	154.0	8/28/2019	210	
Flood_UNT-B-09	6-12"	Bottom Sample	2231962.128	406029.536	154.0	8/28/2019	360	
Flood_UNT-B-09	12-18"	Bottom Sample	2231962.128	406029.536	154.0	8/28/2019	6.1	
Flood_UNT-B-09	18-24"	Bottom Sample	2231962.128	406029.536	154.0	8/28/2019	0.59	
Flood_UNT-B-09	24-28"	Bottom Sample	2231962.128	406029.536	154.0	8/28/2019	0.22	Hard Bottom
Flood_UNT-B-09 [2]	0-6"	Bottom Sample	2231963.407	406027.865	150.9	9/12/2019	1.2	
Flood_UNT-B-09 [2]	6-12"	Bottom Sample	2231963.407	406027.865	150.9	9/12/2019	0.81	
Flood_UNT-B-09 [2]	12-18"	Bottom Sample	2231963.407	406027.865	150.9	9/12/2019	ND	Hard Bottom
Flood_UNT-SW-01	0-6"	Sidewall	2232064.759	406018.227	156.2	8/23/2019	0.56	
Flood_UNT-SW-02	0-6"	Sidewall	2232058.196	406050.110	156.1	8/23/2019	ND	
Flood_UNT-SW-03	0-6"	Sidewall	2232056.325	406073.761	154.2	8/23/2019	ND	
Flood_UNT-SW-04	0-6"	Sidewall	2232104.908	406016.788	159.9	8/23/2019	0.18	
Flood_UNT-SW-05	0-6"	Sidewall	2232026.228	406009.071	157.1	8/28/2019	1.1	
Flood_UNT-SW-06	0-6"	Sidewall	2231987.681	405999.449	156.6	8/28/2019	ND	
UNT-A3-T76b	0-6"	Design/Sidewall	2232100.824	406038.399	--	5/22/2018	0.037	
UNT-A3-T76b	6-12"	Design/Sidewall	2232100.824	406038.399	--	5/22/2018	0.027	
UNT-A3-T76b	12-18"	Design/Sidewall	2232100.824	406038.399	--	5/22/2018	0.022	
UNT-A3-T76b	18-24"	Design/Sidewall	2232100.824	406038.399	--	5/22/2018	ND	
UNT-A3-T76.5c	0-6"	Design/Sidewall	2232069.031	406040.756	--	5/23/2018	0.070	
UNT-A3-T76.5c	6-12"	Design/Sidewall	2232069.031	406040.756	--	5/23/2018	0.040	
UNT-A3-T76.5c	12-18"	Design/Sidewall	2232069.031	406040.756	--	5/23/2018	ND	
UNT-A3-T76.5c	18-24"	Design/Sidewall	2232069.031	406040.756	--	5/23/2018	ND	
UNT-A3-T77.5a	0-6"	Design/Sidewall	2232004.566	406012.629	--	6/8/2018	0.195	
UNT-A3-T77.5a	6-12"	Design/Sidewall	2232004.566	406012.629	--	6/8/2018	0.130	
UNT-A3-T77.5a	12-18"	Design/Sidewall	2232004.566	406012.629	--	6/8/2018	0.026	
UNT-A3-T77.5a	18-24"	Design/Sidewall	2232004.566	406012.629	--	6/8/2018	ND	
UNT-A3-T77.5a	24-30”	Design/Sidewall	2232004.566	406012.629	--	6/8/2018	ND	
UNT-A3-T77.5a	30-36”	Design/Sidewall	2232004.566	406012.629	--	6/8/2018	ND	
UNT-A3-T77.5a	36-42”	Design/Sidewall	2232004.566	406012.629	--	6/8/2018	ND	
UNT-A3-T77.5a	42-48”	Design/Sidewall	2232004.566	406012.629	--	6/8/2018	ND	

Notes:
1. Data for locations that were re-dredged and removed are shaded in gray. Locations Flood_UNT-B-04 and Flood_UNT-SW-05 were re-dredged but not re-sampled.
2. Due to the requirement for expedited backfill placement at location Flood_UNT-B-09, post-excavation samples were collected on September 12, 2019 for documentation purposes only.
3. Duplicates are averaged.
4. -- = Data not available.

Debris removal and excavation in Area A and Area B, as shown on Figure 2-2 and Figure 2-3, was initiated on August 16, 2019, to prepare the site for amphibious excavator. Full-scale excavation in these areas commenced on August 19, 2019. Four bottom samples and four sidewall samples were collected in accordance with the RAWP on August 21, 2019; two of the eight samples contained total PCB concentrations above 1 ppm. A review of the survey data showed that the design excavation depth had not been met in either area. Consequently, additional excavation was performed in Area A and Area B to the target depth and additional verification samples were collected on August 23, 2019. These samples (collected at bottom locations Flood_UNT-B-03, -05, 06 and -07 and sidewall locations Flood_UNT-SW-01, -02, -03 and -04) met the cleanup goal of less than 1 ppm and Areas A and B were backfilled on August 26, 2019.

Excavation of Area C and Area D, as shown on Figure 2-2 and Figure 2-3, was performed on August 27, 2019 and verification samples were collected on August 28, 2019 from five bottom and two sidewall locations. The bottom sample collected at Flood_UNT-B-04 from a depth of 0 to 6 inches contained a total PCB concentration above 1 ppm total PCBs (1.2 ppm), however a deeper sample collected from the interval of 6 to 11 inches was non-detect. Additionally, the sidewall sample collected at Flood_UNT-SW-05 from 0 to 6 inches was above the cleanup goal at 1.1 ppm. Additional excavation was performed on August 30, 2019 to address the detections above the cleanup goal at Flood_UNT-B-04 and Flood_UNT-SW-05, removing an additional 24 inches (on average). The limits of the re-excavation are shown on Figure 2-3.

Elevated total PCB concentrations were identified at bottom location Flood_UNT-B-09 in the sample collected from a depth of 0 to 6 inches (210 ppm) and from 6 to 12 inches (360 ppm). The laboratory was requested to analyze archived samples collected from this location at deeper intervals. The sample collected at a depth of 12 to 18 inches at Flood_UNT-B-09 was above the cleanup goal at 6.1 ppm, however the samples collected from 18 to 24 inches (0.59 ppm) and 24 to 28 inches (0.22 ppm) were below the cleanup objective of 1 ppm total PCBs.

Additional excavation to address the elevated concentrations at Flood_UNT-B-09 was incorporated into the re-excavation plan for the Grasse River remediation area DMU-N20B, which involved one re-dredge pass with expedited backfill placement. Re-excavation was performed on September 9, 2019 to remove an additional 28 inches of sediment in the area of Flood_UNT-B-09. The extent of the re-excavation is shown on Figure 2-3. Due to the geotechnical requirement for expedited backfill placement, additional post-excavation samples were collected for documentation purposes only at location Flood_UNT-B-09 on September 12, 2019. The sample collected from 0 to 6 inches contained a total PCB concentration of 1.2 ppm; deeper samples collected from 6 to 12 inches (0.81 ppm) and 12 to 18 inches (non-detect) met the cleanup goal. Area C and Area D were backfilled on August 30 through September 3, 2019.

Table 2-3 provides a summary of the actual excavation removal depths by subarea within UNT Area III OU3. A total of approximately 730 CY of material was removed, as determined by comparing the pre-construction and post-excavation survey of in-place material.

Table 2-3 Excavation Summary

UNT Subarea	Area (square feet)	Average Removal Depth (feet)	Total Volume Removed (CY)
A	1,690	3.3	210
B	990	5.3	190
C	1,690	3.5	220
D	860	4.3	130
Total	5,230	--	750

2.2.8 Sediment/Soil Waste Management

Excavated material was handled, transported and disposed in accordance with the FDR for the Grasse River (Arconic, October 2019). Barges were used to contain and transport the excavated material to the Route 131 Staging Area for sediment processing. Free water was pumped/decanted from the barges at the Route 131 Staging Area prior to offloading excavated soils and sediment.

Excavated material from the UNT Area III OU3 was combined and processed with dredged material from the Grasse River remediation. The sediment and soil waste management process included blending of the material with stabilization agents (i.e., Portland cement) as needed to meet the SLF Cell 3 acceptance requirements. After blending, the material was placed on the Route 131 Staging Area pad to allow for drying. The processed material batches were required to pass an initial strength test (greater than 6 psi) and paint filter test prior to being transported by truck to the SLF for disposal.

2.2.9 Offsite Borrow Materials

Off-site borrow materials, approved through the environmental and geotechnical testing process in accordance with the FDR (Arconic, October 2019), were delivered to the site and stockpiled at the Route 131 Staging Area throughout the project for backfilling purposes along the Grasse River. The approved material sources used in the UNT Area III OU3 are listed in **Table 2-4**.

Table 2-4 Offsite Borrow Materials Summary

Material Type	Material Source Location	Volume used in UNT Area III OU3 (CY)
Type B	Parishville	1,045
Type C	Lake Ozonia	246
Topsoil	Vankennan	201

2.2.10 Stream and Wetland Restoration

The intent of the restoration activities was to return the UNT Area III OU3 to pre-excavation conditions to the extent practical and foster future habitat growth. The remedial action temporarily impacted approximately 0.12 acres comprised of approximately 740 square feet of vegetated wetland and 1,700 square feet of stream bed. Restoration of Area III OU3 is shown on **Figure 2-4** and **Figure 2-5**.

Restoration was performed in accordance with the UNT Area III OU3 RAWP (CDM Smith, June 2019). The UNT streambed channel was restored to pre-construction grades with Type C backfill in accordance with the RAWP. In accordance with FDR (Arconic, October 2019) specifications, the grain size for Type C backfill was consistent with the New York State Department of Transportation gravel specification for No. 4 stone. In upland and wetland areas, a Type B backfill base consisting of a sand and gravel mixture was placed overlain by a 6-inch layer of topsoil to restore a stable slope. Following topsoil placement, the delineated wetland area was seeded with Wetland Seed Mix and non-wetland upland areas were seeded with Riparian Buffer Mix. Seed mixes were approved as part of design change ECN-2019-012 (included in Appendix D), which included specific native species that were requested by the SRMT. A biodegradable erosion control blanket (Coir Mat 700) was installed over the seeded topsoil areas and straw wattles were installed at the waterline for erosion protection from wave action.

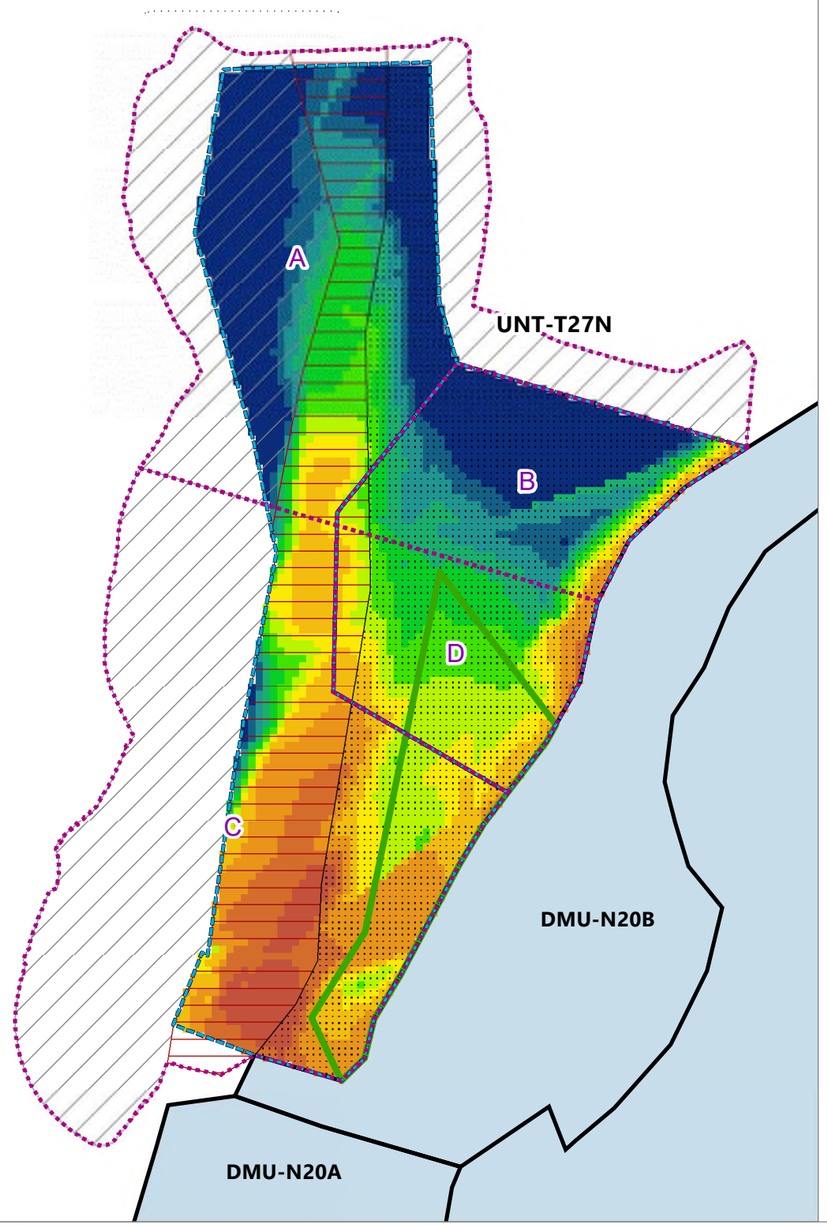
2.2.11 Plantings

Plantings were performed in accordance with the UNT Area III OU3 RAWP (CDM Smith, June 2019). Wetland plants were installed on approximately 2-foot spacing. Riparian trees and shrubs were installed on approximately 25-foot and 10-foot centers, respectively. A planting summary is presented in **Table 2-5**.

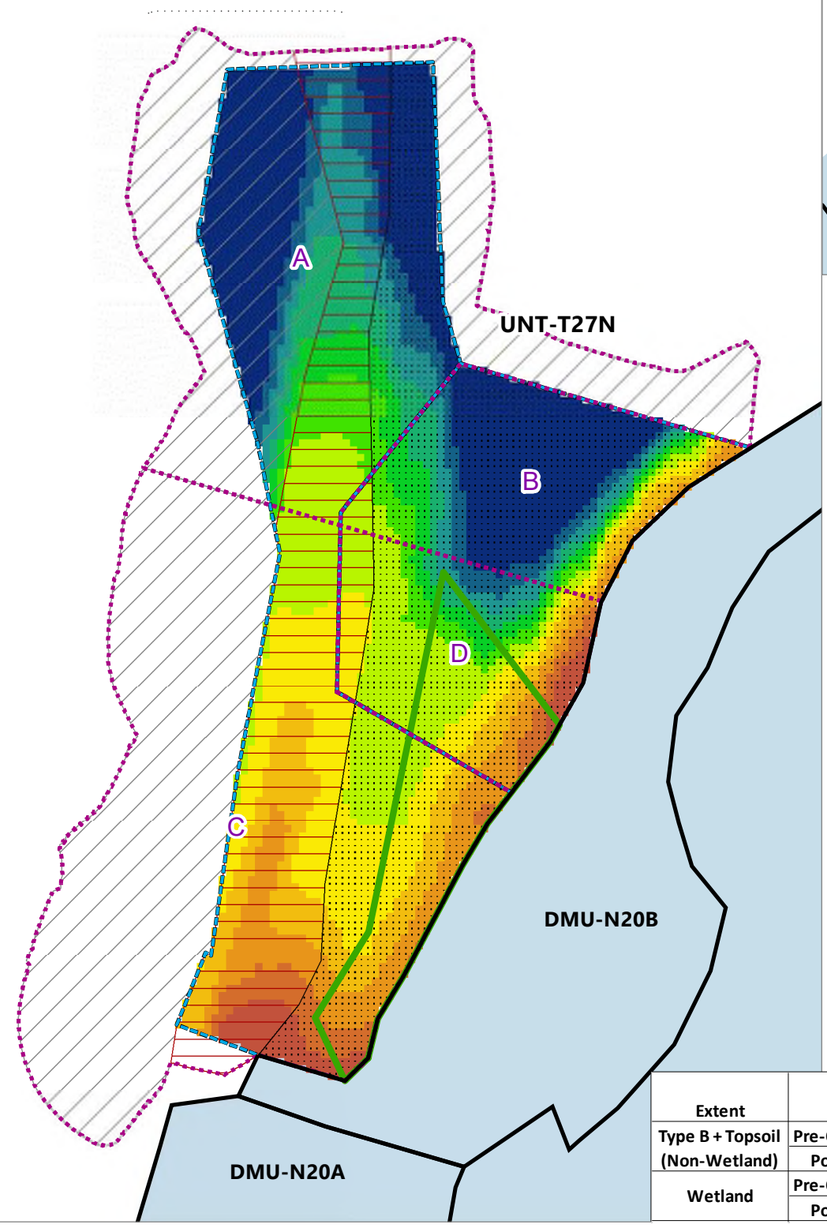
Table 2-5 Site Planting Summary

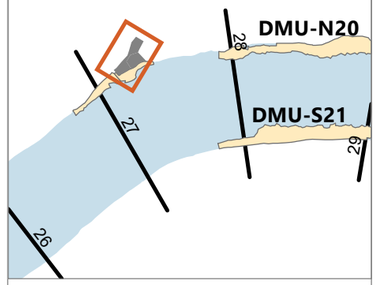
Scientific Name	Common Name	Quantity	Stock	Type
Acorus americanus	Sweet Flag	50	2" planting	Wetland Planting
Juncus effusus	Soft Rush	50	2" planting	Wetland Planting
Schoenoplectus tabernaemonta	Soft stem Bulrush	100	2" planting	Wetland Planting
Juglans nigra	Black Walnut	3	5 gallon	Riparian Planting (Tree)
Ulmus americana	American Elm	3	5 gallon	Riparian Planting (Tree)
Salix nigra	Black Willow	3	5 gallon	Riparian Planting (Tree)
Acer rubrum	Red Maple	3	5 gallon	Riparian Planting (Tree)
Quercus rubra	Red Oak	3	5 gallon	Riparian Planting (Tree)
Carya ovata	Shagbark Hickory	3	5 gallon	Riparian Planting (Tree)
Alnus incana	Speckled Alder	2	3 gallon	Riparian Planting (Tree)
Rhus typhina	Staghorn Sumac	28	3 gallon	Riparian Planting (Shrub)
Salix discolor	Pussy Willow	28	3 gallon	Riparian Planting (Shrub)
Cornus sericea	Red-Osier Dogwood	29	1 gallon	Riparian Planting (Shrub)

2019 Pre-Construction Survey (June 2019)



Post-Backfill/Seeding Survey (October 2019)





LEGEND:

Surface Elevation (USLS35; feet)
- <= 154.5
- 154.5 - 155
- 155 - 155.5
- 155.5 - 156
- 156 - 156.5
- 156.5 - 157
- 157 - 157.5
- 157.5 - 158
- 158 - 158.5
- 158.5 - 159
- 159 - 159.5
- > 159.5

Backfill Design Extent
- Type B + 6" Topsoil
- Type C
- Restore to Stable Slope w/Topsoil Cover
- Wetland Boundary
- UNT Remedial Extent
- UNT Design Grading Limits
- Dredge Management Unit
- Grasse River
- Grasse River Transects

Extent	Survey	Elevation (USLS35; feet)		
		Minimum	Average	Maximum
Type B + Topsoil (Non-Wetland)	Pre-Construction	154.1	158.4	164.5
	Post-Backfill	153.8	158.5	165.1
Wetland	Pre-Construction	155.0	156.3	157.9
	Post-Backfill	154.1	155.9	158.7

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ARCONIC

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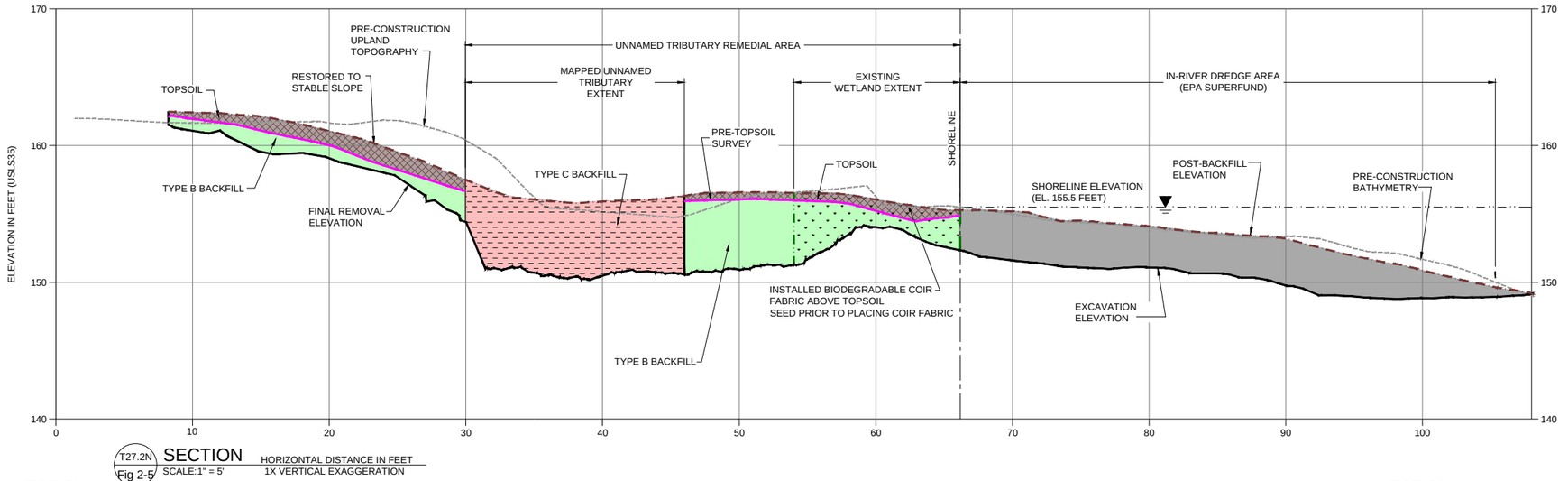
Feet

Figure 2-4
UNT Area III OU3 Restoration



T27.2N Fig 2-5 **SECTION**
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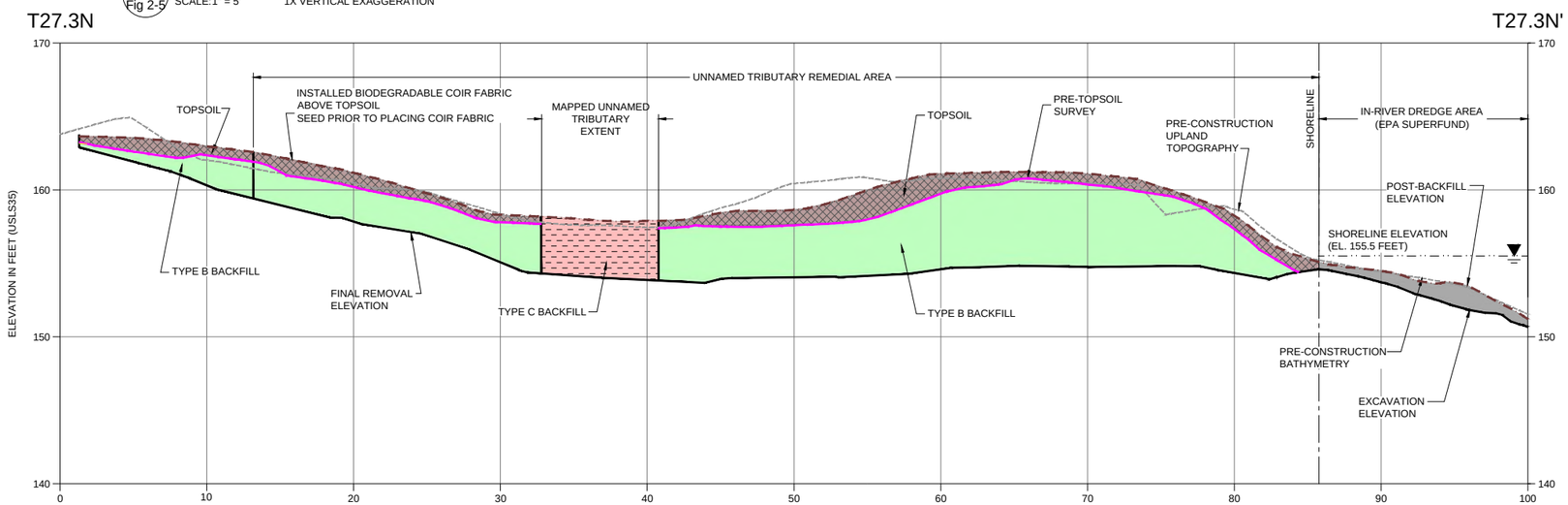
HORIZONTAL DISTANCE IN FEET
1X VERTICAL EXAGGERATION



T27.3N Fig 2-5 **SECTION**
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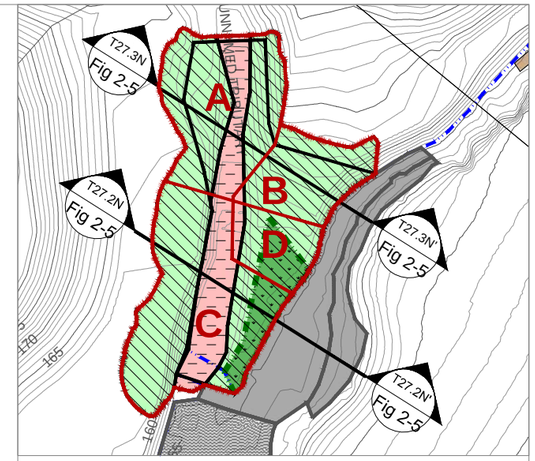
HORIZONTAL DISTANCE IN FEET
1X VERTICAL EXAGGERATION



KEY PLAN
Not to Scale

LEGEND:

- GRASSE RIVER SHORELINE
- SHORELINE ELEVATION (EL. 155.5 FEET USLS35)
- PRE-CONSTRUCTION BATHYMETRY
- EXCAVATION ELEVATION
- PRE-TOPSOIL SURVEY
- POST-BACKFILL ELEVATION
- IN-RIVER DREDGE AREA (EPA SUPERFUND)
- TOPSOIL
- TYPE B BACKFILL
- TYPE C BACKFILL
- EXISTING WETLANDS

HORIZONTAL DATUM: NEW YORK STATE PLANE EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), U.S. SURVEY FEET.

VERTICAL DATUM: UNITED STATES LAKE SURVEY OF 1935, (USLS35), U.S. SURVEY FEET.

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SCALE IN FEET

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Filepath: A:\CAD - Boston\PROJECTS\0002 - Grasse River\FIGURES\0002-RP-060 (Restoration Details).dwg Figure 2-5

2.2.12 Decontamination

The amphibious excavator tracks were positioned on a 6-inch sacrificial sand layer during construction in the UNT as described in Section 2.2.6. In this manner, the tracks on the amphibious excavator only contacted the clean sand layer. The excavator bucket was pressure washed over a transport barge to contain the water and visually inspected prior to removal from the UNT Area III OU3 for use in other Grasse River dredge areas. Separate equipment was used for excavation and handling of clean materials for backfill and restoration. All heavy equipment was decontaminated and tested in accordance with the FDR (Arconic, October 2019) prior to demobilization from the Grasse River.

2.2.13 Demobilization

The UNT Area III OU3 remedial action including restoration activities was completed on November 4, 2019. Demobilization from the UNT Area III OU3 occurred on November 4, 2019.

2.2.14 Final Survey

A final survey was performed and submitted to the CQA team for as-built drawing preparation. Pre-construction, post-removal and final survey conditions are provided in Appendix B.

2.3 Institutional and Engineering Controls

Based on verification sampling, the remedy was successful in removing impacted sediment to meet the cleanup objective of 1 ppm total PCBs, with the exception of location Flood_UNT-B-09 which had 1.2 ppm in the top 6-inch interval. This sample was collected following re-dredging and removal of 28 inches of material; deeper samples collected at this location from 6 to 12 inches (0.81 ppm) and 12 to 18 inches (non-detect) met the cleanup goal. Backfill placement was expedited due to geotechnical requirements. No other known contamination was left in place, thereby eliminating the need for institutional controls. Erosion control blankets and straw wattles were left in place following demobilization to allow for re-establishment of vegetation and erosion control. No further engineering controls were required.

Section 3

Construction Quality Assurance Program

3.1 CQA Team, Function, and Responsibilities

The Arconic project team prepared a CQAP, which established a chain-of-command and procedures for verifying the work was conducted in accordance with the regulatory requirements. The Arconic Manager of Construction was ultimately responsible for the work. A CQA Officer, Matthew D. Millias, P.E., was responsible for executing the CQAP and overseeing the CQA field assignments. The CQA Inspector performed daily inspections, documented the work, and communicated routinely with the contractor, CM, and Manager of Construction.

3.1.1 Field Inspections

CQA personnel from AQ performed daily inspections for the Grasse River remediation project and coordinated with CDM Smith to perform inspections at UNT Area III OU3. Daily inspections included a review of SWPPP measures, contractor's daily activities, CQA activities performed, equipment on-site, materials delivered, relevant on-site meetings/conversations, and sampling analysis results and subsequent decisions. Site photos were taken and labeled throughout the project to document the work. A photo log is provided in Appendix A.

3.1.2 Weekly Progress Meetings

Weekly progress meetings were held for the Grasse River remediation project, which included the field team and agency members. Safety, work progress, schedule, technical issues, and environmental monitoring relevant to the UNT Area III OU3 construction were discussed at these meetings. The CM led the meeting and called upon appropriate project team members to contribute to each topic.

3.1.3 Agency Site Inspections

NYSDEC personnel conducted a site visit on August 19, 2019 at the start of the UNT Area III OU3 excavation.

3.2 Borrow Source Testing and Inspections

As part of the site restoration, materials from offsite borrow sources were required. Offsite materials were tested for environmental and/or geotechnical parameters in accordance with the FDR (Arconic, October 2019) for the Grasse River remediation work. Environmental parameters included those listed in Appendix 5 of DER-10. Testing results were submitted to the CQA team for review/approval prior to use. Approved borrow source materials are provided in Table 2-4.

Once the borrow source materials arrived on-site, the CQA Inspector performed visual inspections and volume estimates to verify the characteristics and volume met the design intent. Materials delivered to site for UNT Area III OU3 construction visually met the graduation requirements per the FDR (Arconic, October 2019).

3.3 Sediment/Soil Verification Sampling, Analysis, and Validation

3.3.1 Sampling Rationale

Verification sampling was performed to document PCB concentrations at the remediated excavation limits. Sampling locations were established to incorporate the excavation limits and confirm the adequacy of the extent of removal. Sampling was designed to verify that remediation was completed to achieve the cleanup criteria of less than or equal to 1 ppm for total PCBs.

3.3.2 Verification Sampling

After contaminated sediment/soils were excavated to the predetermined lateral limits and depth, the excavated surfaces were sampled to verify complete removal of contaminated materials from the target areas. As noted in earlier sections, potential slope stability and geotechnical considerations in the confluence area of the UNT and Grasse River precluded leaving excavation areas open for an extended period of time. As a result, the excavation area was divided into subareas for construction sequencing and documentation samples were collected once survey data confirmed the excavation met the design target in that area. Given the need for immediate backfill, verification sample analyses were expedited so that any areas where sample results indicated the cleanup objective was not met could be addressed promptly.

3.3.3 Sampling Methodology

Post-excavation verification sampling locations were established based on pre-remediation sampling results and in accordance with DER-10. Post-construction verification sampling locations included sidewall and bottom samples and are shown on Figure 2-2. The remedial extent was split into two general areas such that excavation targeted an area of shallower (2.5 feet) and an area of deeper (4.5 feet) removal below the existing grades of the channel and upland streambanks. Sidewall samples were collected along the perimeter of the excavation area to verify the extent of remediation. These samples were collected using a stainless-steel trowel to recover 6 inches of material. The locations of the side slope samples were adjusted as needed in the field to correspond with the sloped excavation perimeter. To confirm the depth of the remedial excavation met the required cleanup goals, bottom samples were collected throughout the excavation area. Cores were advanced to refusal and recovered materials were processed into 6-inch sample intervals, as possible, then thoroughly homogenized prior to placement in laboratory supplied glassware. The verification samples were analyzed in 6-inch intervals beginning with the 0- to 6-inch and 6- to 12-inch verification samples; deeper interval samples were archived, where available, pending results of the upper samples. If the shallower samples documented that cleanup goals were met, no additional analyses were required or requested of the laboratory. If cleanup goals were exceeded in the shallow sample, the deeper samples were analyzed.

Quality assurance and quality control (QA/QC) procedures were followed during all sampling activities and sample management. QA/QC procedures were consistent with the *Pre-Design Investigation Quality Assurance Project Plan (*QAPP) (Arconic, 2013). One blind duplicate sample and one matrix spike/matrix spike duplicate (MS/MSD) were collected for every 20 samples.

3.3.4 Sample Analyses

Samples were relinquished to the on-site laboratory by the sampling crew immediately following processing. Samples were submitted for an accelerated turnaround time (e.g., approximately 24 hours) to ensure data was expedited to lessen the impact on construction. Post-excavation verification samples collected from the UNT were analyzed by Pace for PCB Aroclors using the project-specific modified SW-846-8082A. The laboratory provided Category B deliverable data packages including a case narrative, chain-of-custody, summary of results, summary of quality control/quality assurance results, and raw data. Table 2-2 presents a summary of all verification sampling results. Any samples with a total PCB concentration greater than 1 ppm are grouped together with associated re-samples performed following additional excavation.

Third party data validation was performed by Anchor QEA in accordance with DER-10 (section 2.2) reporting requirements and a data usability summary report (DUSR) was developed. The DUSR and analytical reports are included in **Appendix E**.

Section 4

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Appendix A

Photo Log

Arconic
Unnamed Tributary OU3 Confluence
Photo Log

Abandoned Boat Removal 7/13/2019

Tree Clearing 8/14/2019

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking North: Start of Excavation Area A & B

Looking: North/East

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking East

Looking South/East

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking South

Looking South/East

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking East

Looking North/East

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking South/East

Looking South/West

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking South

East Bank

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking North/East

Looking West Down River

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking East

Looking South/West: Western Bank

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking South

Looking East: Excavation Area C

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking East

Looking East: Bank Fill Placed

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking East-Excavation Area C

Looking South/East

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking East

Looking South/East

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking North/East: Topsoil In Place and Graded

Looking West Up River

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking North

Looking South/West

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking North/West: Shrub and Tree Planting

Looking South/West: Shrub and Tree Planting

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking East: Shrub Planting

Looking East: Shrub Planting

Appendix A
Photo Log
Unnamed Tributary Area III OU3

Looking East: Shrub and Tree Planting

Appendix B

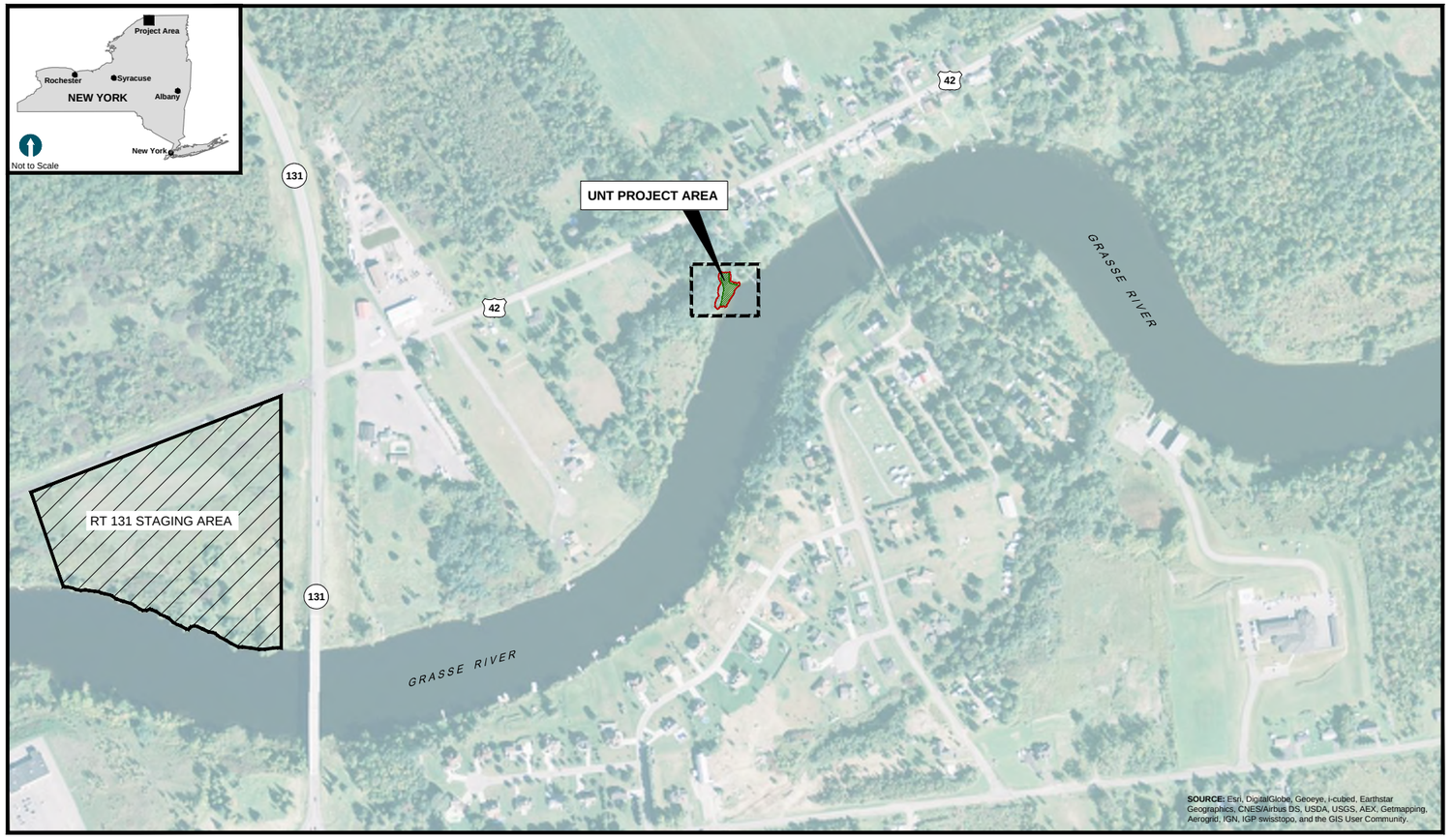
Final Survey/As-builts

U-100

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW TO ALTER THIS DOCUMENT BY MEANS INCONSISTENT WITH SECTION 7209 OF SAID LAW.

ARCONIC
UNT AREA III OU3
CONSTRUCTION COMPLETION REPORT: RECORD DRAWINGS
MASSENA, NEW YORK

VICINITY MAP



NORTH

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ISSUED JANUARY 6, 2020

A-XXXXXX-JM

RECORD DRAWINGS

ARCONIC
Innovation, engineered.
MASSENA OPERATIONS
PREPARED BY:

BLDG. NO.

TITLE SHEET

ENGINEER		PLANT CODE JM	DESIGNED BY A. CONSTANT, M. REEMTS
SCALE	ORIGIN JM	DWG. CLASS CAD	DRAWN BY P. SCIABA
DRAWING NUMBER U-100	1 OF 4		CHECKED BY C. GUEST
			APPROVED BY P. LaROSA

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ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

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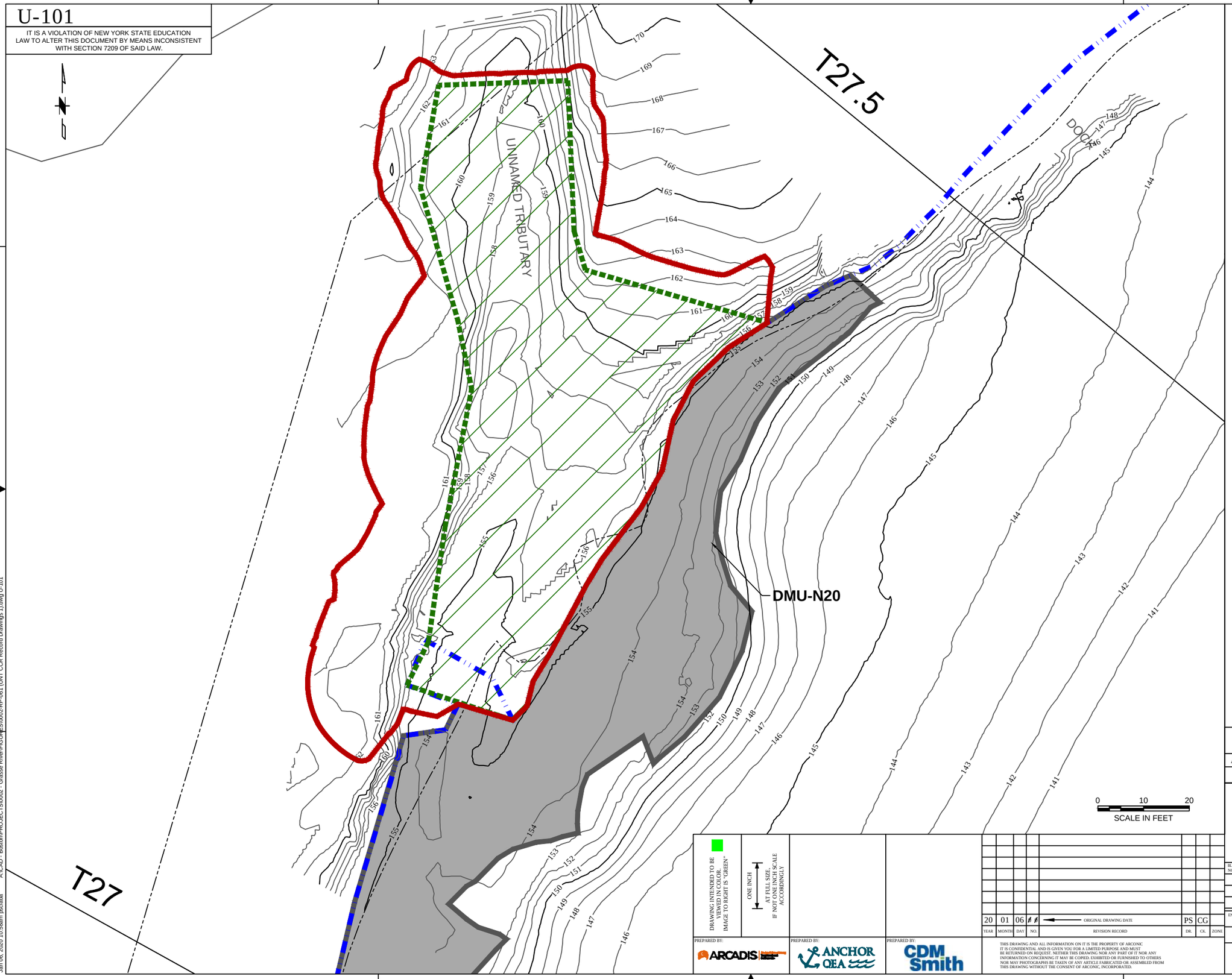
PREPARED BY: ARCADIS | PREPARED BY: ANCHOR QEA | PREPARED BY: CDM Smith

U-101



LEGEND:

- PRE-CONSTRUCTION SURVEY ELEVATION CONTOURS (FEET USLS35) (1-FOOT INTERVAL)
- GRASSE RIVER SHORELINE BOUNDARY (155.5 FEET USLS35)
- ALCOA / ARCONIC PROPERTY LINE
- T27.5 — T27.5 TRANSECT LOCATION
- IN-RIVER DREDGE AREA (EPA SUPERFUND)
- UNNAMED TRIBUTARY REMEDIAL AREA
- DESIGN SOIL REMOVAL LIMITS

HORIZONTAL DATUM: NEW YORK STATE PLANE EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), U.S. SURVEY FEET.

VERTICAL DATUM: UNITED STATES LAKE SURVEY OF 1935. (USLS35), U.S. SURVEY FEET.

NOTES:

1. PRE-CONSTRUCTION SURVEY ELEVATION CONTOURS BY J.F. BRENNAN COMPANY ON MAY 30, 2019.

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ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

YEAR	MONTH	DAY	NO.	REVISION RECORD	DR.	CK.	ZONE
20	01	06	//	← ORIGINAL DRAWING DATE	PS	CG	

PREPARED BY: ARCADIS | PREPARED BY: ANCHOR QEA | PREPARED BY: CDM Smith

ISSUED JANUARY 6, 2020

A-XXXXXX-JM

RECORD DRAWINGS

ARCONIC
Innovation, engineered.
MASSENA OPERATIONS
PREPARED BY:

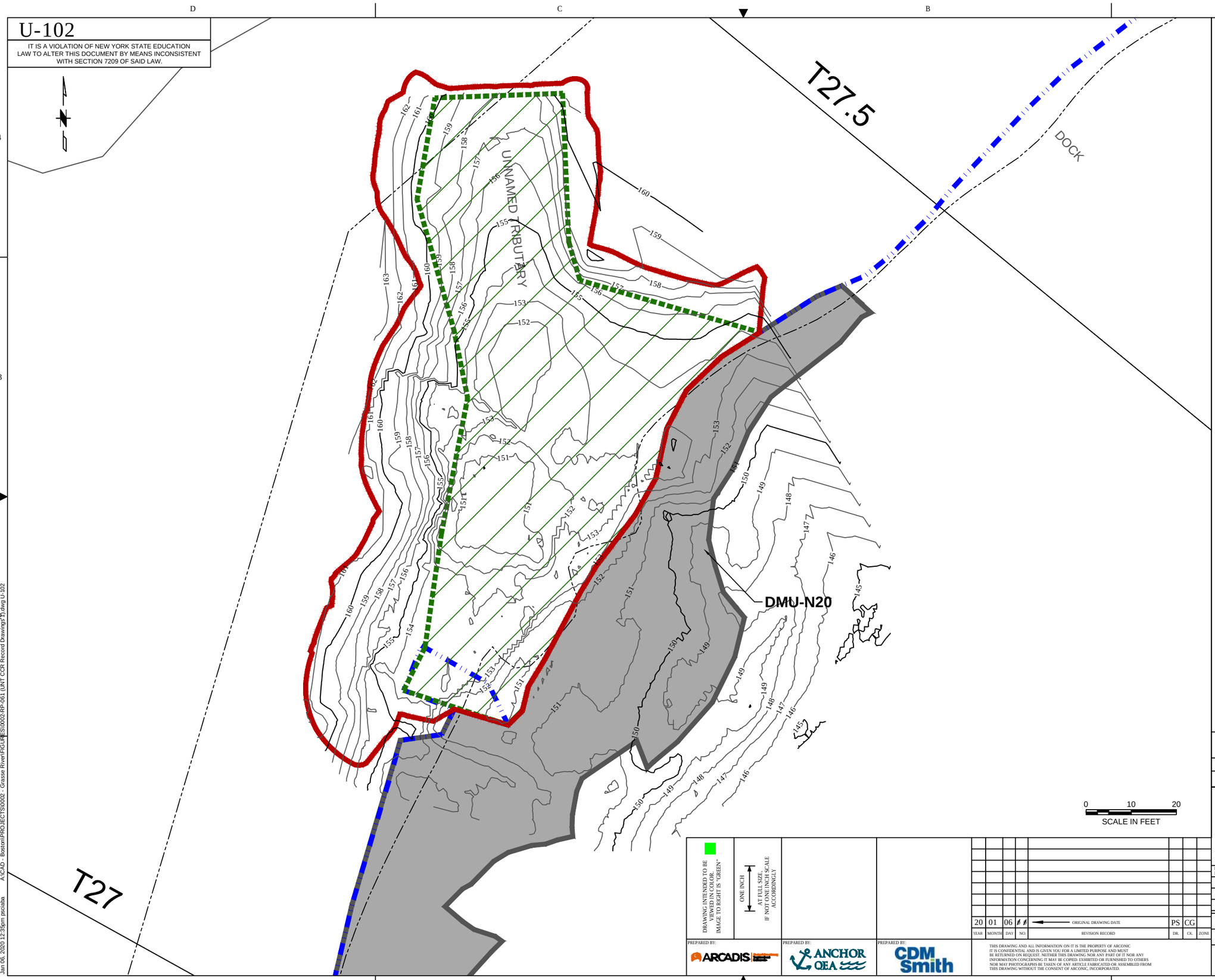
BLDG. NO.

UNT AREA III OU3 PRE-CONSTRUCTION CONDITIONS

ENGINEER		PLANT CODE JM	DESIGNED BY A. CONSTANT, M. REEMTS
SCALE	ORIGIN JM	DWG. CLASS CAD	DRAWN BY P. SCIABA
DRAWING NUMBER U-101	2 OF 4		CHECKED BY C. GUEST
			APPROVED BY P. LaROSA

U-102

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW TO ALTER THIS DOCUMENT BY MEANS INCONSISTENT WITH SECTION 7209 OF SAID LAW.



LEGEND:

- POST-EXCAVATION SURVEY ELEVATION CONTOURS (FEET USLS35) (1-FOOT INTERVAL)
- GRASSE RIVER SHORELINE BOUNDARY (155.5 FEET USLS35)
- ALCOA / ARCONIC PROPERTY LINE
- T27.5 — T27.5 TRANSECT LOCATION
- IN-RIVER DREDGE AREA (EPA SUPERFUND)
- UNNAMED TRIBUTARY REMEDIAL AREA
- DESIGN SOIL REMOVAL LIMITS

HORIZONTAL DATUM: NEW YORK STATE PLANE EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), U.S. SURVEY FEET.

VERTICAL DATUM: UNITED STATES LAKE SURVEY OF 1935, (USLS35), U.S. SURVEY FEET.

NOTES:

1. POST-EXCAVATION SURVEY ELEVATION CONTOURS BY J.F. BRENNAN COMPANY ON AUGUST 21, AUGUST 28, AUGUST 30, AND SEPTEMBER 9, 2019.

0 10 20
SCALE IN FEET

DRAWING INTENDED TO BE VIEWED IN COLOR. IMAGE TO RIGHT IS "GREEN"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

YEAR	MONTH	DAY	NO.	REVISION RECORD	DR.	CK.	ZONE
20	01	06	# #	← ORIGINAL DRAWING DATE	PS	CG	

PREPARED BY: ARCADIS | PREPARED BY: ANCHOR QEA | PREPARED BY: CDM Smith

ISSUED JANUARY 6, 2020

A-XXXXXX-JM

RECORD DRAWINGS

ARCONIC
Innovation, engineered.
MASSENA OPERATIONS
PREPARED BY:

BLDG. NO.

UNT AREA III OU3 POST-EXCAVATION CONDITIONS

ENGINEER		PLANT CODE	JM	DESIGNED BY	A. CONSTANT, M. REEMTS
SCALE	ORIGIN JM	DWG. CLASS	CAD	DRAWN BY	P. SCIABA
DRAWING NUMBER U-102	3 OF 4			CHECKED BY	C. GUEST
				APPROVED BY	P. LaROSA

U-103

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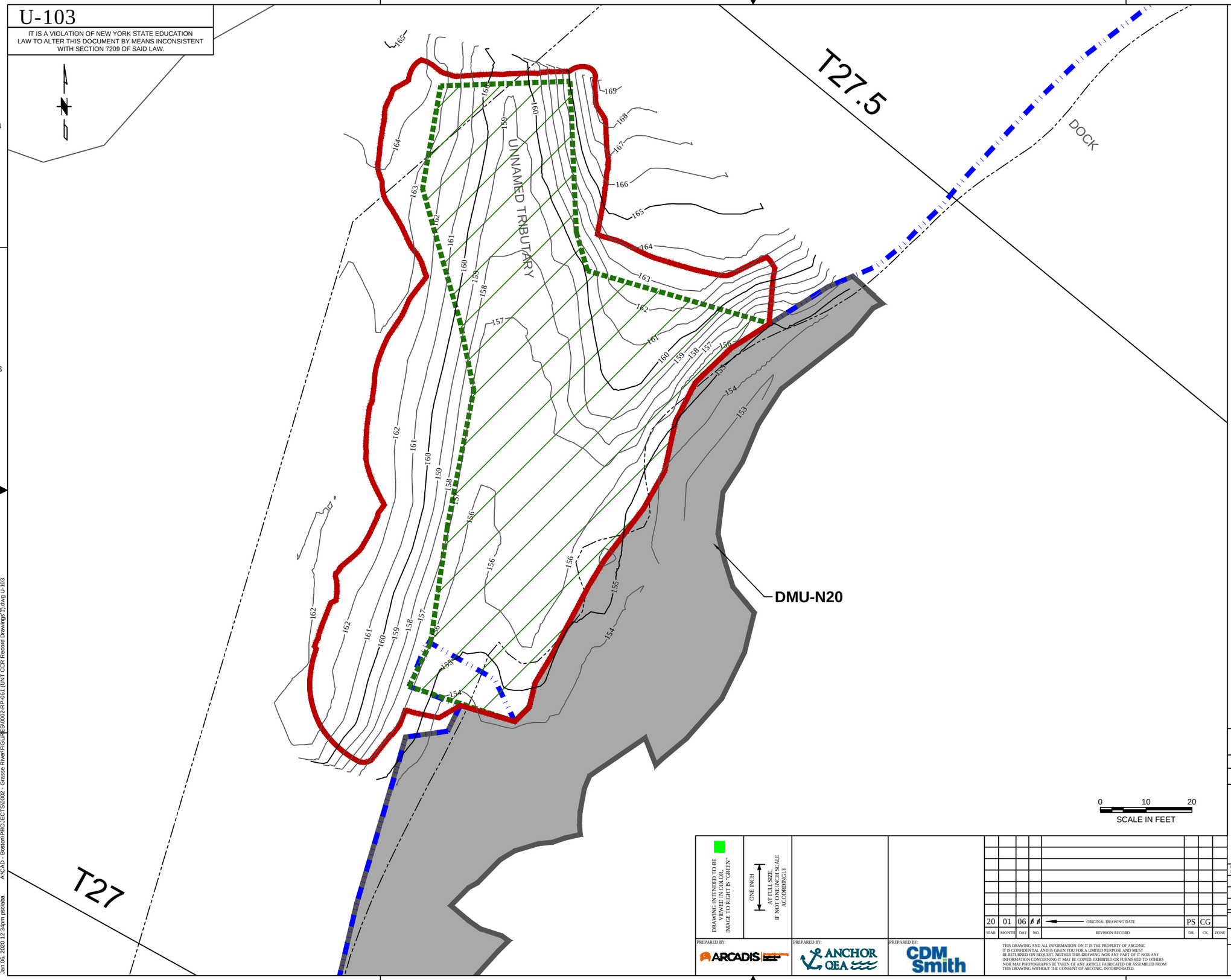


LEGEND:

- 140 / 141 — POST-BACKFILL SURVEY ELEVATION CONTOURS (FEET USLS35) (1-FOOT INTERVAL)
- GRASSE RIVER SHORELINE BOUNDARY (155.5 FEET USLS35)
- ALCOA / ARCONIC PROPERTY LINE
- T27.5 — T27.5 TRANSECT LOCATION
- IN-RIVER DREDGE AREA (EPA SUPERFUND)
- UNNAMED TRIBUTARY REMEDIAL AREA
- DESIGN SOIL REMOVAL LIMITS

HORIZONTAL DATUM: NEW YORK STATE PLANE EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), U.S. SURVEY FEET.

VERTICAL DATUM: UNITED STATES LAKE SURVEY OF 1935, (USLS35), U.S. SURVEY FEET.

NOTES:

1. POST-BACKFILL SURVEY ELEVATION CONTOURS BY J.F. BRENNAN COMPANY ON OCTOBER 2, 2019.

0 10 20
SCALE IN FEET

DRAWING INTENDED TO BE VIEWED IN COLOR. IMAGE TO RIGHT IS "GREEN"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

PREPARED BY: ARCADIS

PREPARED BY: ANCHOR QEA

PREPARED BY: CDM Smith

YEAR	MONTH	DAY	NO.	REVISION RECORD	DR.	CK.	ZONE
20	01	06		ORIGINAL DRAWING DATE	PS	CG	

ISSUED JANUARY 6, 2020

A-XXXXXX-JM

RECORD DRAWINGS

ARCONIC
Innovation, engineered.
MASSENA OPERATIONS
PREPARED BY:

BLDG. NO.

UNT AREA III OU3 POST-BACKFILL CONDITIONS

ENGINEER		PLANT CODE JM	DESIGNED BY A. CONSTANT, M. REEMTS
SCALE	ORIGIN JM	DWG. CLASS CAD	DRAWN BY P. SCIABA
DRAWING NUMBER U-103	4 OF 4		CHECKED BY C. GUEST
			APPROVED BY P. LaROSA

Jan 06, 2020 12:34pm psciaba A:\CAD - Boston\PROJECTS\0002 - Grasse River\FIGURES\0002-RP-061 (UNT CCR Record Drawing 5).dwg U-103

Appendix C

Environmental Monitoring Reports (Air and Water)

Table C-1: Secure Landfill Operations Continuous Air Monitoring Data Summary - PM10 and VOCs
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Start Date	End Date	Predominant Wind Direction	Upwind Station(s)	Downwind Station(s)	PM10 (mg/m^3) [1]						Needs Action? [2]	VOCs (ppm) [1]						Needs Action? [2]	Comments
					SLF-AIR1	SLF-AIR2	SLF-AIR3	SLF-AIR4	SLF-AIR-PA	SLF-AIR-PB		SLF-AIR1	SLF-AIR2	SLF-AIR3	SLF-AIR4	SLF-AIR-PA	SLF-AIR-PB		
8/16	8/17	ENE	SLF-AIR3	SLF-AIR-PA	0.0247	0.0356	0.034	0.0324	0.0308	0.0312	No	0.6607	0.0516	0.0019	0.2619	0.0199	1.0863	No	
8/17	8/18	SSW	SLF-AIR1	SLF-AIR4	0.0241	0.0185	0.0319	0.0385	0.0285	0.0613	No	0.8225	0.0769	0.1677	0.2822	0.0086	0.5	No	
8/18	8/19	SSW	SLF-AIR1	SLF-AIR4	0.0267	0.0223	0.0321	0.0348	--	--	No	0.3738	0.0583	0.0098	0.2983	--	--	No	
8/19	8/20	SW	SLF-AIR1	SLF-AIR3	0.0179	0.0167	0.0245	0.0242	0.0367	0.0312	No	0.2435	0.084	0.4245	0.2637	0.0004	0.3595	No	
8/20	8/21	SSW	SLF-AIR1	SLF-AIR4	0.015	0.0171	0.0263	0.0234	0.0164	0.0178	No	0.4519	0.0393	0.0907	0.2625	0.0035	0.1501	No	
8/21	8/22	SSW	SLF-AIR1	SLF-AIR4	0.0189	0.0157	0.0239	0.023	0.0219	0.0265	No	1.4735	0.0703	0.0028	0.2782	0.0014	0.2011	No	
8/22	8/23	W	SLF-AIR1	SLF-AIR3	0.0105	0.0137	0.022	0.0207	0.0176	0.0191	No	0.0513	0.0777	0.3786	0.1979	0.0003	0.3183	No	
8/23	8/24	NW	SLF-AIR4	SLF-AIR2	0.0091	0.0082	0.0116	0.0105	0.0105	0.0103	No	0	0.0273	0.3981	0.124	0.0001	0	No	
8/24	8/25	NE	SLF-AIR3	SLF-AIR1	0.0157	0.0316	0.0321	0.0239	0.0427	0.0219	No	0	0	0.5387	0.1661	0	0.0616	No	
8/25	8/26	NE	SLF-AIR3	SLF-AIR1	0.0243	0.0244	0.0297	0.0355	--	--	No	0.7943	0.0364	0.6309	0.2042	--	--	No	
8/26	8/27	NE	SLF-AIR3	SLF-AIR1	0.0201	0.0111	0.0299	0.0261	0.0368	0.0364	No	1.5106	0.023	--	--	0.0001	1.0916	No	
8/27	8/28	S	SLF-AIR1	SLF-AIR4	0.0601	0.0083	0.0189	0.0183	0.0112	0.0124	No	0.3286	0.0977	0.0076	0.0482	0	0	No	
8/28	8/29	SSW	SLF-AIR1	SLF-AIR4	0.0129	0.0121	0.0155	0.0173	0.0164	0.0173	No	0.5652	0.0454	0.1181	0.0471	0.0016	0.2029	No	
8/29	8/30	SW	SLF-AIR1	SLF-AIR3	0.0197	0.0139	0.0197	0.022	0.0211	0.019	No	0.7129	0.0853	0.3391	0.0968	0	0.0267	No	
8/30	8/31	WSW	SLF-AIR1	SLF-AIR3	0.0114	0.0086	0.0135	0.0155	0.0114	0.0121	No	0.2711	0.0667	0.3559	0.024	0	0	No	
8/31	9/01	W	SLF-AIR1	SLF-AIR3	0.0142	0.0157	0.0158	0.0219	0.024	0.0151	No	1.3807	0.0334	0.3043	0.0358	0	0.4997	No	
9/01	9/02	E	SLF-AIR3	SLF-AIR1	0.0169	0.0106	0.0219	0.0176	--	--	No	1.0443	0.0951	0.0051	0.0595	--	--	No	
9/02	9/03	W	SLF-AIR1	SLF-AIR3	0.0158	0.0207	0.0307	0.029	--	--	No	0.4151	0.0669	0.4859	0.069	--	--	No	
9/03	9/04	ESE	SLF-AIR2	SLF-AIR-PB	0.0187	0.0129	0.0235	0.0262	0.0201	0.0248	No	1.7825	0.0411	0.0407	0.0798	0.0225	4.5968	No	
9/05	9/06	WSW	SLF-AIR1	SLF-AIR3	0.013	0.0077	0.0252	0.0209	0.024	0.0129	No	1.9012	0.1104	0.0553	0.1343	0.017	2.651	No	
9/06	9/07	NE	SLF-AIR3	SLF-AIR1	0.0155	0.0093	0.0211	0.018	0.0159	0.0158	No	0.3921	0	0	0.0669	0.0219	0.218	No	
9/07	9/08	WSW	SLF-AIR1	SLF-AIR3	0.0232	0.0141	0.0302	0.0282	0.0265	0.0318	No	0.6252	0	0	0.0208	0.0217	0.1836	No	
9/08	9/09	W	SLF-AIR1	SLF-AIR3	0.0099	0.0052	0.013	0.0139	--	--	No	0.2764	0.0547	0.5051	0.0212	--	--	No	
9/09	9/10	NNW	SLF-AIR4	SLF-AIR2	0.0117	0.0073	0.015	0.0154	0.0167	0.0161	No	1.3002	0.0972	0.0905	0.132	0.0141	3.0861	No	

Notes:
1. PM10 and VOC results are daily maximum levels of 15-minute running averages recorded via real-time meters.
2. Corrective Action Level Criteria:
   PM10: downwind station >0.150 mg/m3 above upwind station for a 15 minute period (initial/early warning: 0.100 mg/m3 above upwind for a 15-minute period)
   VOC: any 15 minute average that exceeds 25 ppm (initial/early warning: 5 ppm above upwind for a 15-minute period)

mg/m3 = milligrams per cubic meter
-- = data not collected/reported
PM10 = particulate matter < 10 microns in diameter
ppm = parts per million
SLF = Secure Landfill

Table C-2: Route 131 Staging Area Continuous Air Monitoring Data Summary - PM10 and VOCs
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Start Date	End Date	Predominant Wind Direction	Upwind Station(s)	Downwind Station(s)	PM10 (mg/m^3) [1]				Needs Action? [2]	VOCs (ppm) [1]				Needs Action? [2]	Comments
					SA-AIR1	SA-AIR2	SA-AIR3	SA-AIR4		SA-AIR1	SA-AIR2	SA-AIR3	SA-AIR4		
8/16	8/17	ENE	SA-AIR4	SA-AIR2	0.0339	0.0369	0.0535	0.03	No	0	0.0878	0.4113	0.5054	No	
8/17	8/18	SSW	SA-AIR2	SA-AIR4	0.0265	0.0201	0.0291	0.0282	No	0.17	0.5993	0.8983	2.7689	No	
8/18	8/19	SSW	SA-AIR2	SA-AIR4	0.0249	0.0214	0.0223	0.0266	No	0.1677	0.6002	0.9531	2.5486	No	
8/19	8/20	SW	SA-AIR2	SA-AIR4	0.021	0.016	0.0211	0.0293	No	0.1167	0	0.0033	25.8	No	- There was an exceedance of the VOC corrective action level and several exceedances of the early warning action level at SA-AIR4 from ~1526-0616. The 15-minute avg levels peaked at ~25.8 ppm during this time period. Field crews investigated the exceedances and it appears that the cause was condensation in the line. The unit was replaced and readings dropped below the early warning action levels. It is believed the exceedances were not due to staging area operations.
8/20	8/21	SSW	SA-AIR2	SA-AIR4	0.0183	0.0159	0.0243	0.0265	No	0.0737	0	4.348	1.8981	No	
8/21	8/22	SSW	SA-AIR2	SA-AIR4	0.0196	0.0157	0.0191	0.0224	No	0.4897	0	1.6641	0.0025	No	
8/22	8/23	W	SA-AIR1	SA-AIR3	0.0173	0.018	0.0171	0.0208	No	0	0	0.3723	1.3786	No	
8/23	8/24	NW	SA-AIR1	SA-AIR3	0.0072	0.0047	0.0091	0.0087	No	0.021	0	0.4815	0	No	
8/24	8/25	NE	SA-AIR4	SA-AIR2	0.0244	0.0175	0.0295	0.0171	No	0.514	0.0153	0.3691	0.3984	No	
8/25	8/26	NE	SA-AIR4	SA-AIR2	0.0329	0.0271	0.0358	0.0304	No	0.6141	0.4987	1.8851	0.3109	No	
8/26	8/27	NE	SA-AIR4	SA-AIR2	0.0252	0.0336	0.0157	0.0239	No	0.8481	0.6323	1.8467	0.3597	No	
8/27	8/28	S	SA-AIR2	SA-AIR4	0.0127	0.0127	0.0099	0.0174	No	0.0217	0.2887	1.2715	0	No	
8/28	8/29	SSW	SA-AIR2	SA-AIR4	0.0819	0.08	0.1077	0.0898	No	0.6529	0.2659	0.0243	0.0001	No	- There was an exceedance of the PM10 early warning action level at SA-AIR3 from ~0912-0920. The 15-minute avg levels peaked at ~0.1077 mg/m3 during this time period. Field crews investigated the exceedance and it appears that the cause was heavy rain at the site. The unit was recalibrated and readings dropped below the early warning action levels. It is believed the exceedances were not due to staging area operations.
8/29	8/30	SW	SA-AIR2	SA-AIR4	0.011	0.0097	0.0182	0.014	No	0.8459	0.7672	1.3161	0.0189	No	
8/30	8/31	WSW	SA-AIR2	SA-AIR4	0.0127	0.0109	0.0235	0.0439	No	0.6707	0.1532	2.2941	0.4216	No	
8/31	9/01	W	SA-AIR1	SA-AIR3	0.0141	0.0118	0.0331	0.0117	No	2.4325	0.0175	2.6689	0.4097	No	
9/01	9/02	E	SA-AIR3	SA-AIR1	0.0131	0.0106	0.0269	0.0227	No	2.1721	0.9321	3.1974	0.001	No	
9/02	9/03	W	SA-AIR1	SA-AIR3	0.0231	0.0201	0.0239	0.0201	No	0.9593	1.284	0.6319	1.2831	No	
9/03	9/04	ESE	SA-AIR3	SA-AIR1	0.02	0.0182	0.019	0.0169	No	0.9914	0.4263	1.5253	1.0831	No	
9/05	9/06	WSW	SA-AIR2	SA-AIR4	0.0133	0.0145	0.0209	0.1041	No	0	6.104	1.4621	5.6411	No	- There was an exceedance of the VOC early warning action level at SA-AIR2 from ~2308-0403. The 15-minute avg levels peaked at ~6.104 ppm during this time period. Field crews investigated the exceedances and it appears that the cause was due to condensation in the line. The unit was recalibrated and readings dropped below the early warning action levels. It is believed the exceedances were not due to staging area operations. - There was an exceedance of the PM10 early warning action level at SA-AIR4 from ~1217-1225. The 15-minute avg levels peaked at ~0.1041 mg/m3 during this time period. Field crews investigated the exceedance and it appears that the cause was mowing at the site. The unit was recalibrated and readings dropped below the early warning action levels. It is believed the exceedances were not due to staging area operations. - There was an exceedance of the VOC early warning action level at SA-AIR4 from ~1221-1230. The 15-minute avg levels peaked at ~5.6411 ppm during this time period. Field crews investigated the exceedances and it appears that the cause was mowing at the site. The unit was recalibrated and readings dropped below the early warning action levels. It is believed the exceedances were not due to staging area operations.
9/06	9/07	NE	SA-AIR4	SA-AIR2	0.0175	0.0314	0.0139	0.0217	No	4.094	0.7869	0.2539	0	No	
9/07	9/08	WSW	SA-AIR2	SA-AIR4	0.0223	0.0195	0.0466	0.0266	No	2.2805	0.7001	0.0498	0	No	

Table C-2: Route 131 Staging Area Continuous Air Monitoring Data Summary - PM10 and VOCs
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Start Date	End Date	Predominant Wind Direction	Upwind Station(s)	Downwind Station(s)	PM10 (mg/m^3) [1]				Needs Action? [2]	VOCs (ppm) [1]				Needs Action? [2]	Comments
					SA-AIR1	SA-AIR2	SA-AIR3	SA-AIR4		SA-AIR1	SA-AIR2	SA-AIR3	SA-AIR4		
9/08	9/09	W	SA-AIR1	SA-AIR3	0.0077	0.0082	0.0107	0.0131	No	2.2175	0.5002	0	0	No	
9/09	9/10	NNW	SA-AIR1	SA-AIR3	0.0092	0.0078	0.0208	0.0157	No	2.1091	1.9419	1.7353	0	No	
9/10	9/11	SSW	SA-AIR2	SA-AIR4	0.0243	0.0191	0.0325	0.0348	No	Not applicable - backfill only at UNT Area III OU3					
9/11	9/12	NNW	SA-AIR1	SA-AIR3	0.0214	0.0155	0.0419	0.0307	No	Not applicable - backfill only at UNT Area III OU3					
9/12	9/13	NE	SA-AIR1 SA-AIR4	SA-AIR2 SA-AIR3	0.0135	0.0413	0.0189	0.0189	No	Not applicable - backfill only at UNT Area III OU3					
9/13	9/14	SSE	SA-AIR3	SA-AIR1	0.0143	0.0533	0.0121	0.0198	No	Not applicable - backfill only at UNT Area III OU3					
9/14	9/15	SW	SA-AIR2	SA-AIR4	0.0127	11.989	0.0121	0.0205	No	Not applicable - backfill only at UNT Area III OU3					- There was an exceedance of the PM10 corrective action level at SA-AIR2 from ~1428-1444. The 15-minute avg levels peaked at ~11.989 mg/m3 during this time period. Field personnel investigated the following morning and could not identify a cause for the exceedance. The exceedance was due to a single one-minute spike in PM10 with a value of ~92.609 mg/m3. The meter was recalibrated, and readings dropped below the early warning action levels. It is believed that these readings are not due to activities being conducted at the staging area.
9/15	9/16	W	SA-AIR1	SA-AIR3	0.0109	0.01	0.0143	0.0113	No	Not applicable - backfill only at UNT Area III OU3					
9/16	9/17	W	SA-AIR1	SA-AIR3	0.0242	0.022	0.0939	0.036	No	Not applicable - backfill only at UNT Area III OU3					
9/17	9/18	NNE	SA-AIR4	SA-AIR2	0.0198	0.0176	0.0157	0.0234	No	Not applicable - backfill only at UNT Area III OU3					
9/18	9/19	ENE	SA-AIR4	SA-AIR2	0.0239	0.0236	0.0189	0.0306	No	Not applicable - backfill only at UNT Area III OU3					
9/19	9/20	SW	SA-AIR2	SA-AIR4	0.0188	0.0175	0.0214	0.0203	No	Not applicable - backfill only at UNT Area III OU3					
9/20	9/21	SW	SA-AIR2	SA-AIR4	0.0301	0.0286	0.0408	0.0356	No	Not applicable - backfill only at UNT Area III OU3					
9/21	9/22	SW	SA-AIR2	SA-AIR4	0.045	0.0319	0.0409	0.0473	No	Not applicable - backfill only at UNT Area III OU3					
9/22	9/23	SW	SA-AIR2	SA-AIR4	0.0368	0.0283	0.0388	0.0475	No	Not applicable - backfill only at UNT Area III OU3					
9/23	9/24	SW	SA-AIR2	SA-AIR4	0.0351	0.0291	0.0474	0.0528	No	Not applicable - backfill only at UNT Area III OU3					
9/24	9/25	W	SA-AIR1	SA-AIR3	0.0101	0.0085	0.0405	0.0154	No	Not applicable - backfill only at UNT Area III OU3					
9/25	9/26	SSW	SA-AIR2	SA-AIR4	0.0142	0.0121	0.0358	0.024	No	Not applicable - backfill only at UNT Area III OU3					

Notes:

1. PM10 and VOC results are daily maximum levels of 15-minute running averages recorded via real-time meters.
2. Corrective Action Level Criteria:
   PM10: downwind station >0.150 mg/m3 above upwind station for a 15 minute period (initial/early warning: 0.100 mg/m3 above upwind for a 15-minute period)
   VOC: any 15 minute average that exceeds 25 ppm (initial/early warning: 5 ppm above upwind for a 15-minute period)

mg/m3 = milligrams per cubic meter
PM10 = particulate matter < 10 microns in diameter
ppm = parts per million
SA = Staging Area

Table C-3: Secure Landfill Operations Continuous Air Monitoring Data Summary - PCBs
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Start Date	End Date	Predominant Wind Direction	Upwind Station(s)	Downwind Station(s)	Total PCBs (µg/m^3) [1,2]						Needs Action? [3]	Comments
					SLF-AIR1	SLF-AIR2	SLF-AIR3	SLF-AIR4	SLF-AIR-PA	SLF-AIR-PB		
8/16	8/17	ENE	SLF-AIR3	SLF-AIR-PA	0.001100	0.001100	0.002700	0.002000	0.002000 UJ	0.002000 UJ	No	
8/17	8/18	SSW	SLF-AIR1	SLF-AIR4	0.000690	0.001700 (0.002100)	0.016000	0.015000 J	0.002000 U	0.002000 U	No	
8/18	8/19	SSW	SLF-AIR1	SLF-AIR4	0.000740 J (0.000990)	0.001400	0.009900 J	0.015000 J	--	--	No	
8/19	8/20	SW	SLF-AIR1	SLF-AIR3	0.000270 J (0.000930)	0.002000	0.033000 J	0.008200	0.002000 U (0.002000 U)	0.002000 U (0.002000 U)	No	
8/20	8/21	SSW	SLF-AIR1	SLF-AIR4	0.000740	0.001400 (0.001700)	0.016000	0.008000	0.002000 U (0.002000 U J)	0.002000 U (0.002000 U)	No	
8/21	8/22	SSW	SLF-AIR1	SLF-AIR4	0.000530	0.002100 J (0.002900 J)	0.019000 J	0.023000	0.002000 UJ	0.002000 UJ	No	
8/22	8/23	W	SLF-AIR1	SLF-AIR3	0.000480	0.001900	0.016000 J (0.019000 J)	0.000980	--	--	No	
8/23	8/24	NW	SLF-AIR4	SLF-AIR2	0.000670	0.027000	0.001200	0.000440	0.002000 U	0.002000 U (0.002000 U)	No	
8/24	8/25	NE	SLF-AIR3	SLF-AIR1	0.001800	0.002100	0.002200	0.000850	0.002000 U	0.002000 UJ	No	
8/25	8/26	NE	SLF-AIR3	SLF-AIR1	0.001400	0.000960	0.002000	0.000530	--	--	No	
8/26	8/27	NE	SLF-AIR3	SLF-AIR1	0.000770 (0.001000)	0.000820	0.001600	0.000980	0.002000 U	0.002000 U	No	
8/27	8/28	S	SLF-AIR1	SLF-AIR4	0.001500 (0.002000)	0.016000 J	0.002500	0.029000 J	0.002000 U	0.012	No	
8/28	8/29	SSW	SLF-AIR1	SLF-AIR4	0.000630 J	0.001600 J (0.002990 J)	0.012000	0.037000	0.002000 U	0.002000 UJ	No	
8/29	8/30	SW	SLF-AIR1	SLF-AIR3	0.000600 J	0.001300 J (0.002200)	0.031000 J	0.011000	0.002000 UJ	0.002000 UJ	No	
8/30	8/31	WSW	SLF-AIR1	SLF-AIR3	0.000220 J	0.001787 J (0.002420 J)	0.034000 J	0.004300	0.002000 UJ	0.002000 UJ	No	
8/31	9/01	W	SLF-AIR1	SLF-AIR3	0.000510	0.002838 J	0.004100 J (0.002000 J)	0.001800	0.002000 UJ	0.002000 UJ	No	
9/01	9/02	E	SLF-AIR3	SLF-AIR1	0.000820	0.000890	0.003100 (0.004100)	0.010400	--	--	No	
9/02	9/03	W	SLF-AIR1	SLF-AIR3	0.007900	0.002400	0.006000 (0.008600 J)	0.000400	--	--	No	
9/03	9/04	ESE	SLF-AIR2	SLF-AIR-PB	0.000470 J	0.000540	0.001100 (0.002600 J)	0.004700	0.002000 UJ	0.002000 UJ	No	
9/04	9/05	WSW	SLF-AIR1	SLF-AIR3	0.000310	0.001000	0.003100 J (0.006100 J)	0.002900	0.002000 U	0.002000 UJ	No	
9/05	9/06	WSW	SLF-AIR1	SLF-AIR3	0.000330	0.000750	0.008500 (0.011000)	0.002200	0.002000 UJ	0.002000 UJ	No	
9/06	9/07	NE	SLF-AIR3	SLF-AIR1	0.000350	0.001100	0.001400 J	0.001200	0.002000 UJ	0.002000 UJ	No	
9/07	9/08	WSW	SLF-AIR1	SLF-AIR3	0.000160 J	0.001200	0.007200	0.000970	0.002000 UJ (0.002000 U J)	0.002000 UJ	No	

Table C-3: Secure Landfill Operations Continuous Air Monitoring Data Summary - PCBs
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Start Date	End Date	Predominant Wind Direction	Upwind Station(s)	Downwind Station(s)	Total PCBs (µg/m^3) [1,2]						Needs Action? [3]	Comments
					SLF-AIR1	SLF-AIR2	SLF-AIR3	SLF-AIR4	SLF-AIR-PA	SLF-AIR-PB		
9/08	9/09	W	SLF-AIR1	SLF-AIR3	0.000400	0.002120 J	0.001000	0.000380	--	--	No	
9/09	9/10	NNW	SLF-AIR4	SLF-AIR2	0.001260	0.002700 J	0.000920	0.001200	0.002000 UJ	0.002000 UJ	No	

Notes:
1. PCB results are from samples collected after a 24 hour exposure duration.
2. All non-detect results are reported at the method detection limit with a U or UJ qualifier. Results for sample duplicates are in parentheses.
3. Corrective Action Level Criteria: Total PCBs (Aroclor): >0.100 µg/m3

-- = sample not collected/reported
µg/m3 = micrograms per cubic meter
J = estimated value
PCB = polychlorinated biphenyl
SLF = Secure Landfill
U = compound analyzed, but not detected above detection limit
UJ = compound analyzed, but not detected above estimated detection limit

Table C-4: Route 131 Staging Area Operations Continuous Air Monitoring Data Summary - PCBs
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Start Date	End Date	Predominant Wind Direction	Upwind Station(s)	Downwind Station(s)	Total PCBs (µg/m^3) [1,2]				Needs Action? [3]	Comments
					SA-AIR1 (low volume)	SA-AIR2 (low volume)	SA-AIR3 (high volume)	SA-AIR4 (high volume)		
8/16	8/17	ENE	SA-AIR4	SA-AIR2	0.002000 U	0.002000 U	0.0013	0.0012	No	
8/17	8/18	SSW	SA-AIR2	SA-AIR4	0.002000 U (0.002000 U)	0.002000 U (0.002000 U)	0.003400 (0.004600)	0.0015	No	
8/18	8/19	SSW	SA-AIR2	SA-AIR4	0.002000 U (0.002000 U)	0.002000 U (0.002000 U)	0.00136	0.0026	No	
8/19	8/20	SW	SA-AIR2	SA-AIR4	0.002000 U (0.002000 U)	0.002000 U (0.002000 U)	0.00349	0.003600 J (0.003600 J)	No	
8/20	8/21	SSW	SA-AIR2	SA-AIR4	0.002000 U (0.002000 U J)	0.002000 U (0.002000 U)	0.00084	0.00223	No	
8/21	8/22	SSW	SA-AIR2	SA-AIR4	0.002000 UJ (0.002000 U J)	0.002000 UJ (0.002000 U J)	0.00176	0.002570 (0.002340)	No	
8/22	8/23	W	SA-AIR1	SA-AIR3	0.002000 U (0.002000 U)	0.002000 U (0.002000 U)	0.006800 J	0.000820 J (0.000580 J)	No	
8/23	8/24	NW	SA-AIR1	SA-AIR3	0.002000 U (0.002000 U)	0.002000 U (0.002000 U)	0.0036	0.000430 (0.000270 J)	No	
8/24	8/25	NE	SA-AIR4	SA-AIR2	0.002000 U	0.002000 U	0.00161	0.000290 J (0.000520)	No	
8/25	8/26	NE	SA-AIR4	SA-AIR2	0.002000 U	0.002000 U	0.00146	0.000570 (0.000470)	No	
8/26	8/27	NE	SA-AIR4	SA-AIR2	0.002000 U	0.002000 U	0.0018	0.000550 (0.000790)	No	
8/27	8/28	S	SA-AIR2	SA-AIR4	0.002000 U	0.002000 U	0.001530 J	0.001500 J (0.001810 J)	No	
8/28	8/29	SSW	SA-AIR2	SA-AIR4	0.002000 U	0.002000 U	0.000690 J	0.001900 J (0.001890 J)	No	
8/29	8/30	SW	SA-AIR2	SA-AIR4	0.002000 U	0.002000 U	0.00214	0.00228	No	
8/30	8/31	WSW	SA-AIR2	SA-AIR4	0.002000 UJ	0.002000 UJ	0.001171 J	0.000450 J (0.001640 J)	No	
8/31	9/01	W	SA-AIR1	SA-AIR3	0.002000 UJ	0.002000 UJ	0.009681 J	0.000220 J (0.000930 J)	No	
9/01	9/02	E	SA-AIR3	SA-AIR1	0.002000 UJ	0.002000 UJ	0.00192	0.000420 (0.000900 J)	No	
9/02	9/03	W	SA-AIR1	SA-AIR3	0.002000 UJ	0.002000 UJ	0.00216	0.000640 J (0.000500)	No	
9/03	9/04	ESE	SA-AIR3	SA-AIR1	0.002000 UJ	0.002000 U	0.00037	0.001510 J	No	
9/04	9/05	WSW	SA-AIR2	SA-AIR4	0.002000 U	0.002000 UJ	0.0051	0.0019	No	
9/05	9/06	WSW	SA-AIR2	SA-AIR4	0.002000 UJ	0.002000 UJ (0.002000 U J)	0.00331	0.001000 J	No	
9/06	9/07	NE	SA-AIR4	SA-AIR2	0.002000 UJ	0.002000 UJ	0.001520 J (0.001380)	0.000300 J	No	
9/07	9/08	WSW	SA-AIR2	SA-AIR4	0.002000 UJ	0.002000 UJ	0.0054	0.00174	No	

Table C-4: Route 131 Staging Area Operations Continuous Air Monitoring Data Summary - PCBs
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Start Date	End Date	Predominant Wind Direction	Upwind Station(s)	Downwind Station(s)	Total PCBs (µg/m^3) [1,2]				Needs Action? [3]	Comments
					SA-AIR1 (low volume)	SA-AIR2 (low volume)	SA-AIR3 (high volume)	SA-AIR4 (high volume)		
9/08	9/09	W	SA-AIR1	SA-AIR3	0.002000 UJ	0.002000 UJ	0.00255	0.000200 J	No	
9/09	9/10	NNW	SA-AIR1	SA-AIR3	0.002000 UJ	0.002000 UJ	0.00242	0.00035	No	

Notes:

1. PCB results are from samples collected after a 24 hour exposure duration.
2. All non-detect results are reported at the method detection limit with a U or UJ qualifier. Results for sample duplicates are in parentheses.
3. Corrective Action Level Criteria: Total PCBs (Aroclor): >0.100 µg/m3

µg/m3 = micrograms per cubic meter
J = estimated value
PCB = polychlorinated biphenyl
SA = Staging Area
U = compound analyzed, but not detected above detection limit
UJ = compound analyzed, but not detected above estimated detection limit

Table C-5: Dredge Corridor Continuous Air Monitoring Data Summary - PCBs
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Start Date	End Date	Predominant Wind Direction	Upwind Station(s)	Downwind Station(s)	Total PCBs (µg/m^3) [1,2]			Needs Action? [3]	Comments
					DC-M2 (low volume)	DC-M3 (low volume)	DC-M4 (low volume)		
8/16	8/17	ENE	DC-M2	DC-M4	0.002000 UJ	0.002000 U	0.002000 U	No	
8/19	8/20	SW	DC-M2	DC-M4	0.002000 U	0.002000 U	0.002000 U	No	
8/20	8/21	SSW	DC-M2	DC-M4	0.002000 U (0.002000 U)	0.002000 UJ	0.002000 UJ (0.002000 U)	No	
8/21	8/22	SSW	DC-M2	DC-M4	0.002000 UJ (0.002000 U J)	0.002000 UJ	0.002000 UJ (0.002000 U J)	No	
8/22	8/23	W	DC-M3	DC-M4	0.002000 U (0.002000 U)	0.002000 U	0.002000 U (0.002000 U)	No	
8/23	8/24	NW	DC-M3	DC-M2	0.002000 U	0.002000 U	0.002000 U	No	
8/24	8/25	NE	DC-M4	DC-M2	0.002000 U	0.002000 U	0.002000 UJ	No	
8/27	8/28	S	DC-M3	DC-M4	0.002000 U (0.002000 U)	0.002000 U	0.002000 U	No	
8/28	8/29	SSW	DC-M3	DC-M2	0.002000 U	0.002000 U	0.002000 U (0.002000 U)	No	
9/09	9/10	NNW	DC-M2	DC-M4	0.002000 UJ	0.002000 UJ	0.002000 UJ	No	

Notes:
1. PCB results are from samples collected after a 24 hour exposure duration.
2. All non-detect results are reported at the method detection limit with a U or UJ qualifier. Results for sample duplicates are in parentheses.
3. Corrective Action Level Criteria: Total PCBs (Aroclor): >0.100 µg/m3

µg/m3 = micrograms per cubic meter
PCB = polychlorinated biphenyl
DC = Dredging Corridor
M = mobile station
U = compound analyzed, but not detected above detection limit
UJ = compound analyzed, but not detected above estimated detection limit

Table C-6: Water Intake Monitoring Data Summary - Turbidity
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Sampling Date	Turbidity (NTU) Water Intakes			Needs Action? [1]	Comments
	IN-AE-RAW (untreated)	IN-SRMT-RAW (untreated)	IN-SRMT-FIL (treated)		
8/16	0.4	1.0	0.2	No	
8/17	0.3	1.3	0.3	No	
8/19	0.0	0.2	0.1	No	
8/20	0.1	0.4	0.2	No	
8/21	0.4	0.3	0.2	No	
8/22	0.8	1.1	0.4	No	
8/23	0.2	0.8	0.2	No	
8/24	0.3	1.0	0.0	No	
8/26	0.4	0.9	0.2	No	
8/27	0.3	1.1	0.3	No	
8/28	0.9	0.8	1.3	No	
8/29	1.0	1.4	0.2	No	
8/30	0.2	2.0	0.3	No	
8/31	0.6	2.2	0.3	No	
9/03	0.7	0.8	0.7	No	
9/04	0.9	1.1	0.5	No	
9/05	0.8	1.2	0.5	No	
9/06	2.5	1.1	0.1	No	
9/07	0.6	1.6	0.6	No	
9/09	0.6	1.7	0.4	No	
9/10	0.8	2.2	0.3	No	
9/11	0.5	2.5	0.4	No	
9/12	0.6	1.4	0.7	No	
9/13	2.1	1.4	0.2	No	
9/14	0.7	1.2	0.6	No	

Table C-6: Water Intake Monitoring Data Summary - Turbidity
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Sampling Date	Turbidity (NTU)			Needs Action? [1]	Comments
	Water Intakes				
	IN-AE-RAW (untreated)	IN-SRMT-RAW (untreated)	IN-SRMT-FIL (treated)		
9/16	0.7	1.3	0.2	No	
9/17	0.6	2.2	0.5	No	
9/18	0.7	2.8	0.4	No	
9/19	0.5	1.3	0.3	No	
9/20	2.0	1.3	0.5	No	
9/21	1.4	1.4	0.4	No	
9/23	1.3	3.7	0.5	No	
9/24	1.5	1.7	0.2	No	
9/25	1.4	1.4	0.6	No	

Notes:

1. Corrective Action Level Criteria:
   Intakes: Turbidity >100 NTU over baseline turbidity level

-- = data not collected

NTU = Nephelometric turbidity unit

Table C-7: Water Column Monitoring Data Summary - TSS
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Sampling Date	TSS (mg/L)[1] Water Column				Needs Action? [2]	Stratification Present?[3]	Comments
	WC-UP	WC-NF	WC-Mouth	WC-SLR			
8/16	4.0 U	4.8 J	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T50.5 - Stratification present at WC-MOUTH location
8/17	4.0 U	4.4 J	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T51 - Stratification present at WC-MOUTH location
8/19	4.0 U	4.8 J	4.0 J	4.0 U (4.0 U)	No	Y	- WC-NF collected at approximately T51 - Stratification present at WC-NF and WC-MOUTH locations
8/20	4.0 U	4.4 J	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T51 - Stratification present at WC-MOUTH location
8/21	4.0 U	5.6 J	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T36 - Stratification present at WC-NF and WC-MOUTH locations
8/22	4.0 U	4.8 J	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T40 - Stratification present at WC-NF and WC-MOUTH locations
8/23	4.0 U	4.0 U	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T40.5 - Stratification present at WC-NF and WC-MOUTH locations
8/24	4.0 U	6.4 J	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T40.5 - Stratification present at WC-MOUTH location
8/26	4.0 U	4.0 J (4.8 J)	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T55 - Stratification present at WC-MOUTH location
8/27	4.0 U	4.0 U	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T55.5 - Stratification present at WC-MOUTH location
8/28	4.0 U	4.0 J	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T55.5 - Stratification present at WC-NF and WC-MOUTH locations
8/29	4.0 U	4.0 U	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T55.5 - Stratification present at WC-NF and WC-MOUTH locations
8/30	4.0 U	4.4 J	4.0 U	4.0 U	No	N	- WC-NF collected at approximately T62.5

Table C-7: Water Column Monitoring Data Summary - TSS
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Sampling Date	TSS (mg/L)[1] Water Column				Needs Action? [2]	Stratification Present?[3]	Comments
	WC-UP	WC-NF	WC-Mouth	WC-SLR			
8/31	4.0 U	4.0 J	4.0 U	4.0 U	No	N	- WC-NF collected at approximately T62.5
9/03	4.0 U	4.0 U	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T62.5 - Stratification present at WC-NF and WC-MOUTH locations
9/04	4.0 U	4.4 J	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T62.5 - Stratification present at WC-MOUTH location
9/05	4.0 U (4.0 U)	4.8 J	4.0 J	4.0 U	No	Y	- WC-NF collected at approximately T68 - Stratification present at WC-MOUTH location
9/06	4.0 U	4.4 J	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T68 - Stratification present at WC-MOUTH location
9/07	4.0 U	5.6 J	5.2 J	4.0 U	No	N	- WC-NF collected at approximately T68.5
9/09	4.0 U	4.8 J	5.2 J	4.0 U	No	N	- WC-NF collected at approximately T68.5
9/10	4.0 U	4.0 J	4.4 J	4.0 U	No	N	- WC-NF collected at approximately T69.5
9/11	4.0 U	4.0 U (4.0 U)	--	4.0 J	No	N	- WC-NF collected at approximately T71 - WC-MOUTH not collected because the location coincides with the location of WC-NF
9/12	4.0 U	4.4 J	--	4.0 U	No	N	- WC-NF collected at approximately T71 - WC-MOUTH not collected because the location coincides with the location of WC-NF
9/13	4.0 U	4.0 U	--	4.4 J	No	N	- WC-NF collected at approximately T71 - WC-MOUTH not collected because the location coincides with the location of WC-NF
9/14	4.0 U	4.0 J	4.0 J	4.0 U	No	N	- WC-NF collected at approximately T68
9/16	4.0 U	4.0 U	5.6 J	4.0 U (4.0 U)	No	N	- WC-NF collected at approximately T66
9/17	4.0 U	4.0 J	4.8 J	4.0 U	No	N	- WC-NF collected at approximately T67.5
9/18	4.0 U	6.4 J	--	7.6 J	No	N	- WC-NF collected at approximately T71 - WC-MOUTH not collected because the location coincides with the location of WC-NF
9/19	4.0 U	5.2 J	6.4 J	4.0 U	No	N	- WC-NF collected at approximately T68.5

Table C-7: Water Column Monitoring Data Summary - TSS
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Sampling Date	TSS (mg/L)[1] Water Column				Needs Action? [2]	Stratification Present?[3]	Comments
	WC-UP	WC-NF	WC-Mouth	WC-SLR			
9/20	4.0 U	4.0 J	--	4.0 U	No	N	- WC-NF collected at approximately T72 - WC-MOUTH not collected because the location coincides with the location of WC-NF
9/21	4.0 U	6.0 J	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T67.5 - Stratification present at WC-MOUTH location
9/23	4.0 U	4.0 U	4.0 U	4.0 U	No	Y	- WC-NF collected at approximately T67 - Stratification present at WC-NF and WC-MOUTH locations
9/24	4.0 U	4.0 U	--	4.0 U	No	Y	- WC-NF collected at approximately T72, stratification present; WC-MOUTH not collected
9/25	4.0 U	5.6 J	4.8 J	4.0 U	No	N	- WC-NF collected at approximately T69

Notes:

1. All non-detect results are reported at the detection limit with a U or UJ qualifier. Results for sample duplicates are in parentheses.
2. Advisory Level Criteria:
   WC-NF: TSS >100 mg/L over WC-UP (upstream location)
3. If stratification is observed in the field, only the readings from 0.2 times the total water column depth, where applicable, will be considered in the correc

-- = data not collected
mg/L = milligrams/L
TSS = total suspended solids
WC = water column
UP = upstream
NF = near field location approximately 1000 feet downstream of activity
SLR = Saint Lawrence River

Table C-8: Water Column Monitoring Data Summary - PCBs
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Sampling Date	Total PCBs (µg/L) [1]						Needs Action? [3]	Stratification Present?[4]	Comments
	Water Column			Water Intakes[2]					
	WC-NF	WC-Mouth	WC-SLR	IN-AE-RAW (untreated)	IN-SRMT-RAW (untreated)	IN-SRMT-FIL (treated)			
8/16	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T50.5 - Stratification present at WC-MOUTH location
8/17	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T51 - Stratification present at WC-MOUTH location
8/19	0.100000 U	0.100000 U	0.100000 U (0.100000 U)	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T51 - Stratification present at WC-NF and WC-MOUTH locations
8/20	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T51 - Stratification present at WC-MOUTH location
8/21	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T36 - Stratification present at WC-NF and WC-MOUTH locations
8/22	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U (0.100000 U)	0.100000 U	No	Y	- WC-NF collected at approximately T40 - Stratification present at WC-NF and WC-MOUTH locations
8/23	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T40.5 - Stratification present at WC-NF and WC-MOUTH locations
8/24	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T40.5 - Stratification present at WC-MOUTH location
8/26	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T55 - Stratification present at WC-MOUTH location
8/27	0.12	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T55.5 - Stratification present at WC-MOUTH location
8/28	0.081	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T55.5 - Stratification present at WC-NF and WC-MOUTH locations
8/29	0.079	0.100000 U (0.100000 U)	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T55.5 - Stratification present at WC-NF and WC-MOUTH locations
8/30	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	N	- WC-NF collected at approximately T62.5
8/31	0.072	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	N	- WC-NF collected at approximately T62.5
9/03	0.1	0.084	0.100000 U (0.100000 U)	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T62.5 - Stratification present at WC-NF and WC-MOUTH locations
9/04	0.088000 J	0.100000 U	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T62.5 - Stratification present at WC-MOUTH location

Table C-8: Water Column Monitoring Data Summary - PCBs
Unnamed Tributary Area III Operable Unit 3 Construction Completion Report

Sampling Date	Total PCBs (µg/L) [1]						Needs Action? [3]	Stratification Present?[4]	Comments
	Water Column			Water Intakes[2]					
	WC-NF	WC-Mouth	WC-SLR	IN-AE-RAW (untreated)	IN-SRMT-RAW (untreated)	IN-SRMT-FIL (treated)			
9/05	0.095	0.097	0.100000 U	0.100000 U (0.100000 U)	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T68 - Stratification present at WC-MOUTH location
9/06	0.11	0.098	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	Y	- WC-NF collected at approximately T68 - Stratification present at WC-MOUTH location
9/07	0.074	0.081	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	N	- WC-NF collected at approximately T68.5
9/09	0.084	0.088	0.100000 U	0.100000 U	0.100000 U	0.100000 U	No	N	- WC-NF collected at approximately T68.5

Notes:

1. All non-detect results are reported at the reporting limit with a U or UJ qualifier. Results for sample duplicates are in parentheses. PCB sampling not conducted at upstream monitoring location.
2. Daily water column and intake samples will be submitted for Aroclor analysis (SW846-8082A).
3. Advisory Level Criteria: WC-NF and WC-Mouth: Total PCBs (Aroclor): >0.50 µg/L;
   Corrective Action Level Criteria: WC-SLR and intakes: Total PCBs (Aroclor) > 0.5µg/L
4. If stratification is observed in the field, only the readings from 0.2 times the total water column depth, where applicable, will be considered in the corrective action level evaluation.

-- = sample not collected
PCB = polychlorinated biphenyl
µg/L = micrograms per liter
WC = water column
NF = near field location approximately 1000 feet downstream of activity
SLR = Saint Lawrence River
IN = intake
AE = Alcoa East Plant
SRMT = Saint Regis Mohawk Tribe
FIL = filtered/treated
J = estimated value
U = compound analyzed, but not detected above detection limit
UJ = compound analyzed, but not detected above estimated detection limit

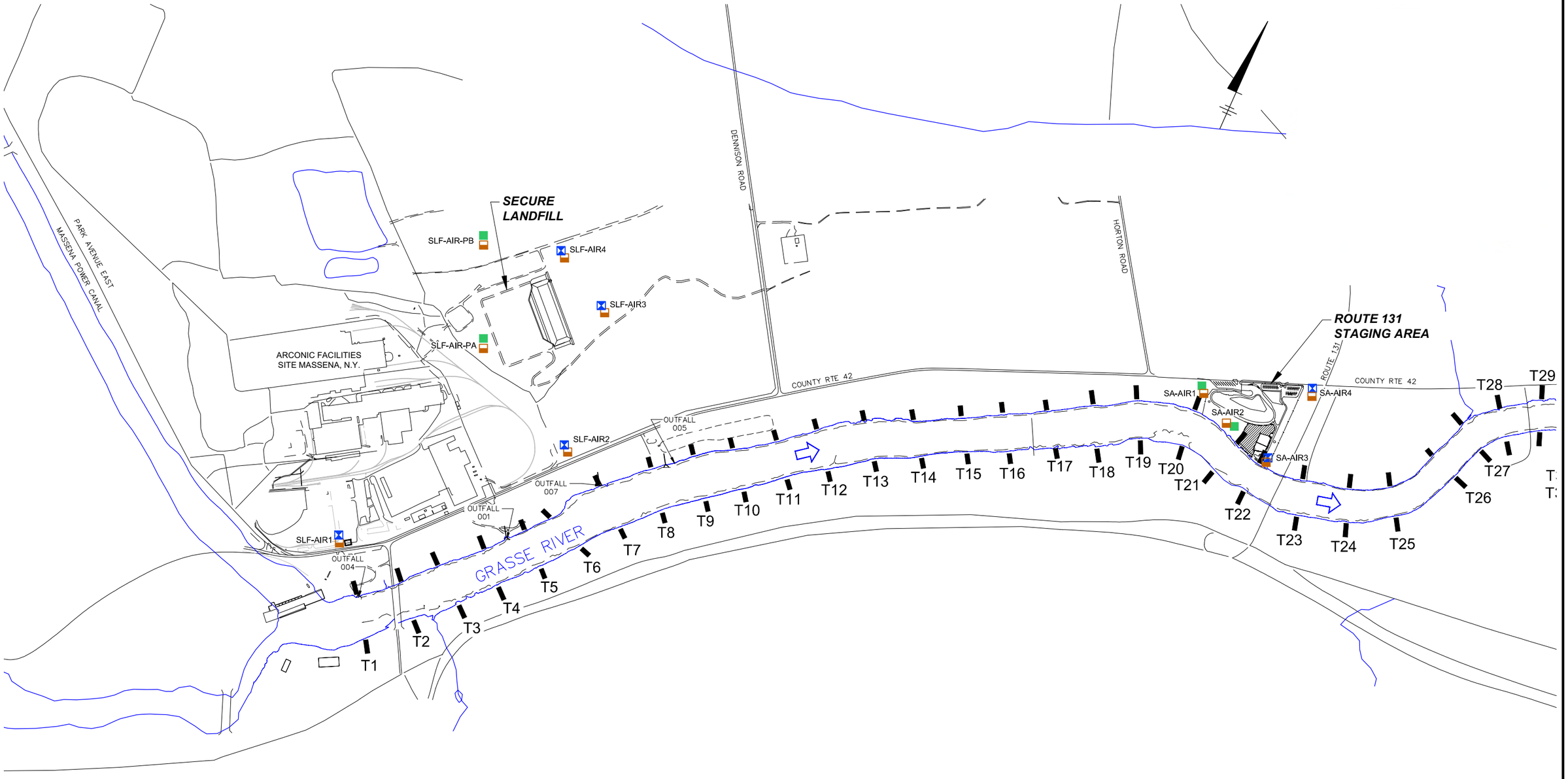
UNNAMED TRIBUTARY AREA III OPERABLE UNIT 3
CONSTRUCTION COMPLETION REPORT
MASSENA, NEW YORK

UNT MOUTH APPROXIMATE MOBILE AIR SAMPLE LOCATIONS

ARCONIC

FIGURE
C-1

G:\Project_Data\Alcoa - UNT\OU3\CCR\UNT Air Sample Figure



LEGEND:

- T9 — 1992 SEDIMENT PROBING TRANSECT LOCATION
- RIVER BOUNDARY
- NEAR SHORE AREA
- DIRECTION OF RIVER FLOW

APPROXIMATE AIR MONITORING LOCATIONS:

- PARTICULATE AND VOC
- HIGH VOLUME PCB
- LOW VOLUME PCB

NOTE:

1. BASE MAP TAKEN FROM PLANIMETRIC MAPPING PREPARED BY LOCKWOOD MAPPING, INC. USING 11/9/92 AERIAL PHOTOGRAPHY. RIVER BOUNDARY PROVIDED BY ANCHOR QEA ON SEPTEMBER 15, 2016, AND SHOULD BE CONSIDERED APPROXIMATE ONLY.

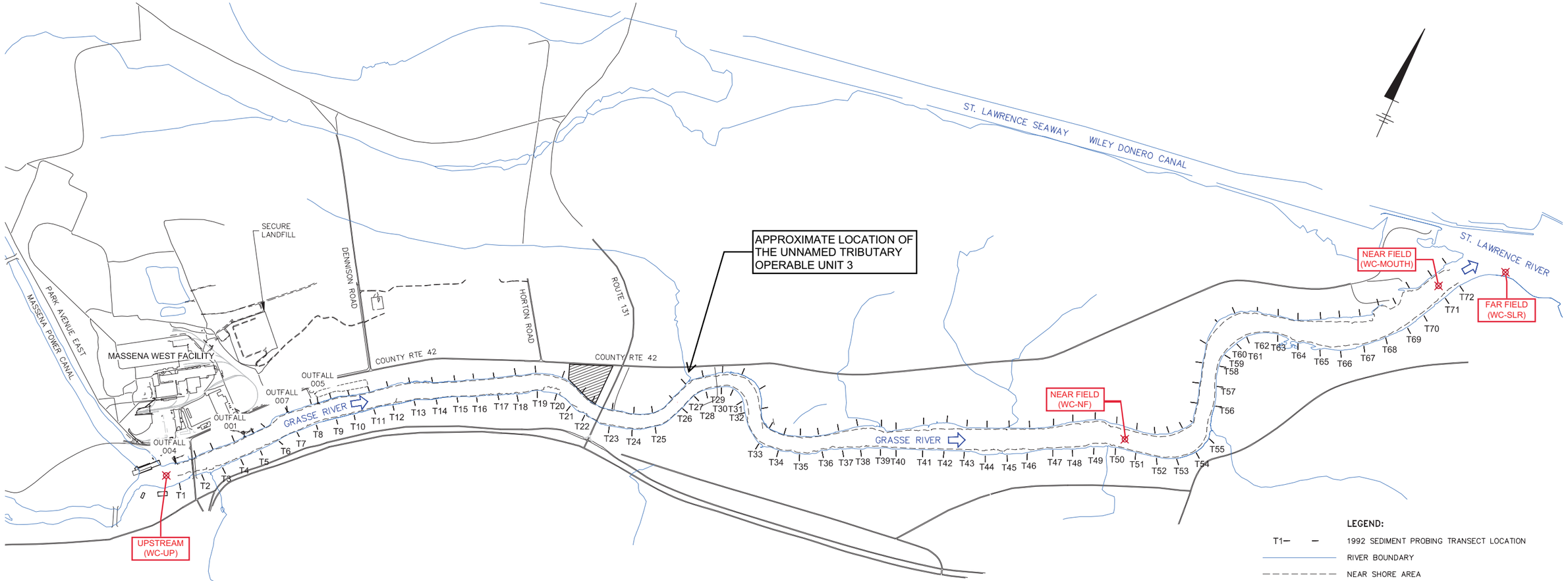
UNNAMED TRIBUTARY AREA III OPERABLE UNIT 3
MASSENA, NEW YORK
CONSTRUCTION COMPLETION REPORT

SECURE LANDFILL AND STAGING AREA AIR MONITORING LOCATIONS

ARCONIC

FIGURE
C-2

CITY: SYRACUSE, NY DIV/GROUP: IMDV/CAD DB: LPOSENAUER PIC/PM: H. VANDEWALKER TM: S. HILL LYR: ON=*; OFF=*REF*
C:\BIM\OneDrive - ARCADIS\BIM 360 Docs\Arconic, Inc\Grasse River\2019\01-DWG\Fig 1 - Air Monitoring Locations.dwg LAYOUT: 1 SAVED: 8/1/2019 9:24 AM
8/1/2019 9:24 AM ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 8/1/2019 9:50 AM BY: HARRIS, JESS
XREFS:
X-BASE2
X-CHSP-DL



LEGEND:

- T1— — 1992 SEDIMENT PROBING TRANSECT LOCATION
- RIVER BOUNDARY
- NEAR SHORE AREA
- DIRECTION OF RIVER FLOW
- UPSTREAM (WC-UP) APPROXIMATE WATER COLUMN MONITORING STATION

NOTE:

1. BASE MAP TAKEN FROM PLANIMETRIC MAPPING PREPARED BY LOCKWOOD MAPPING, INC. USING 11/9/92 AERIAL PHOTOGRAPHY. RIVER BOUNDARY PROVIDED BY ANCHOR QEA ON SEPTEMBER 15, 2016, AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. WC-NF IS A MOBILE STATION ESTABLISHED MID-RIVER APPROXIMATELY 1,000 FEET DOWNSTREAM OF THE COLLECTIVE WORK AREAS DURING EACH MONITORING EVENT. THE LOCATION SHOWN HERE IS AN EXAMPLE ONLY.

0 1200' 2400'
GRAPHIC SCALE

UNNAMED TRIBUTARY AREA III OPERABLE UNIT 3
MASSENA, NEW YORK
CONSTRUCTION COMPLETION REPORT

WATER COLUMN MONITORING LOCATIONS

ARCONIC

FIGURE
C-3

CITY: SYRACUSE, NY DIV/GROUP: IMD/CAD DB: L.POSENAUER PIC/PM: H. VANDEWALKER TM: S. HILL LYR: ON=*; OFF=*REF*
C:\ENVCAD\SYRACUSE\ACTIB001088\001700001\DWG\2017-CA\CHSP\10886B02.dwg LAYOUT: 2-1 SAVED: 3/30/2017 10:17 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: C-LD2B-PDF-GMS PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/30/2017 10:19 PM BY: STOWELL, GARY
XREFS: 10886X02 10886XDL
IMAGES: Arconic.jpg

LEGEND

WATER INTAKE MONITORING LOCATION

NOTE:

1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH ON NOVEMBER 16, 2009.

UNNAMED TRIBUTARY AREA III OPERABLE UNIT 3
MASSENA, NEW YORK
CONSTRUCTION COMPLETION REPORT

WATER INTAKE MONITORING LOCATIONS

ARCONIC

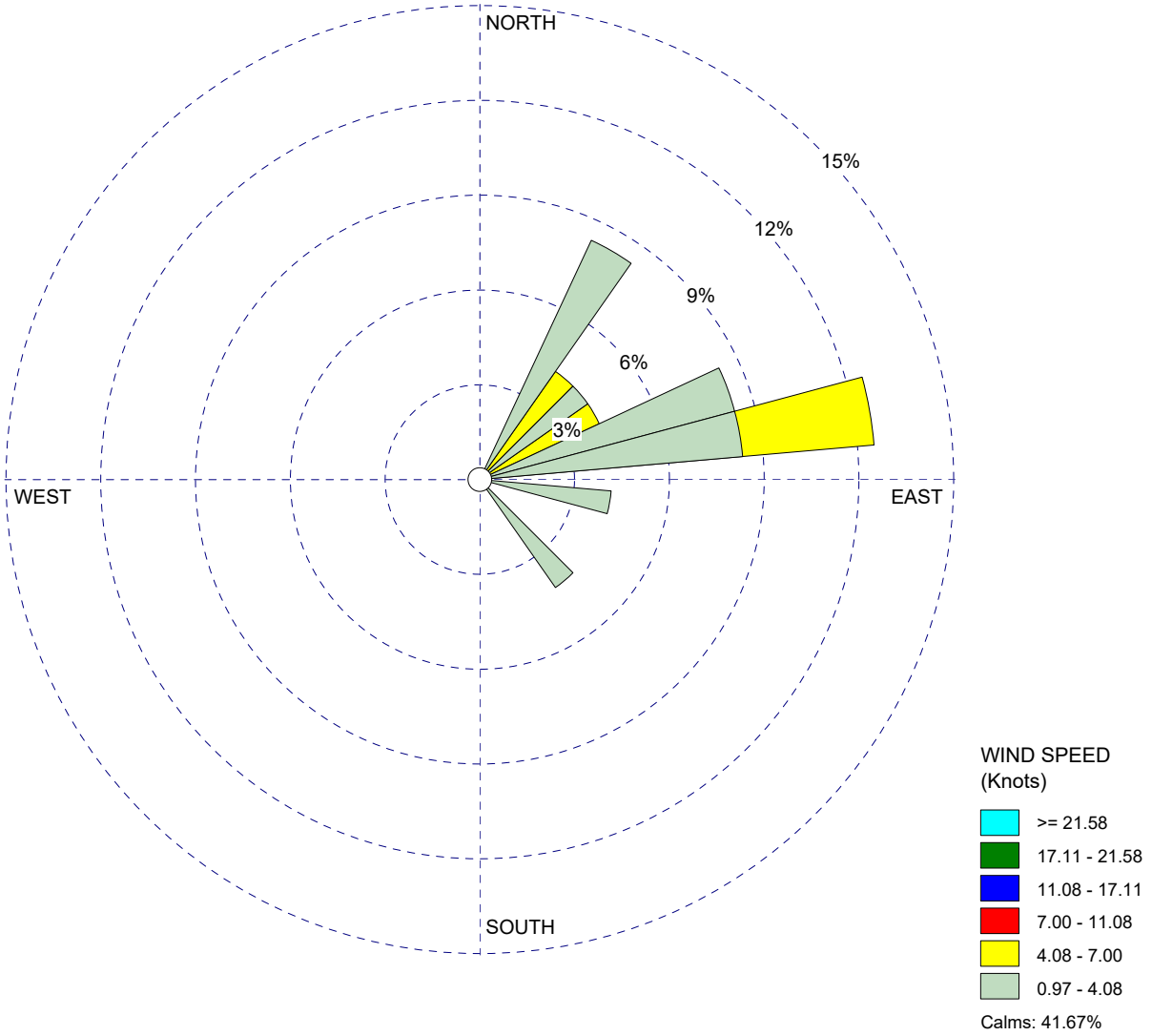
FIGURE
C-4

WIND ROSE PLOT:

Massena/FAA Airport, NY (Station #94725)
August 16 (8am) to August 17 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



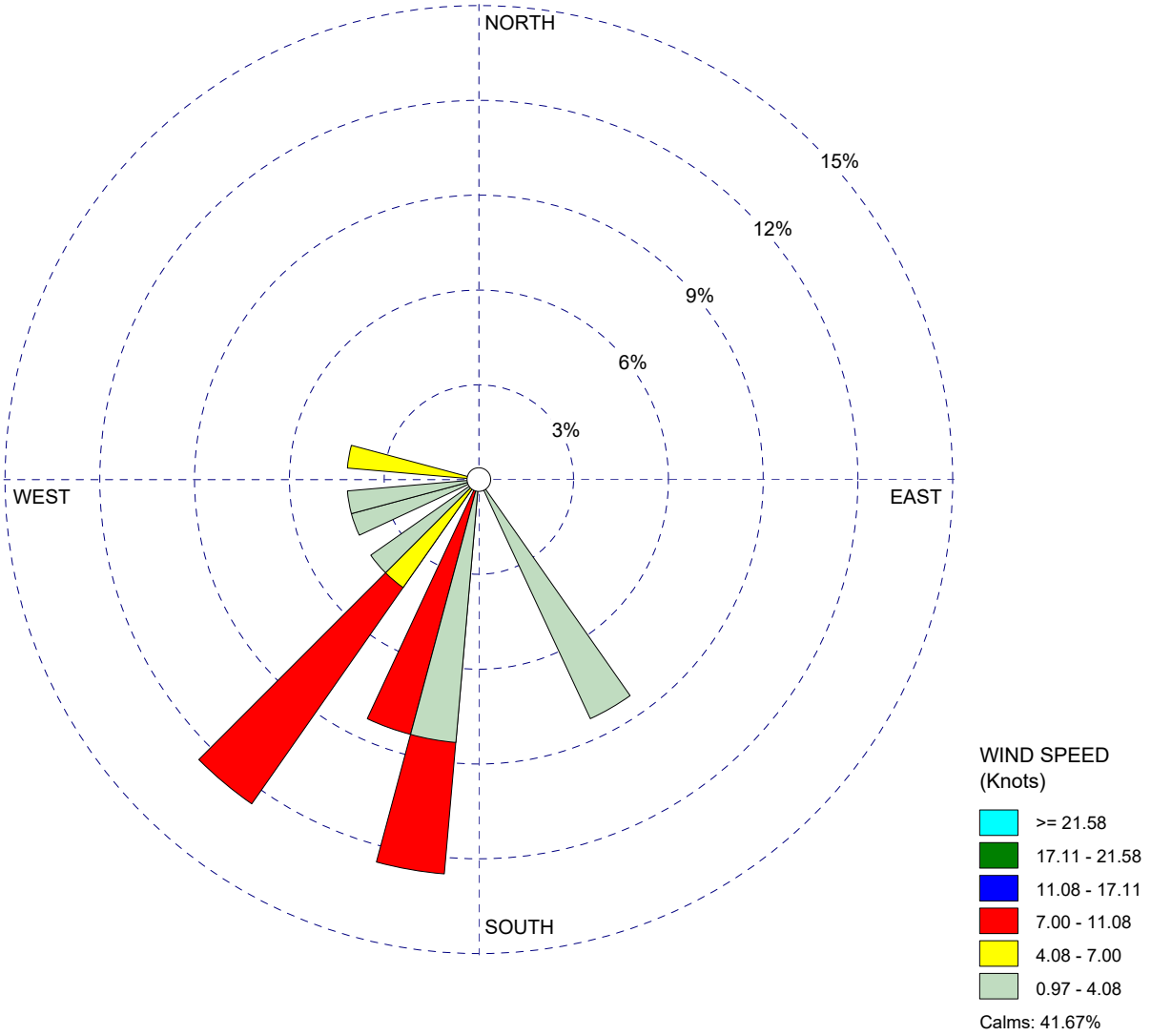
COMMENTS: Blowing FROM Day 1 (8am) - Day 2 (7am) Light and Variable Wind Hours: 12 Missing Data Hours: 0	DATA PERIOD: **Start Date: 8/16/2019 - 08:00** **End Date: 8/17/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Maxwell**	
	CALM WINDS: **41.67%**	TOTAL COUNT: **22 hrs.**	
	AVG. WIND SPEED: **2.27 Knots**	DATE: **8/17/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Massena/FAA Airport, NY (Station #94725)
August 17 (8am) to August 18 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



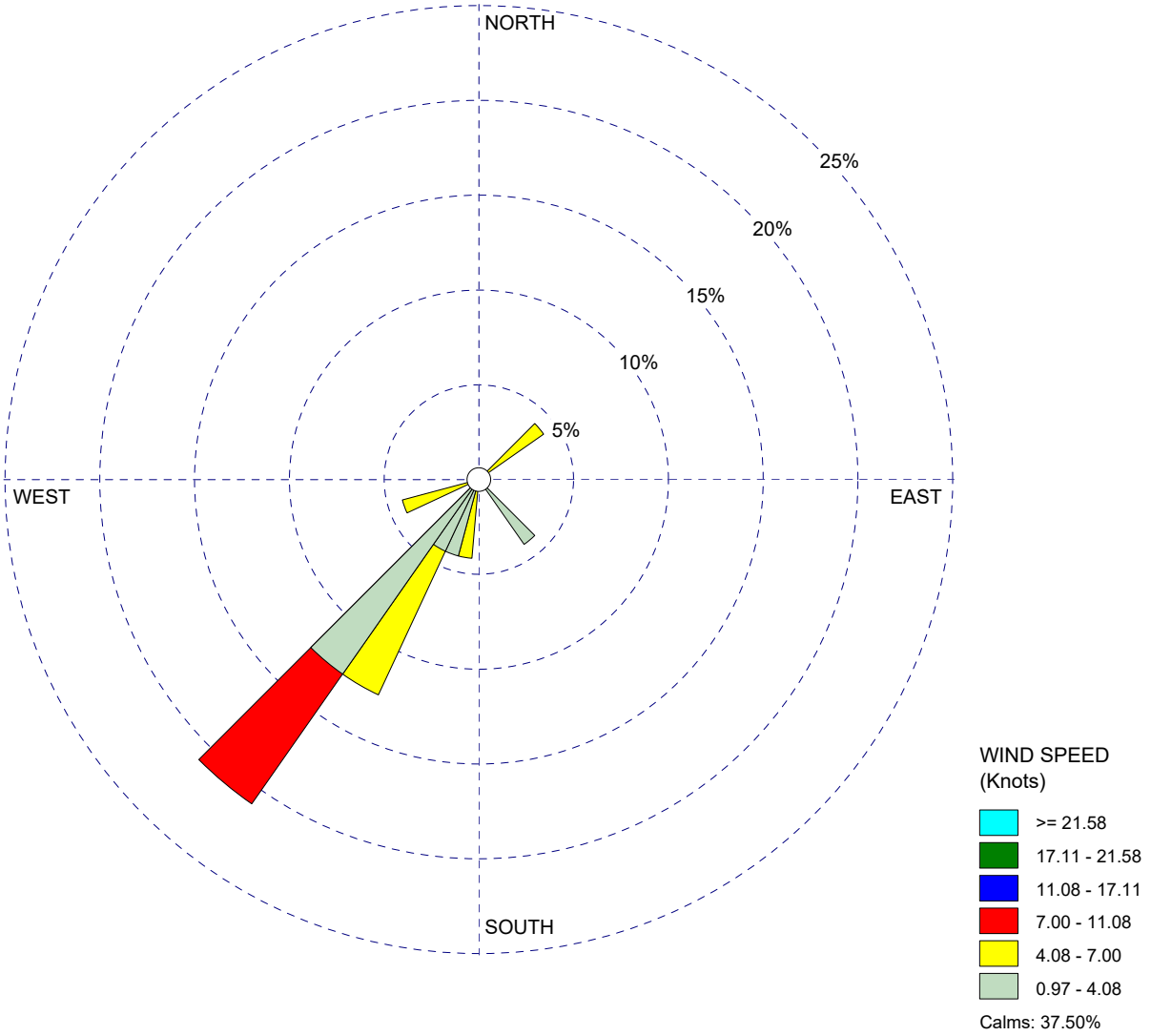
COMMENTS: Blowing FROM Day 1 (8am) - Day 2 (7am) Light and Variable Wind Hours: 10 Missing Data Hours: 0	DATA PERIOD: **Start Date: 8/16/2019 - 08:00** **End Date: 8/17/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Maxwell**	
	CALM WINDS: **41.67%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **3.08 Knots**	DATE: **8/18/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Massena/FAA Airport, NY (Station #94725)
August 18 (8am) to August 19 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



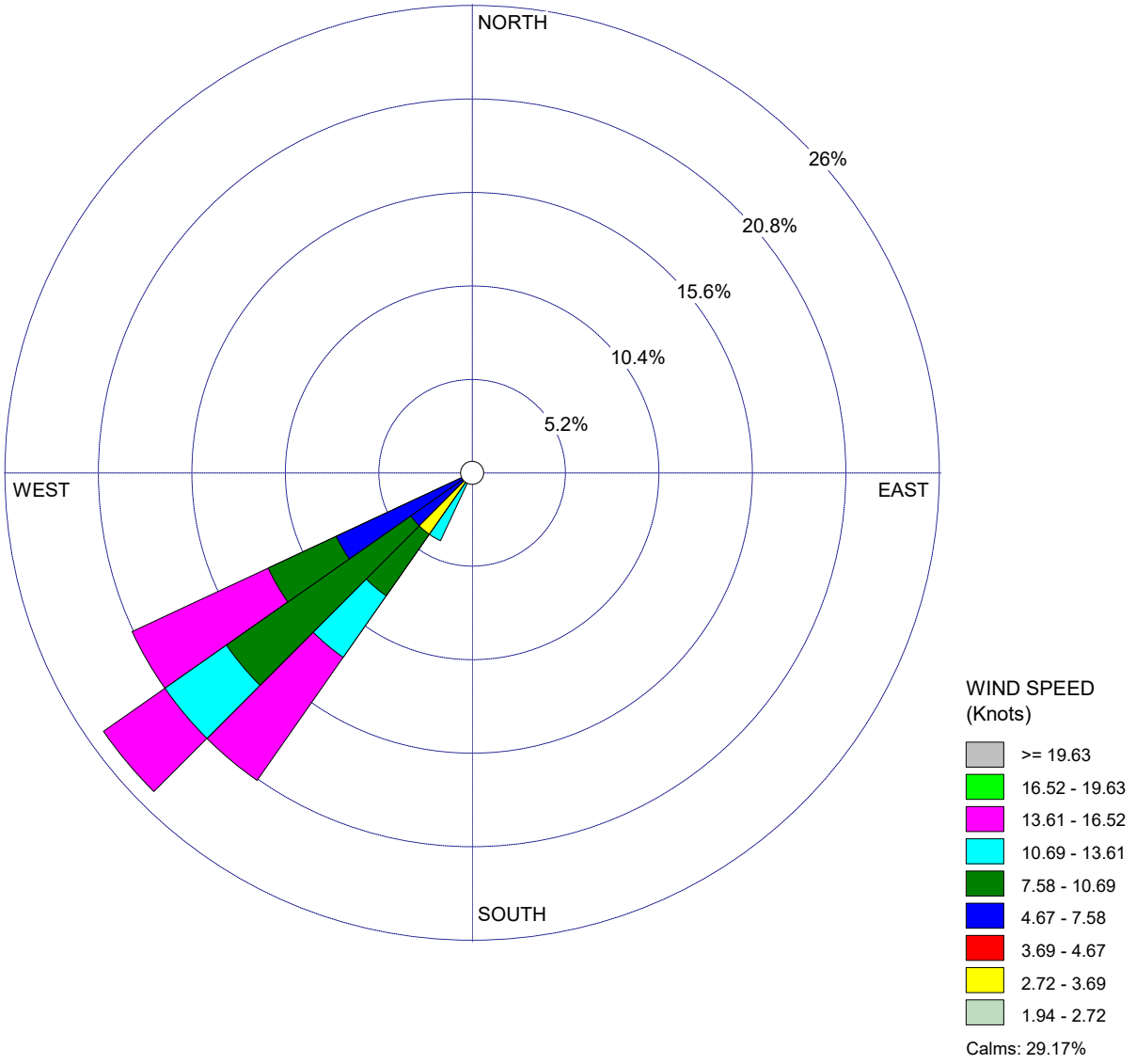
COMMENTS: Blowing FROM Day 1 (8am) - Day 2 (7am) Light and Variable Wind Hours: 11 Missing Data Hours: 0	DATA PERIOD: **Start Date: 8/18/2019 - 08:00** **End Date: 8/19/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Maxwell**	
	CALM WINDS: **37.50%**	TOTAL COUNT: **22 hrs.**	
	AVG. WIND SPEED: **2.91 Knots**	DATE: **8/19/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 19 (8am) to August 20 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



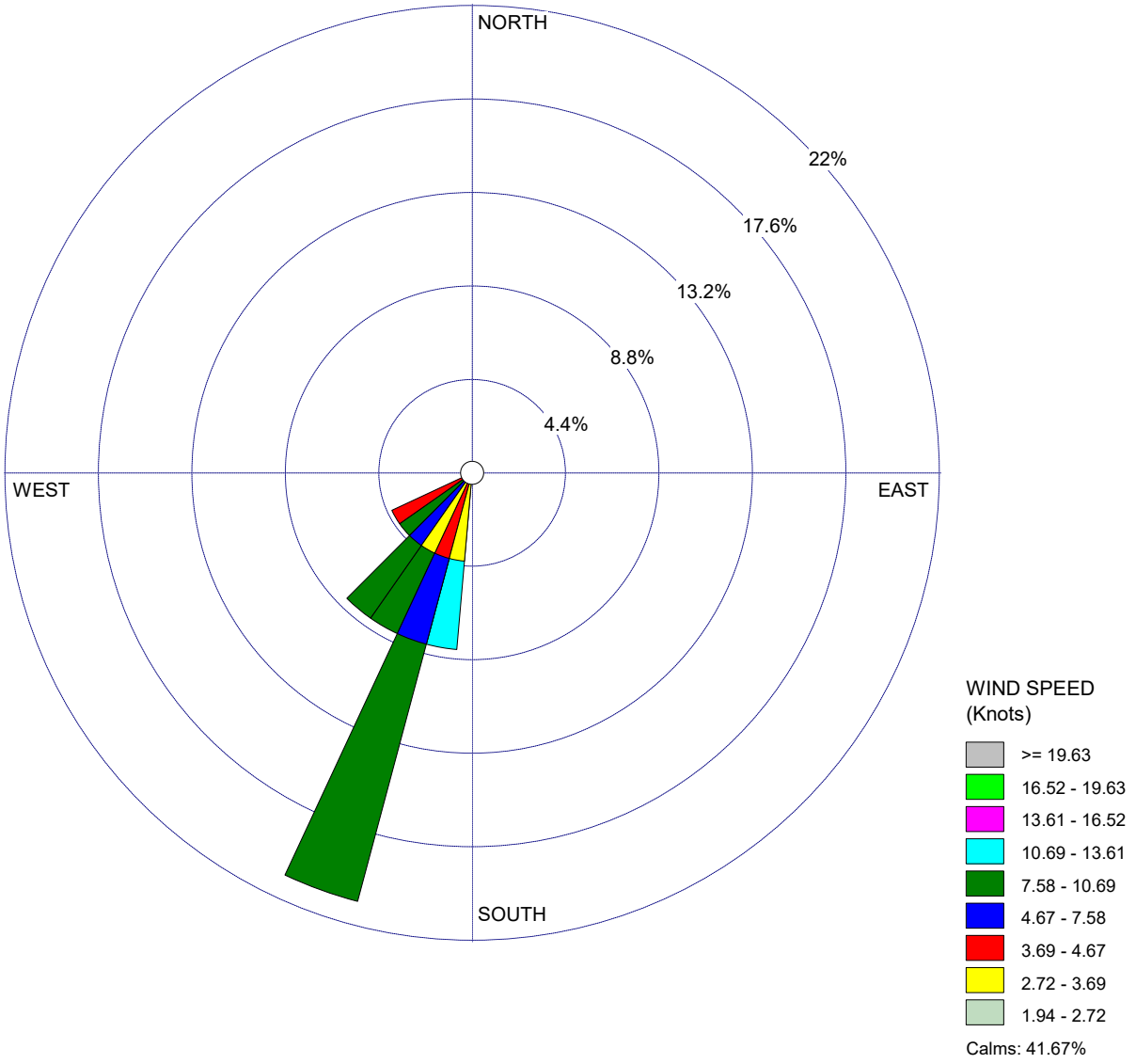
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 7 Missing Data Hours: 0	**Start Date: 8/19/2019 - 08:00** **End Date: 8/20/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **29.17%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **7.46 Knots**	DATE: **8/20/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 20 (8am) to August 21 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



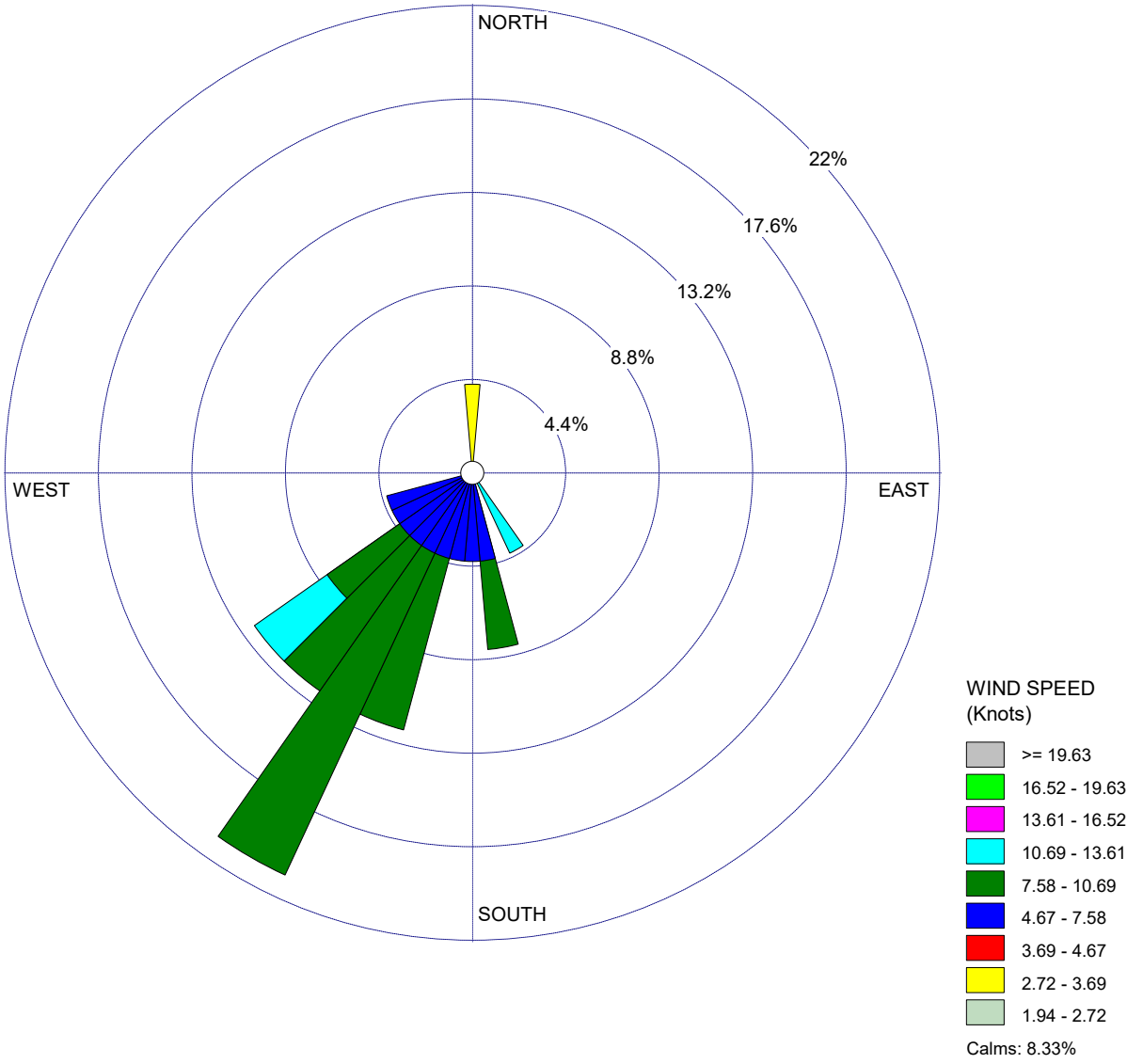
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 11 Missing Data Hours: 0	**Start Date: 8/20/2019 - 08:00** **End Date: 8/21/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **41.67%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **3.83 Knots**	DATE: **8/21/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 21 (8am) to August 22 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



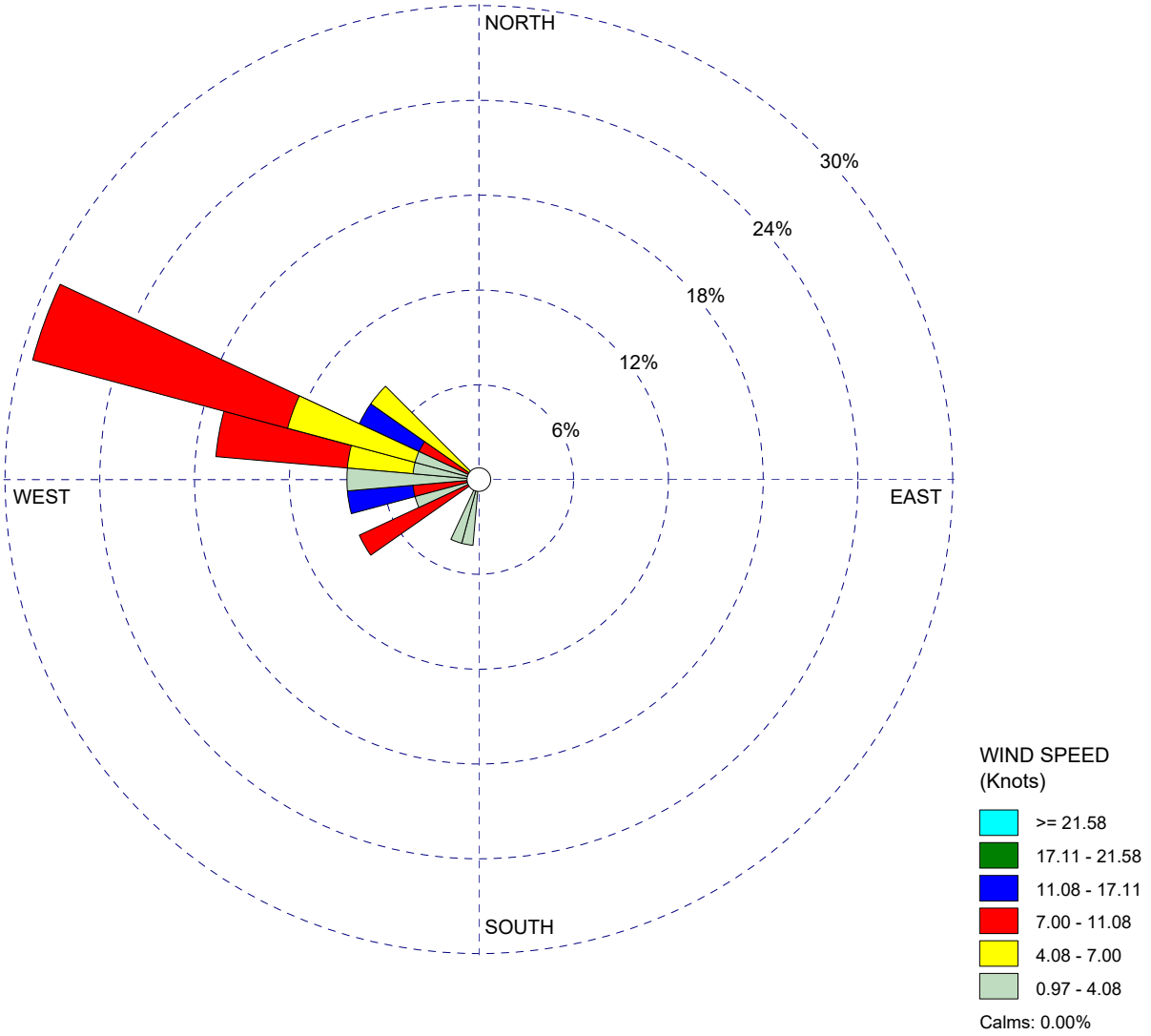
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 2 Missing Data Hours: 0	DATA PERIOD: **Start Date: 8/21/2019 - 08:00** **End Date: 8/22/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **8.33%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **6.83 Knots**	DATE: **8/22/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Massena/FAA Airport, NY (Station #94725)
August 22 (8am) to August 23 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



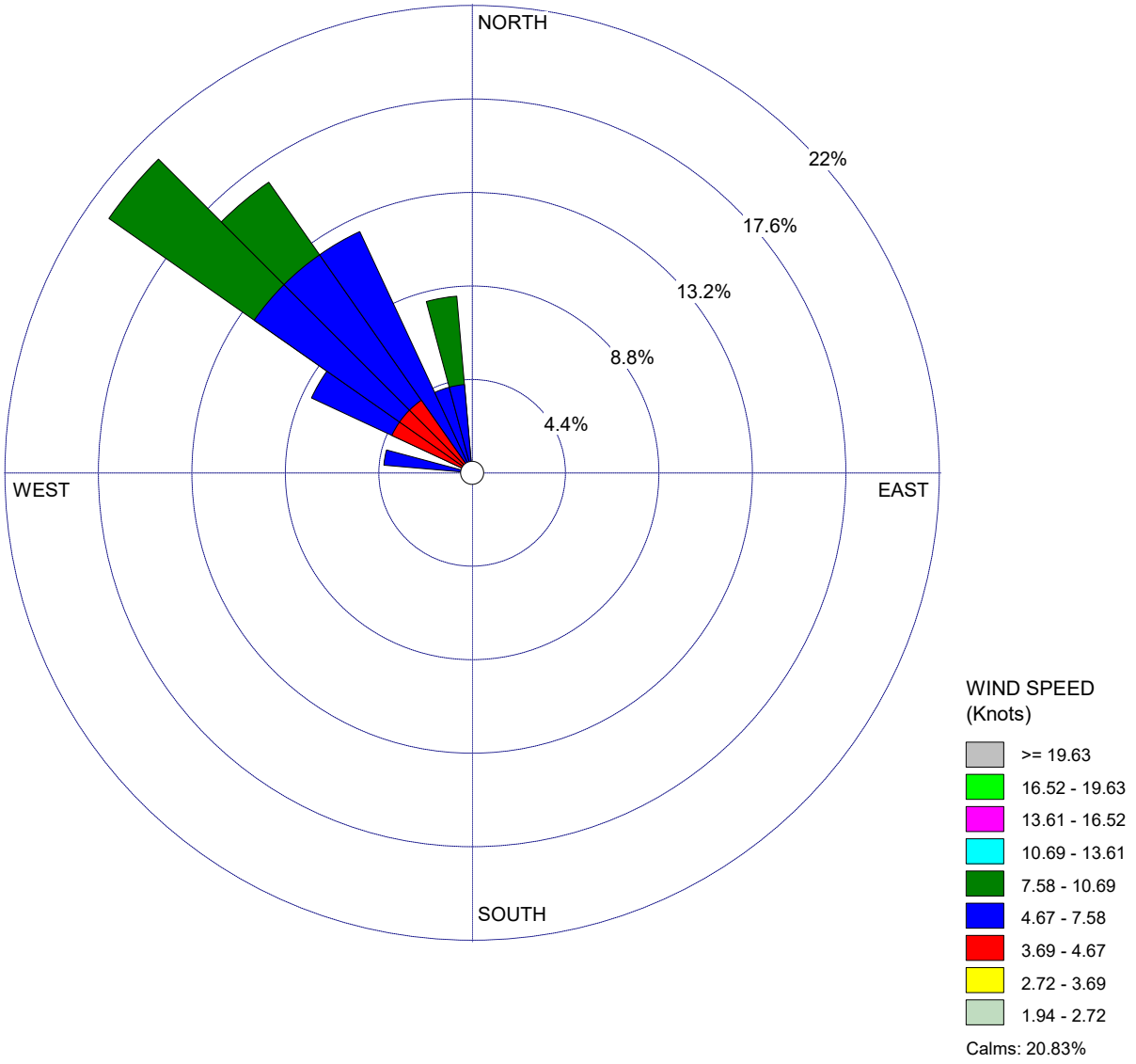
COMMENTS: Blowing FROM Day 1 (8am) - Day 2 (7am) Light and Variable Wind Hours: 0 Missing Data Hours: 0	DATA PERIOD: **Start Date: 8/22/2019 - 08:00** **End Date: 8/23/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Maxwell**	
	CALM WINDS: **0.00%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **6.54 Knots**	DATE: **8/23/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 23 (8am) to August 24 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



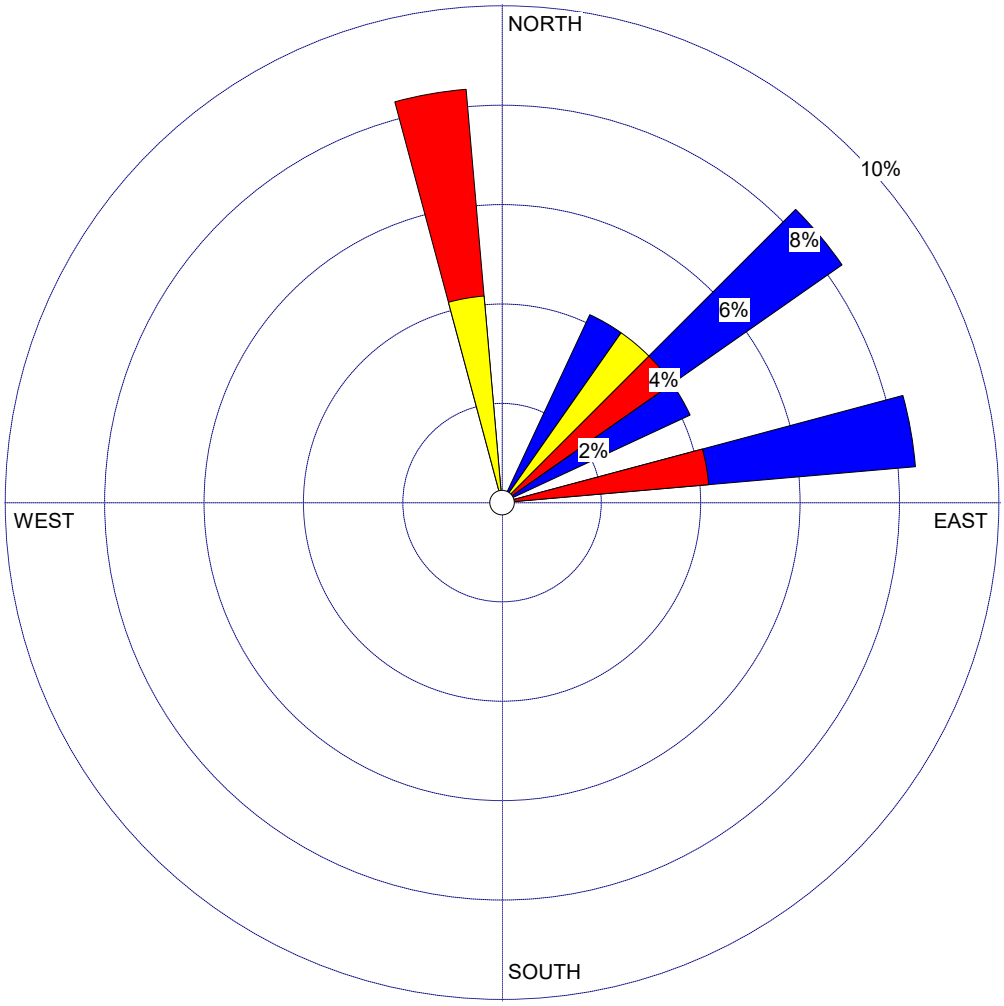
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 6 Missing Data Hours: 0	DATA PERIOD: **Start Date: 8/23/2019 - 08:00** **End Date: 8/24/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **20.83%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **4.96 Knots**	DATE: **8/24/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 24 (8am) to August 25 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(Knots)

- >= 19.63
- 16.52 - 19.63
- 13.61 - 16.52
- 10.69 - 13.61
- 7.58 - 10.69
- 4.67 - 7.58
- 3.69 - 4.67
- 2.72 - 3.69
- 1.94 - 2.72

Calms: 50.00%

COMMENTS:

Blowing from

Day 1 (8a.m.) - Day 2 7(a.m.)

Light and Variable Wind Hours: 15

Missing Data Hours: 0

DATA PERIOD:

Start Date: 8/24/2019 - 08:00
End Date: 8/25/2019 - 07:00

CALM WINDS:

50.00%

AVG. WIND SPEED:

2.10 Knots

COMPANY NAME:

Arcadis

MODELER:

Joshua Miller

TOTAL COUNT:

21 hrs.

DATE:

8/25/2019

PROJECT NO.:

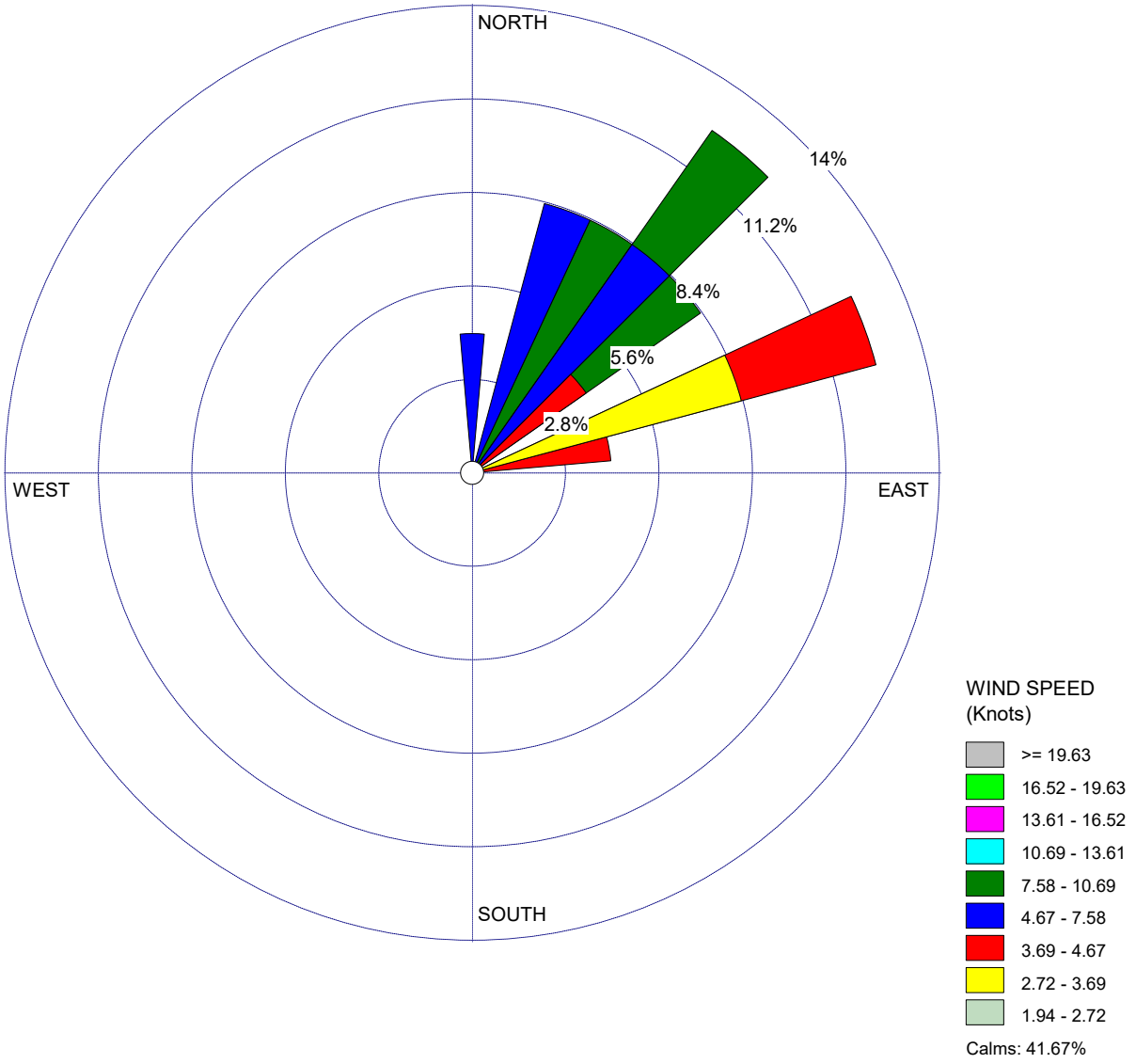
B0010886.2011

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 25 (8am) to August 26 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



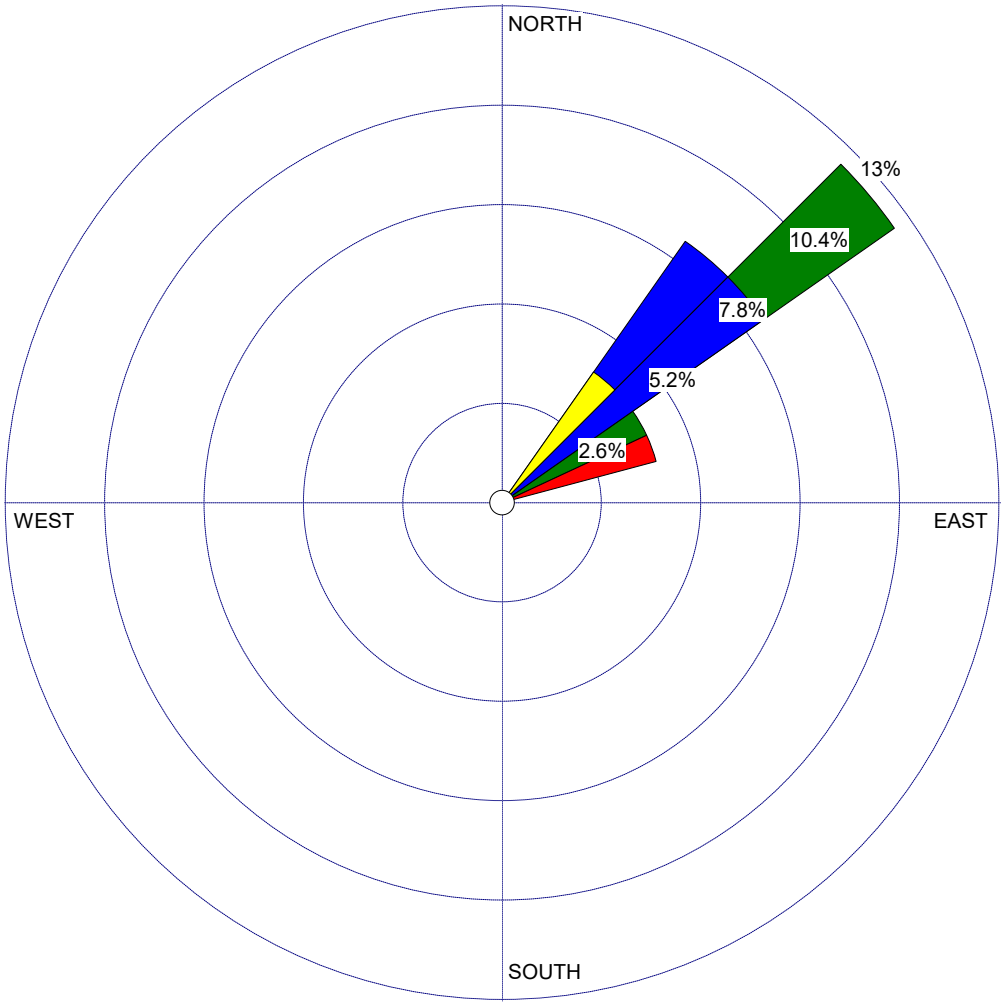
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 10 Missing Data Hours: 0	**Start Date: 8/25/2019 - 08:00** **End Date: 8/26/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **41.67%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **3.46 Knots**	DATE: **8/26/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 26 (8am) to August 27 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(Knots)

- >= 19.63
- 16.52 - 19.63
- 13.61 - 16.52
- 10.69 - 13.61
- 7.58 - 10.69
- 4.67 - 7.58
- 3.69 - 4.67
- 2.72 - 3.69
- 1.94 - 2.72

Calms: 62.50%

COMMENTS:

Blowing from

Day 1 (8a.m.) - Day 2 7(a.m.)

Light and Variable Wind Hours: 15

Missing Data Hours: 2

DATA PERIOD:

Start Date: 8/26/2019 - 08:00
End Date: 8/27/2019 - 07:00

CALM WINDS:

62.50%

AVG. WIND SPEED:

2.18 Knots

COMPANY NAME:

Arcadis

MODELER:

Joshua Miller

TOTAL COUNT:

22 hrs.

DATE:

8/27/2019

PROJECT NO.:

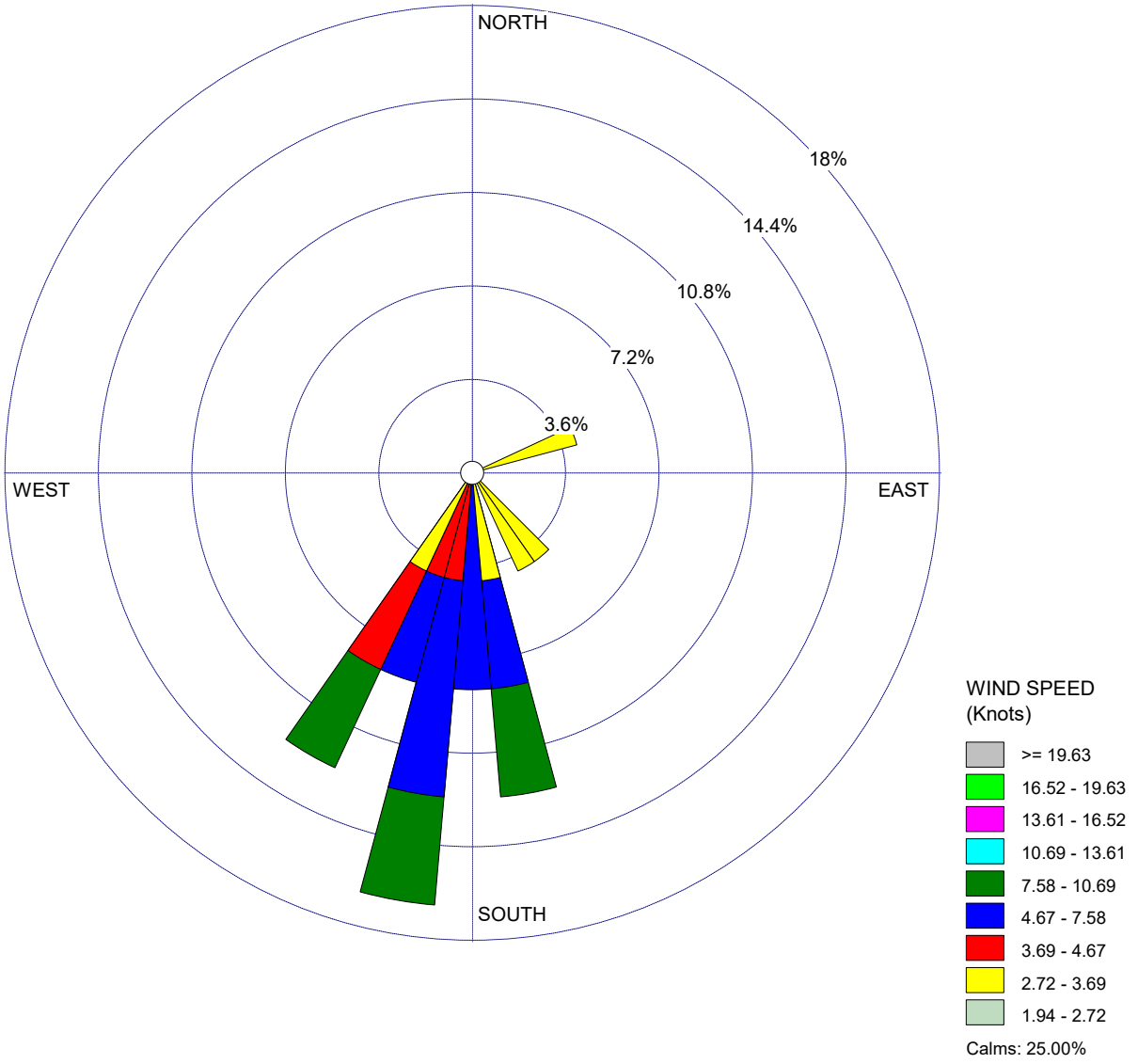
B0010886.2011

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 27 (8am) to August 28 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



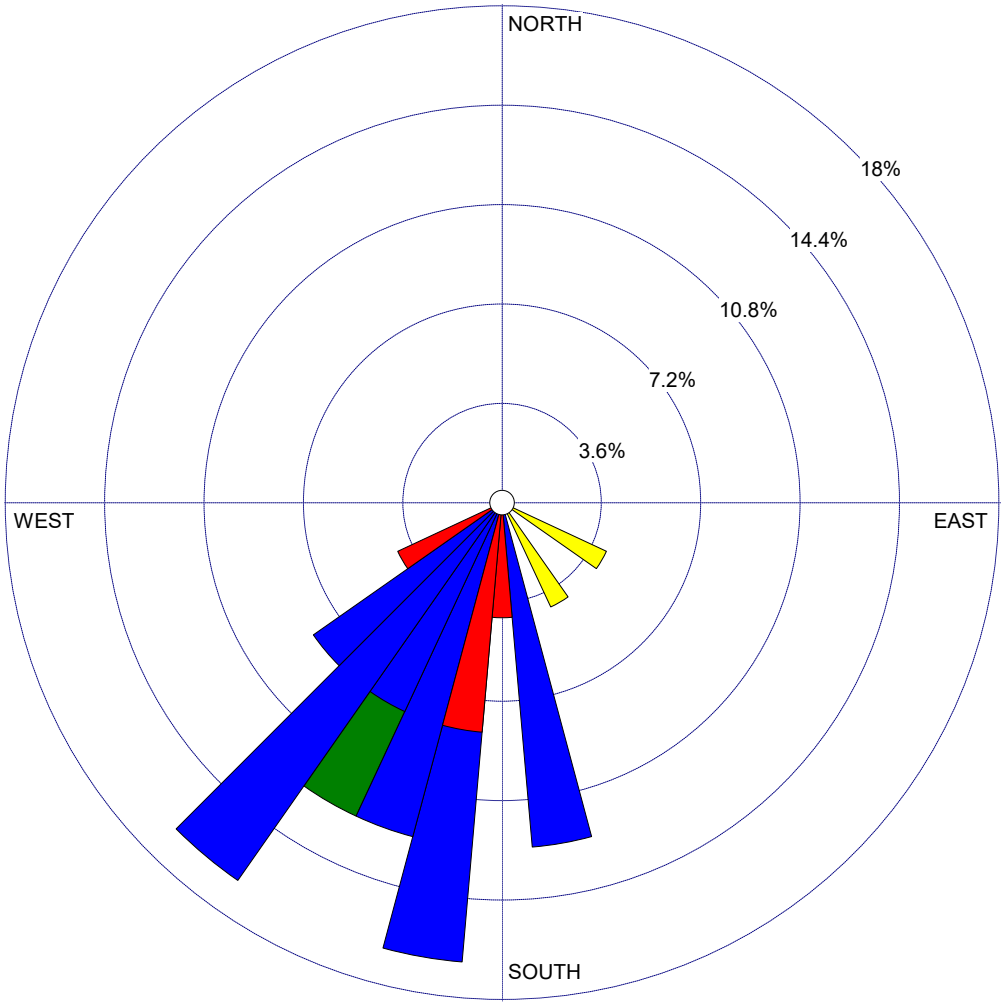
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 7 Missing Data Hours: 0	**Start Date: 8/27/2019 - 08:00** **End Date: 8/28/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **25.00%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **3.74 Knots**	DATE: **8/28/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 28 (8am) to August 29 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(Knots)

- >= 19.63
- 16.52 - 19.63
- 13.61 - 16.52
- 10.69 - 13.61
- 7.58 - 10.69
- 4.67 - 7.58
- 3.69 - 4.67
- 2.72 - 3.69
- 1.94 - 2.72

Calms: 4.17%

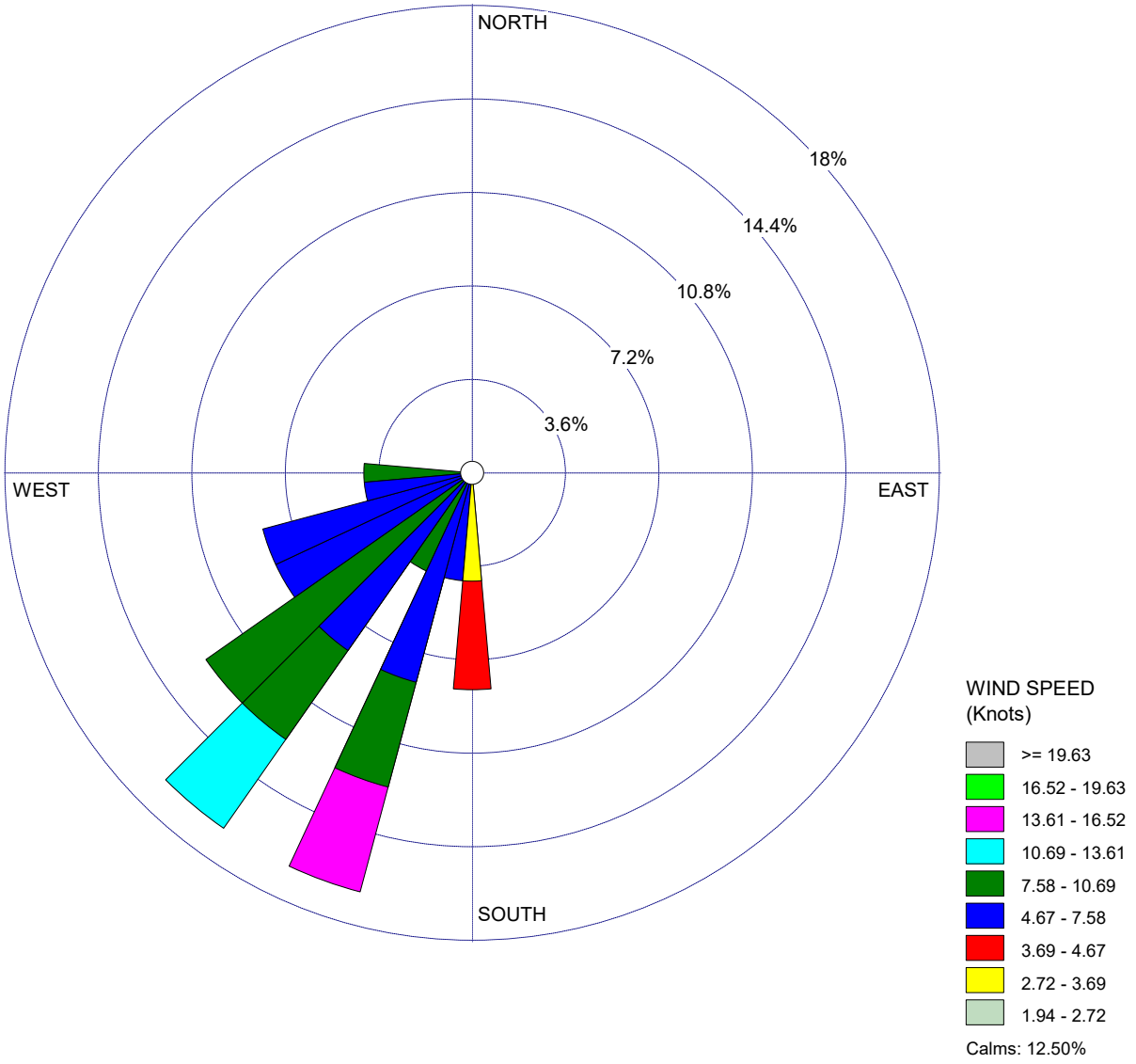
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 1 Missing Data Hours: 0	**Start Date: 8/28/2019 - 08:00** **End Date: 8/29/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **4.17%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **5.21 Knots**	DATE: **8/29/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 29 (8am) to August 30 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



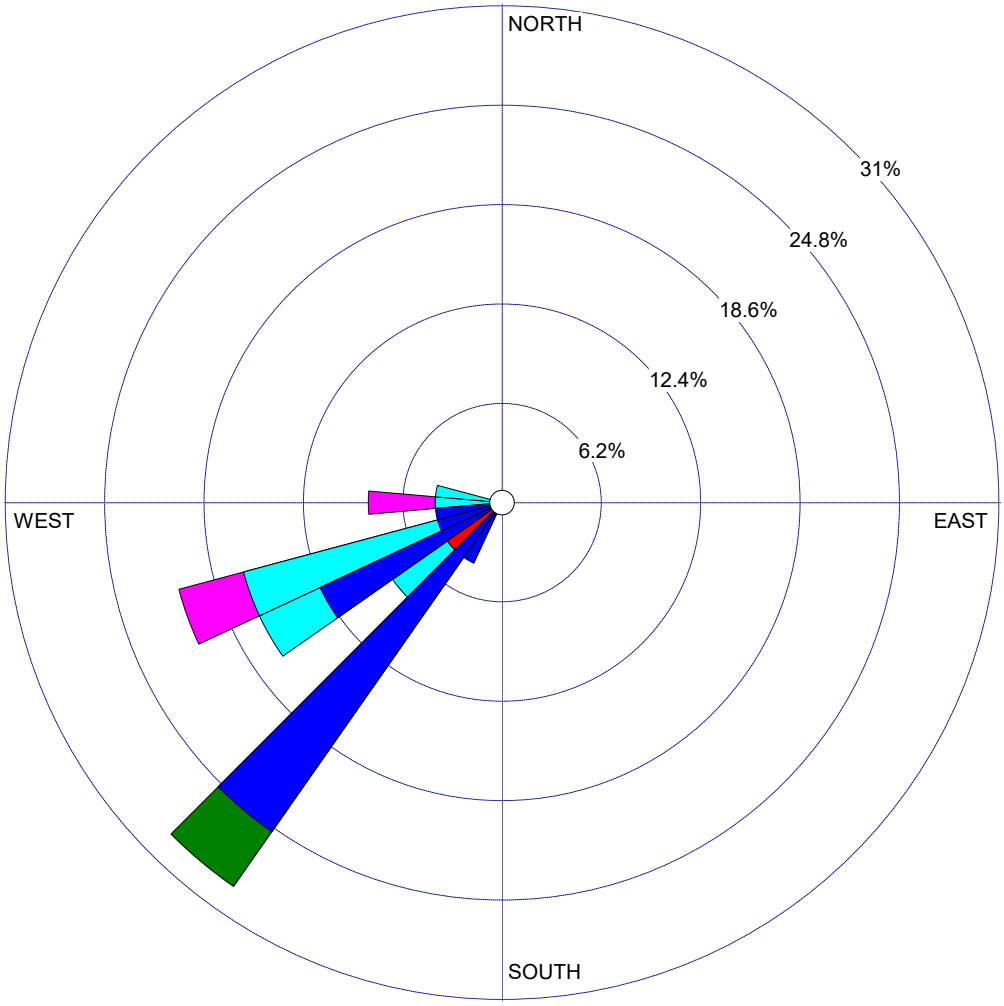
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 3 Missing Data Hours: 0	**Start Date: 8/29/2019 - 08:00** **End Date: 8/30/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **12.50%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **6.71 Knots**	DATE: **8/30/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
August 30 (8am) to August 31 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(Knots)

- >= 19.63
- 16.52 - 19.63
- 13.61 - 16.52
- 10.69 - 13.61
- 7.58 - 10.69
- 4.67 - 7.58
- 3.69 - 4.67
- 2.72 - 3.69
- 1.94 - 2.72

Calms: 0.00%

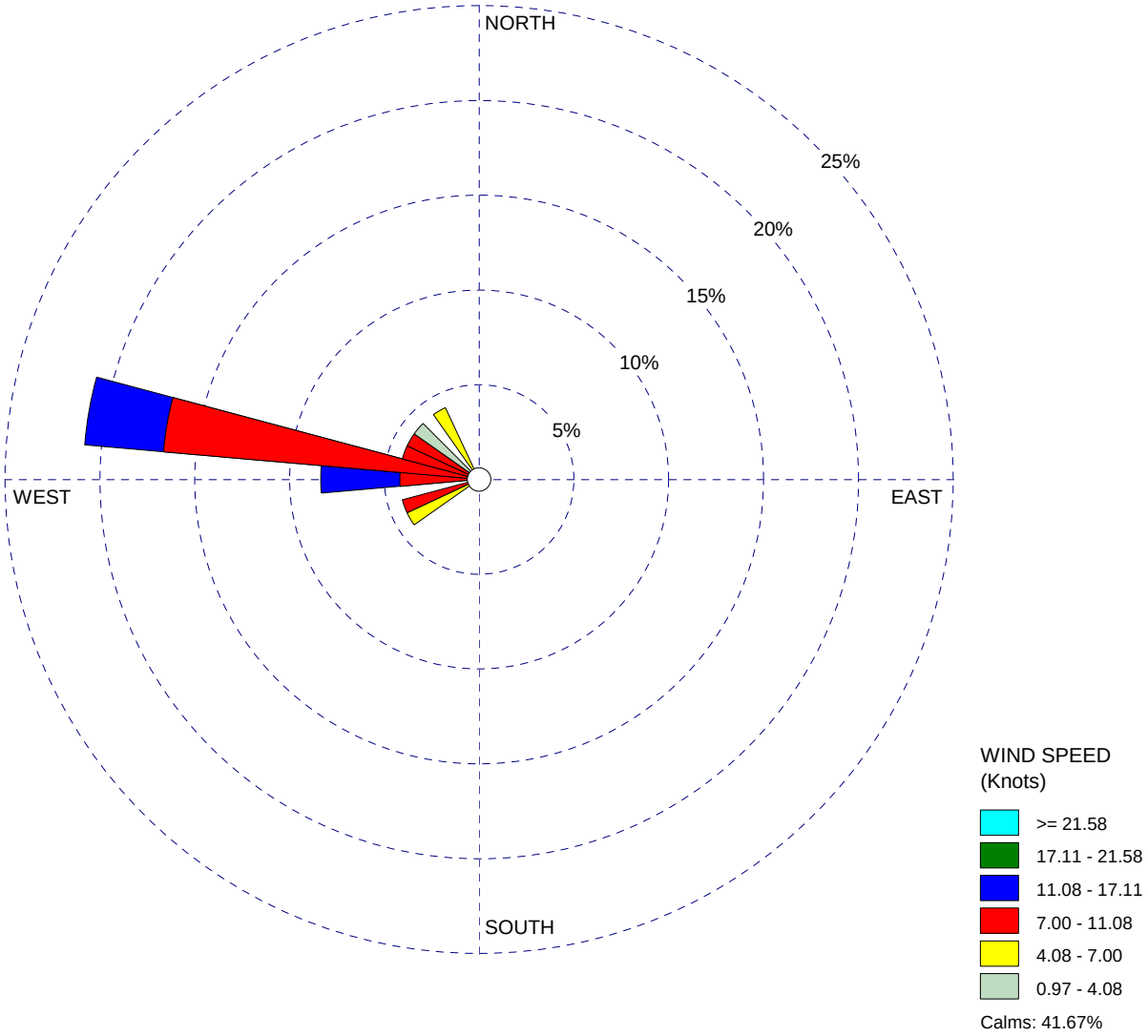
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 0 Missing Data Hours: 1	DATA PERIOD: **Start Date: 8/30/2019 - 08:00** **End Date: 8/31/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **0.00%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **8.57 Knots**	DATE: **8/31/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Massena/FAA Airport, NY (Station #94725)
August 31 (8am) to September 1 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



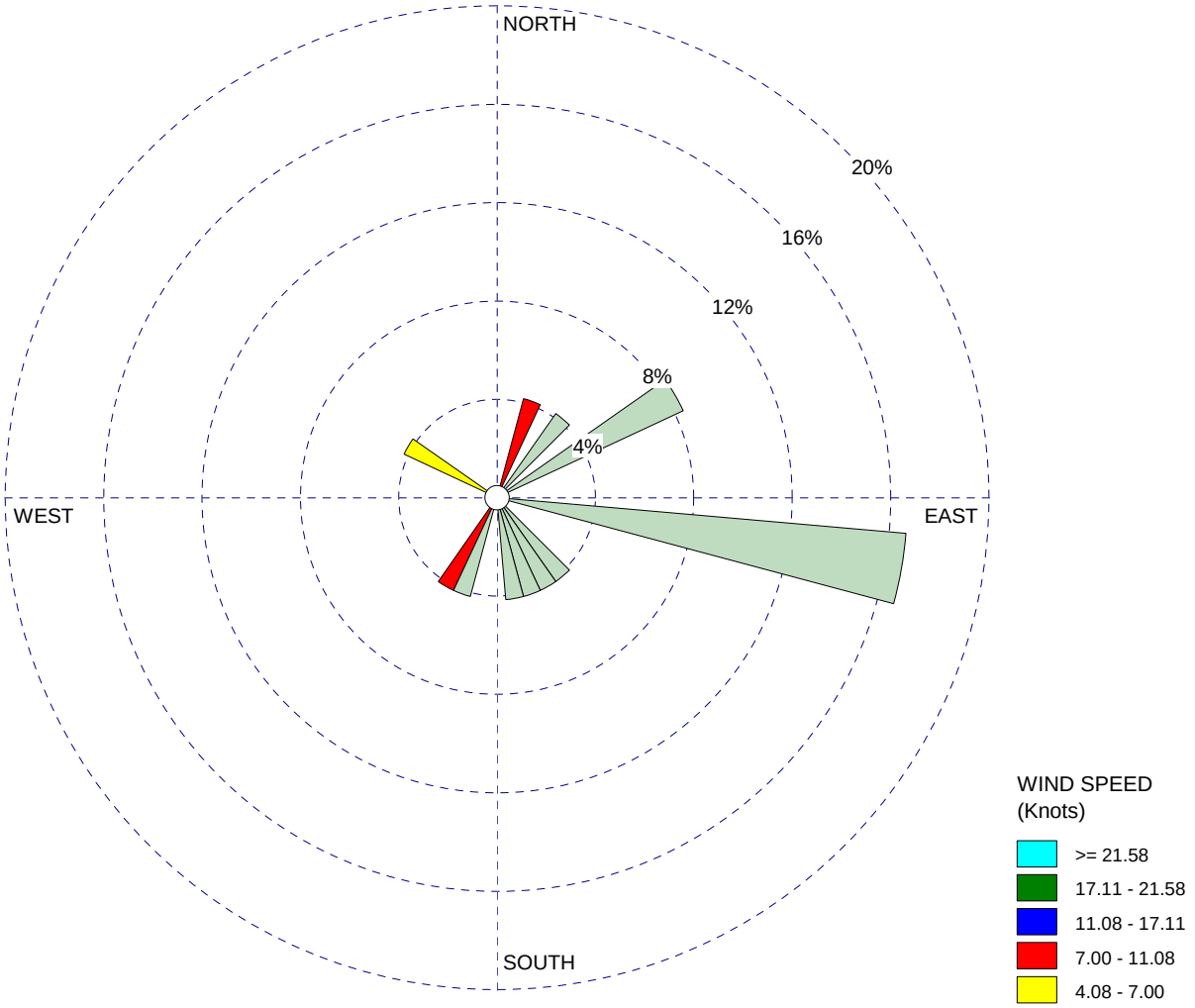
COMMENTS: Blowing FROM Day 1 (8am) - Day 2 (7am) Light and Variable Wind Hours: 10 Missing Data Hours: 1	DATA PERIOD: **Start Date: 8/31/2019 - 08:00** **End Date: 9/1/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Maxwell**	
	CALM WINDS: **41.67%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **4.48 Knots**	DATE: **9/1/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Massena/FAA Airport, NY (Station #94725)
September 1 (8am) to September 2 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



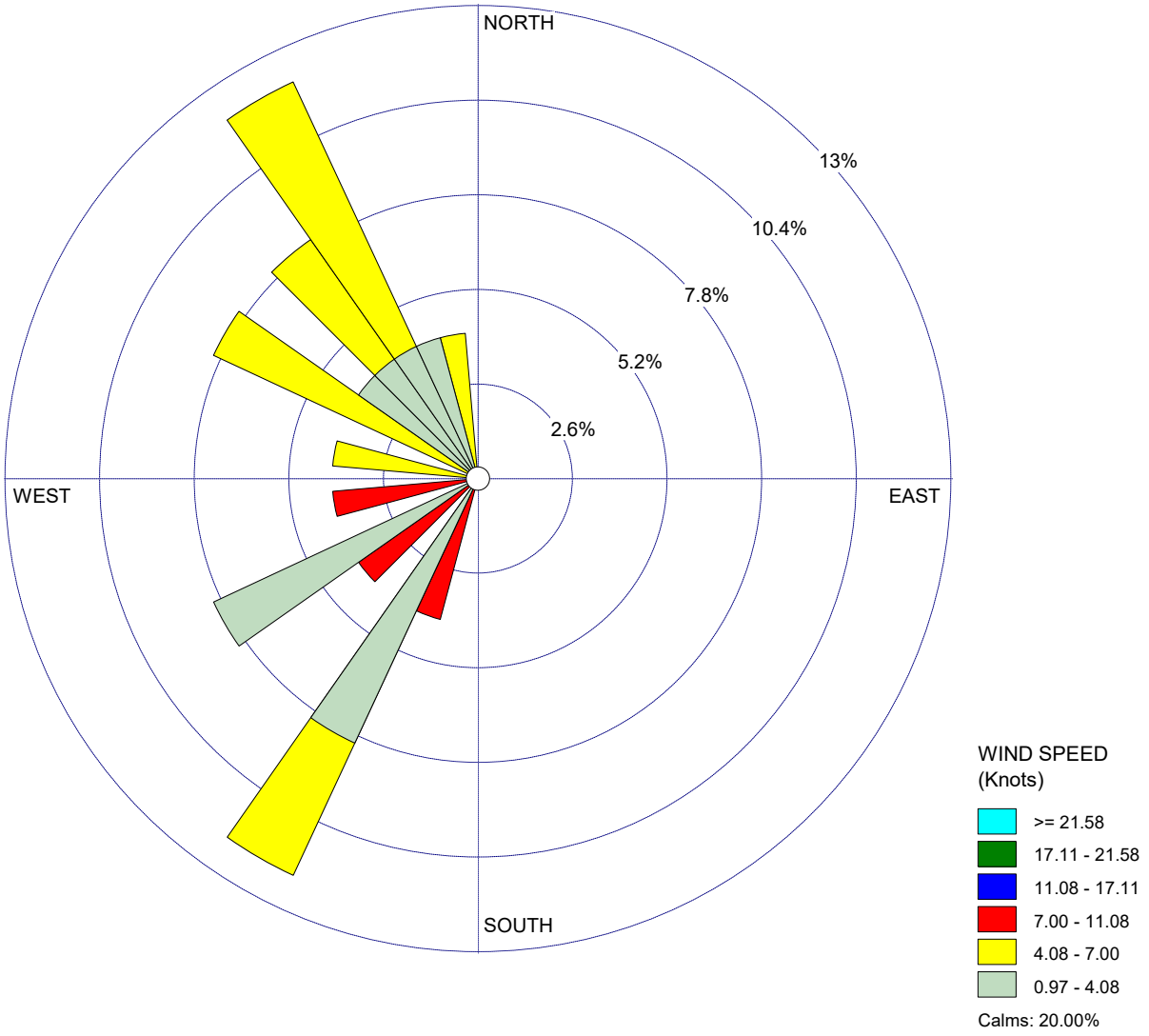
COMMENTS: Blowing FROM Day 1 (8am) - Day 2 (7am) Light and Variable Wind Hours: 9 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/1/2019 - 08:00** **End Date: 9/2/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Maxwell**	
	CALM WINDS: **33.33%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **2.70 Knots**	DATE: **9/2/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Massena/FAA Airport, NY (Station #94725)
September 2 (8am) to September 3 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



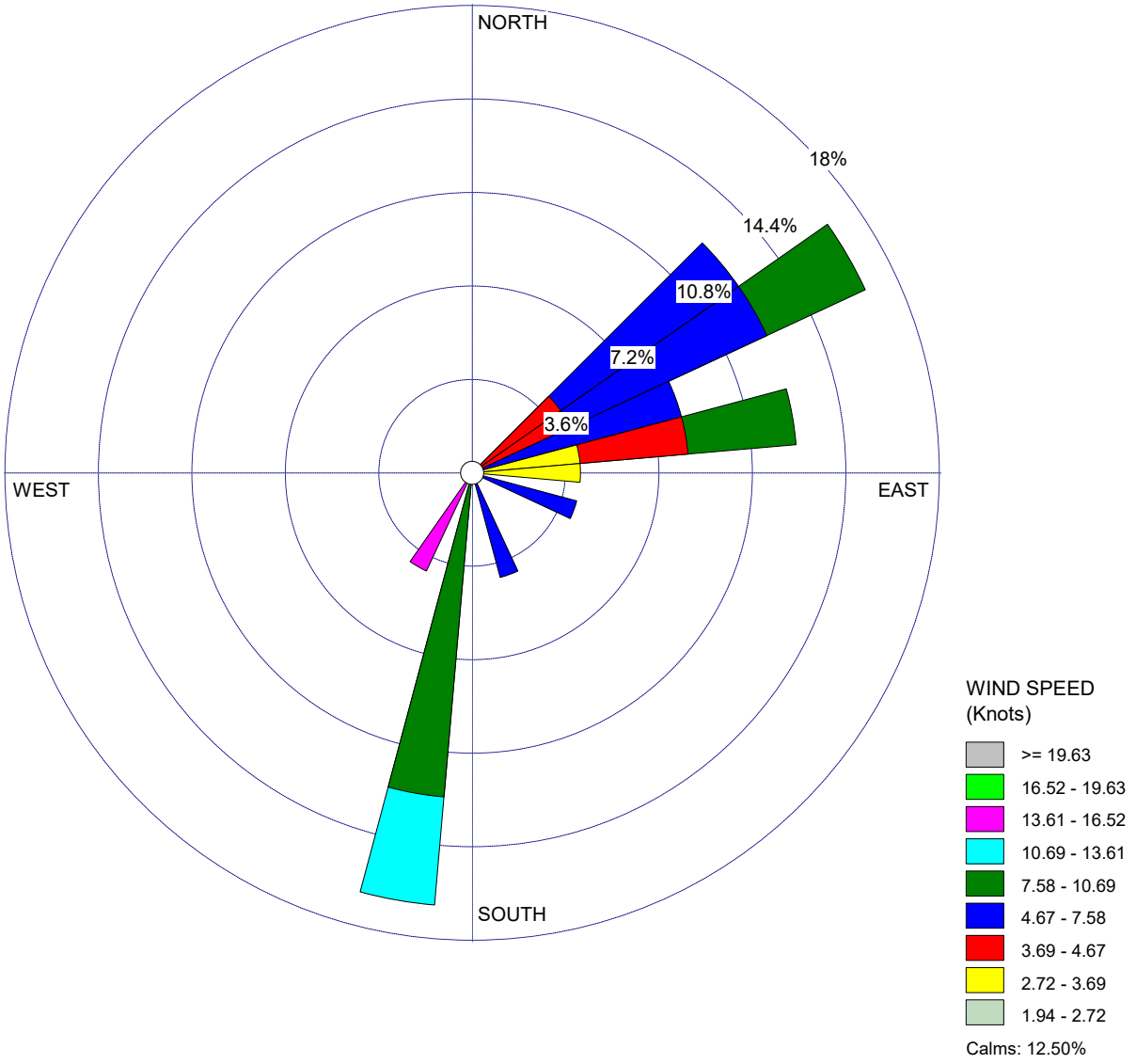
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing FROM Day 1 (8am) - Day 2 (7am) Light and Variable Wind Hours: 5 Missing Data Hours: 0	**Start Date: 9/2/2019 - 08:00** **End Date: 9/3/2019 - 07:00**	**Arcadis**	
		MODELER: **Maxwell**	
	CALM WINDS: **20.00%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **4.04 Knots**	DATE: **9/3/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 3 (8am) to September 4 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



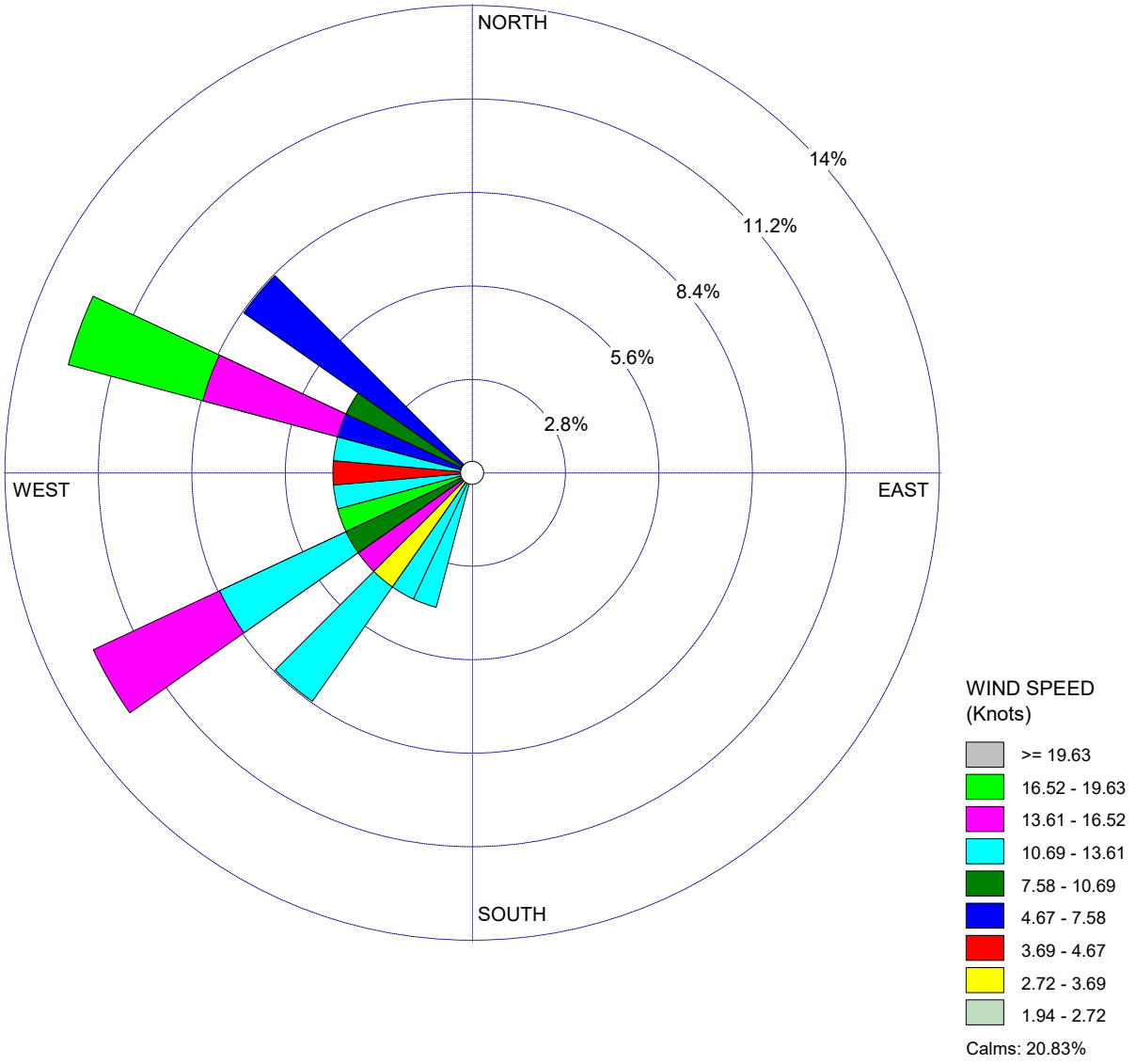
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 4 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/3/2019 - 08:00** **End Date: 9/4/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **12.50%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **5.65 Knots**	DATE: **9/4/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 4 (8am) to September 5 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



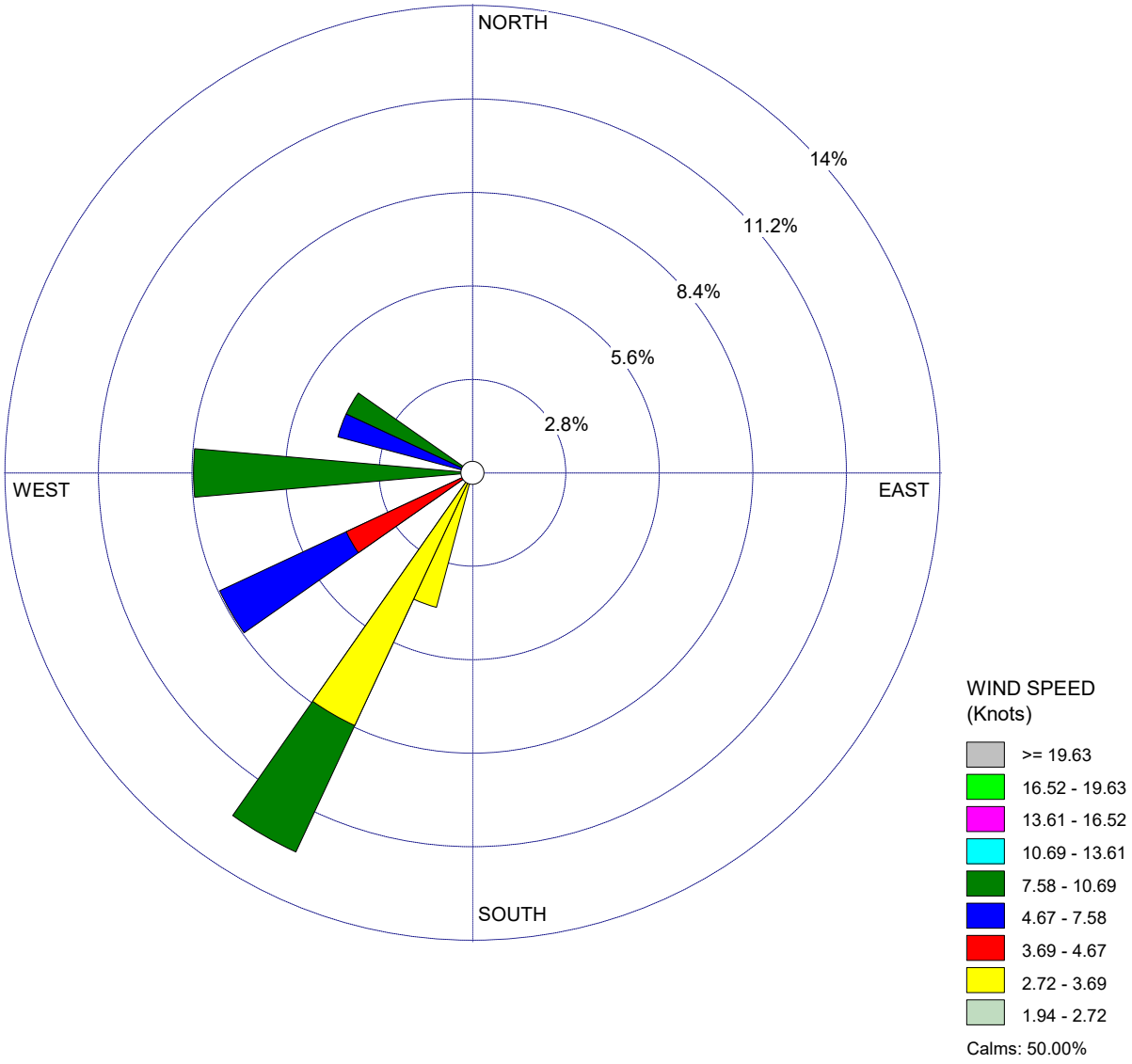
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 6 Missing Data Hours: 0	**Start Date: 9/4/2019 - 08:00** **End Date: 9/5/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **20.83%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **8.39 Knots**	DATE: **9/5/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 5 (8am) to September 6 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



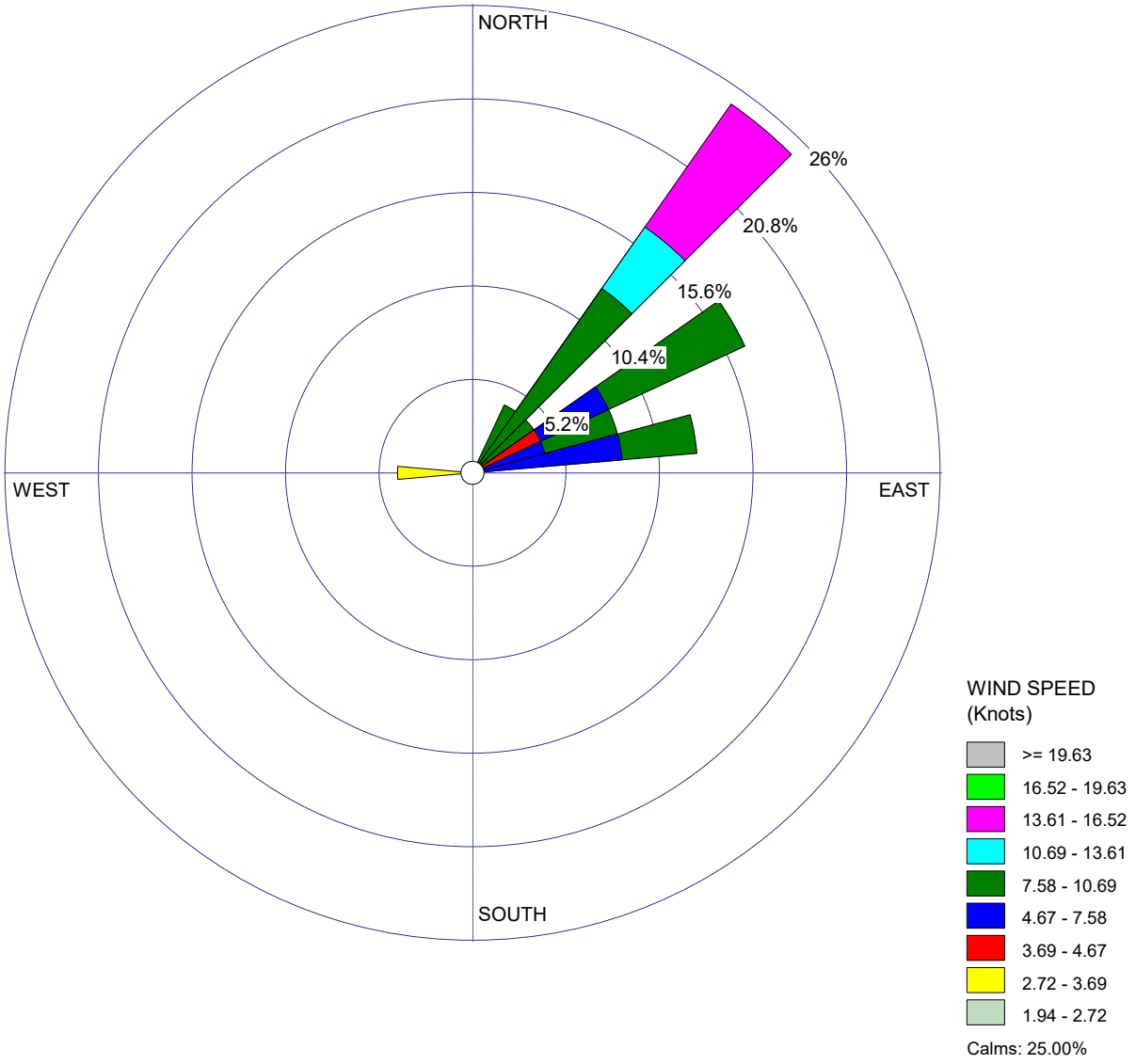
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 14 Missing Data Hours: 0	**Start Date: 9/5/2019 - 08:00** **End Date: 9/6/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **50.00%**	TOTAL COUNT: **22 hrs.**	
	AVG. WIND SPEED: **2.55 Knots**	DATE: **9/6/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 6 (8am) to September 7 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



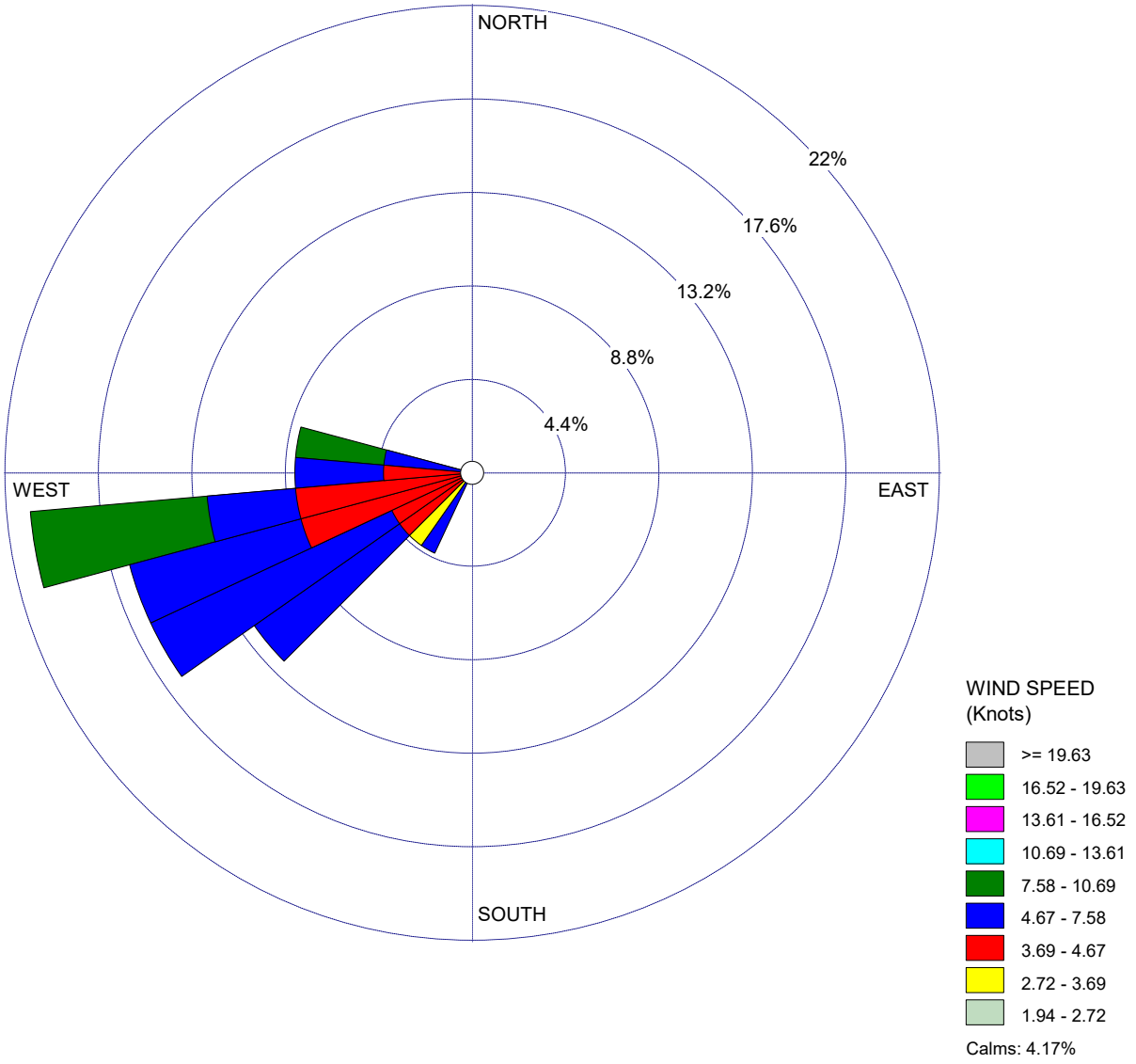
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 6 Missing Data Hours: 0	**Start Date: 9/6/2019 - 08:00** **End Date: 9/7/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **25.00%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **6.58 Knots**	DATE: **9/7/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 7 (8am) to September 8 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



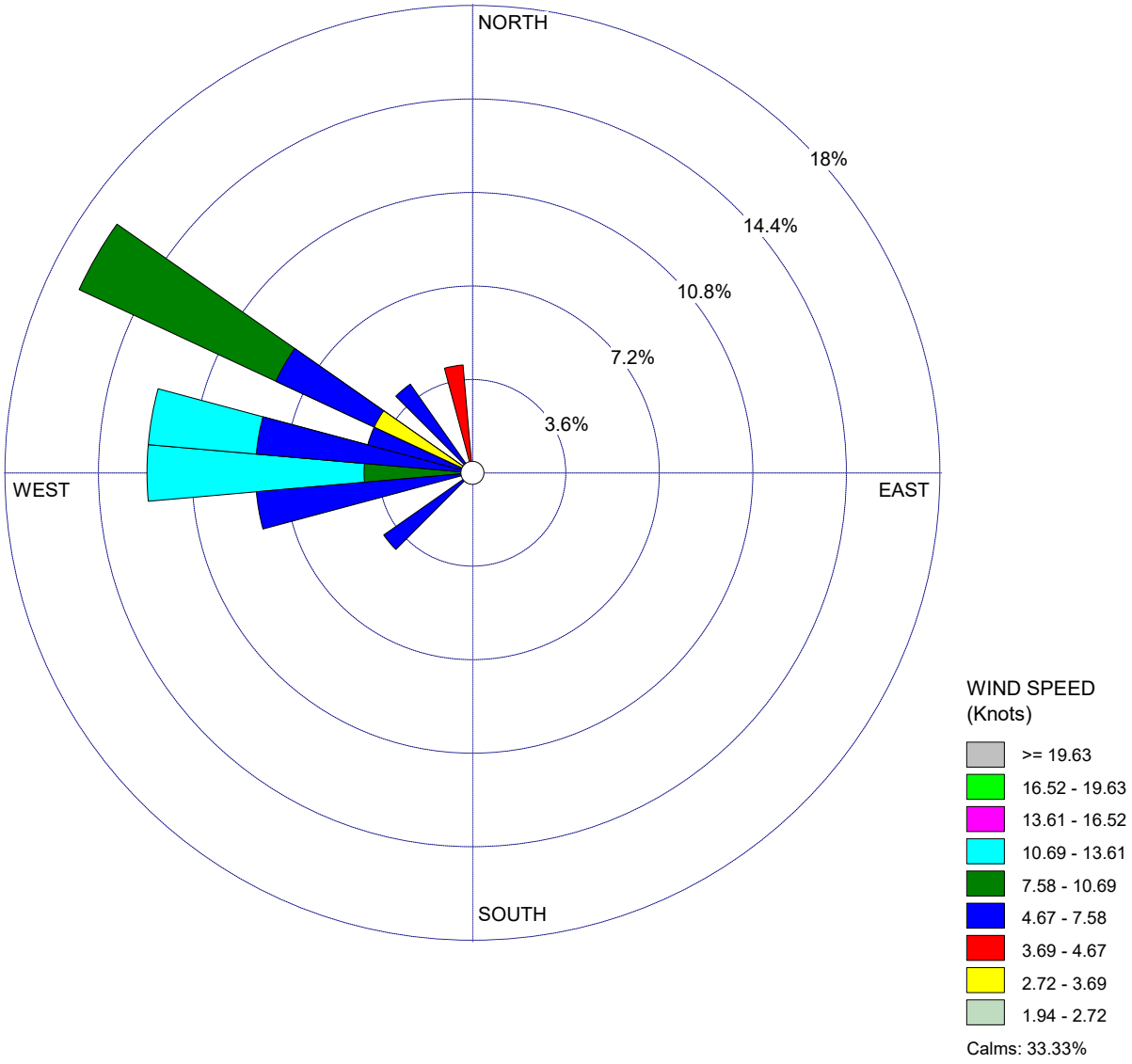
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 2 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/7/2019 - 08:00** **End Date: 9/8/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **4.17%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **5.39 Knots**	DATE: **9/8/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 8 (8am) to September 9 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



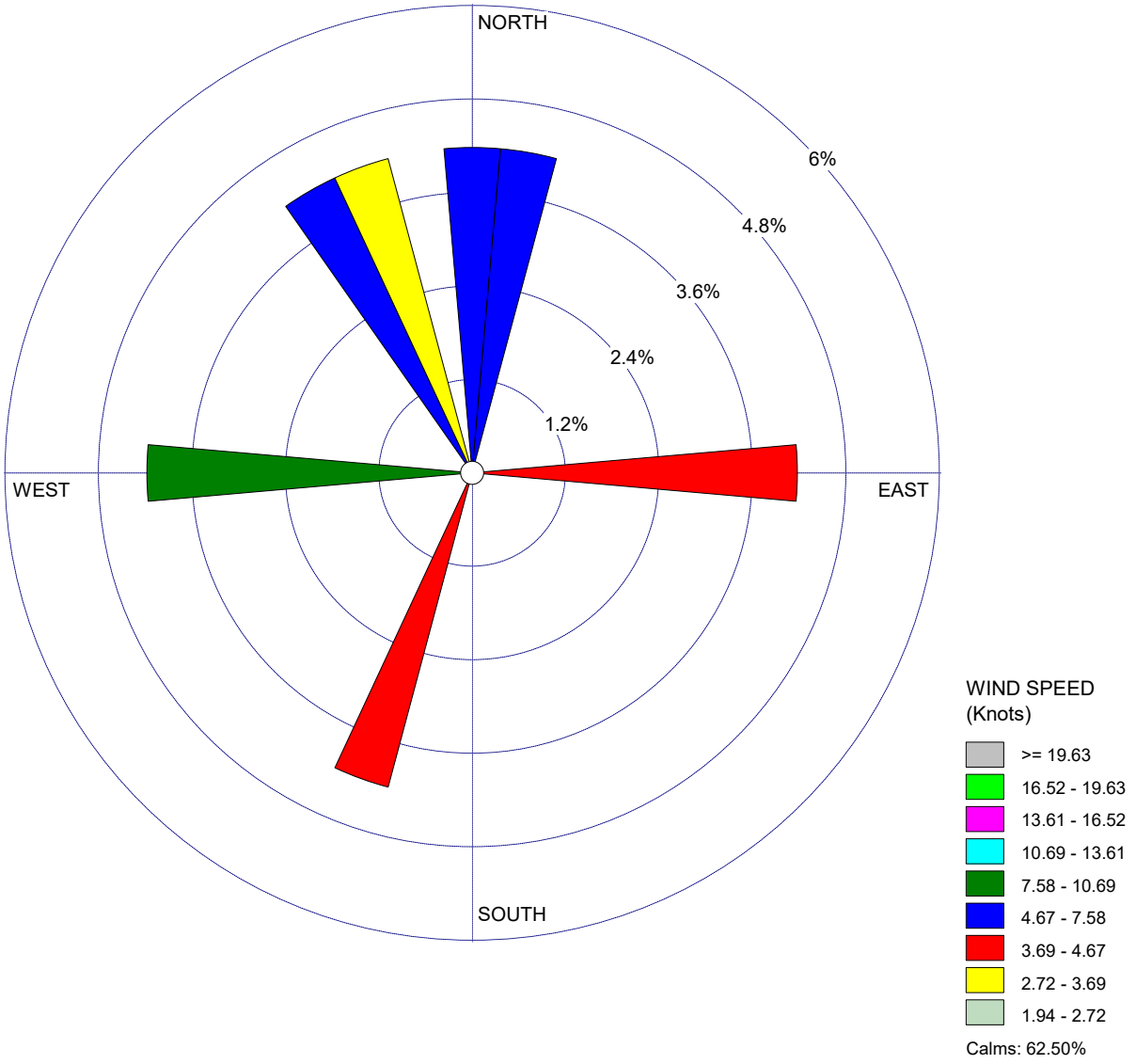
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 8 Missing Data Hours: 0	**Start Date: 9/8/2019 - 08:00** **End Date: 9/9/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **33.33%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **4.79 Knots**	DATE: **9/9/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 9 (8am) to September 10 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



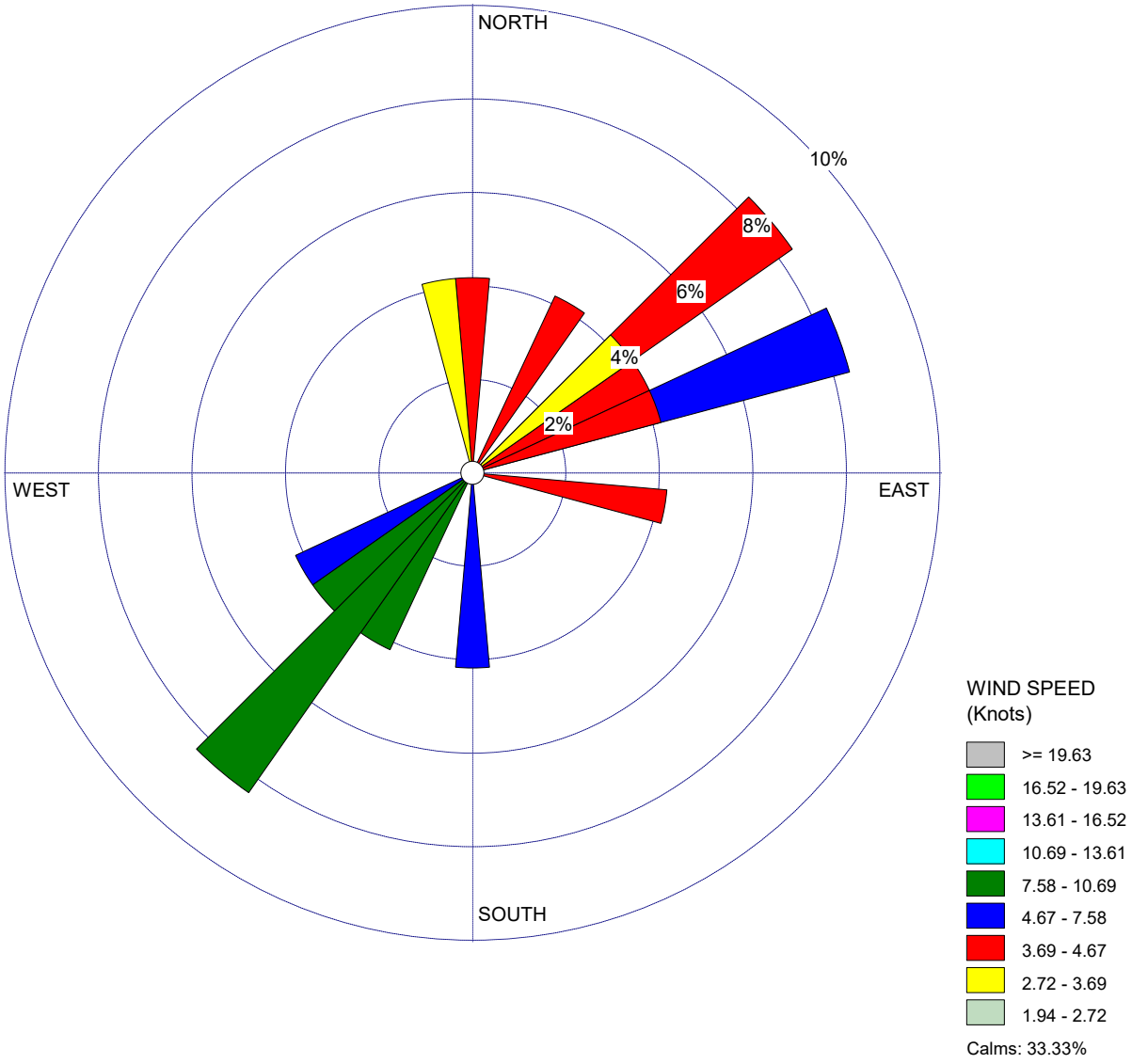
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 17 Missing Data Hours: 0	**Start Date: 9/9/2019 - 08:00** **End Date: 9/10/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **62.50%**	TOTAL COUNT: **22 hrs.**	
	AVG. WIND SPEED: **1.68 Knots**	DATE: **9/10/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 10 (8am) to September 11 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



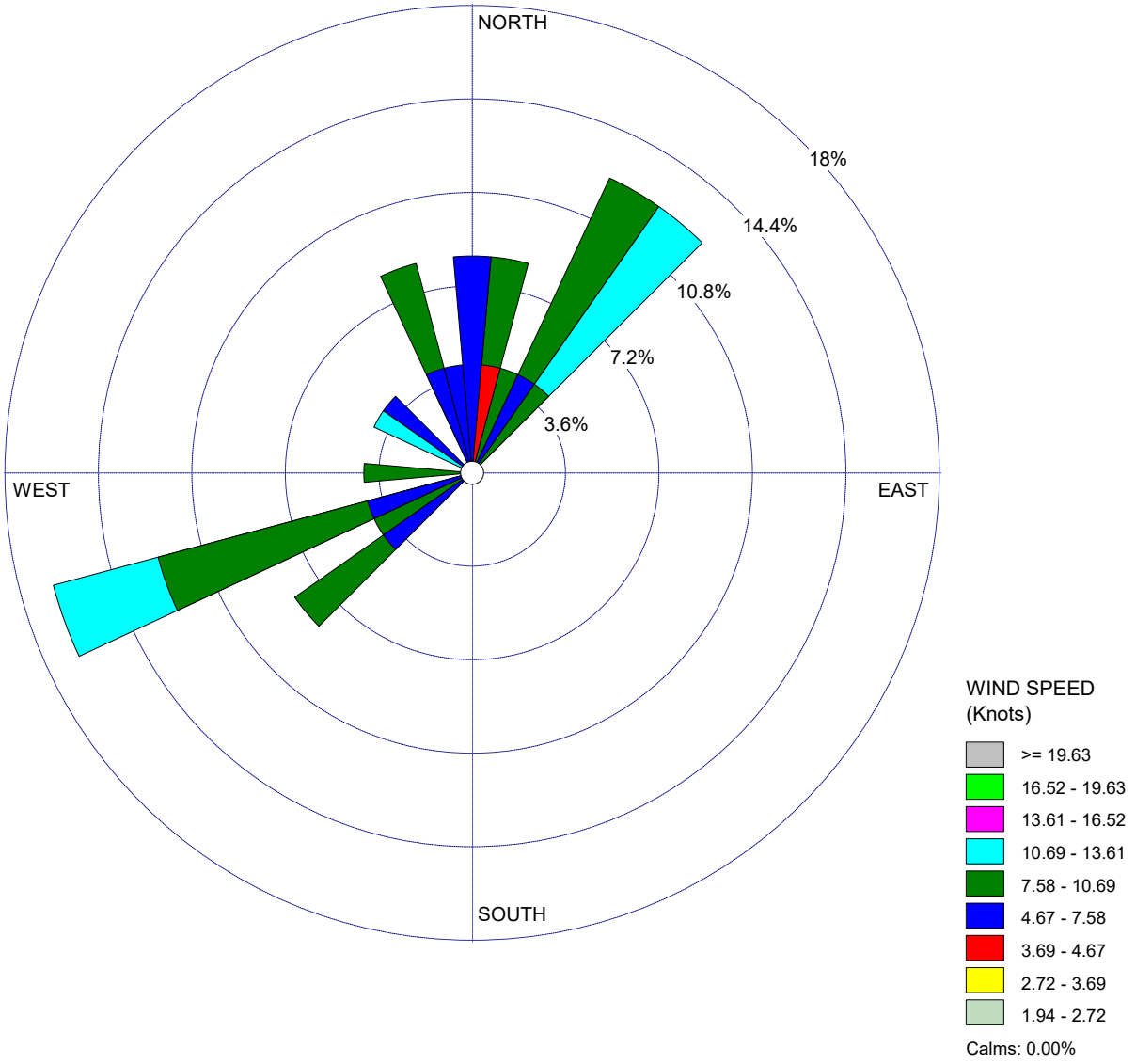
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 9 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/10/2019 - 08:00** **End Date: 9/11/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **33.33%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **3.57 Knots**	DATE: **9/11/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 11 (8am) to September 12 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



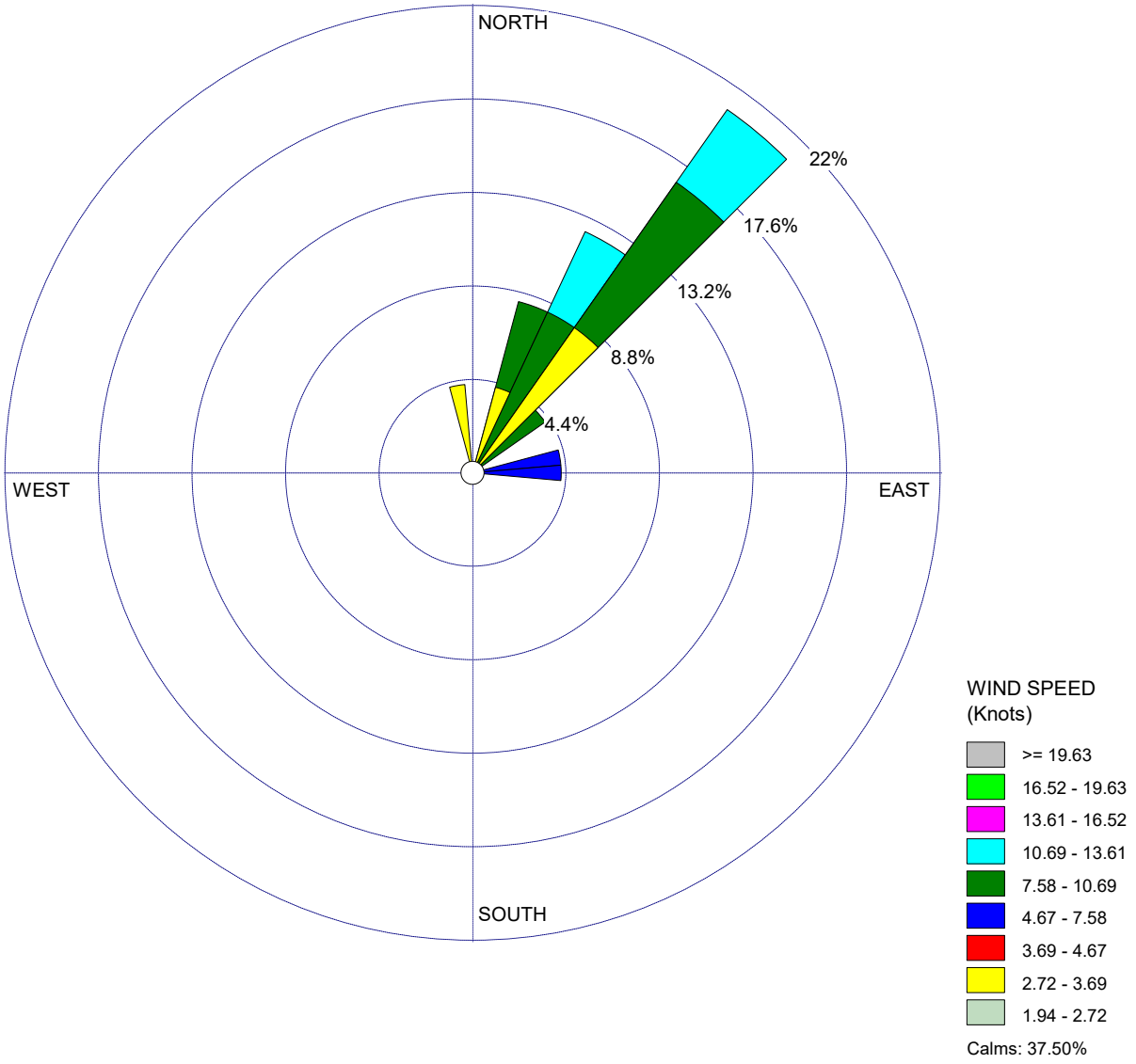
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 0 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/11/2019 - 08:00** **End Date: 9/12/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **0.00%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **8.38 Knots**	DATE: **9/12/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 12 (8am) to September 13 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



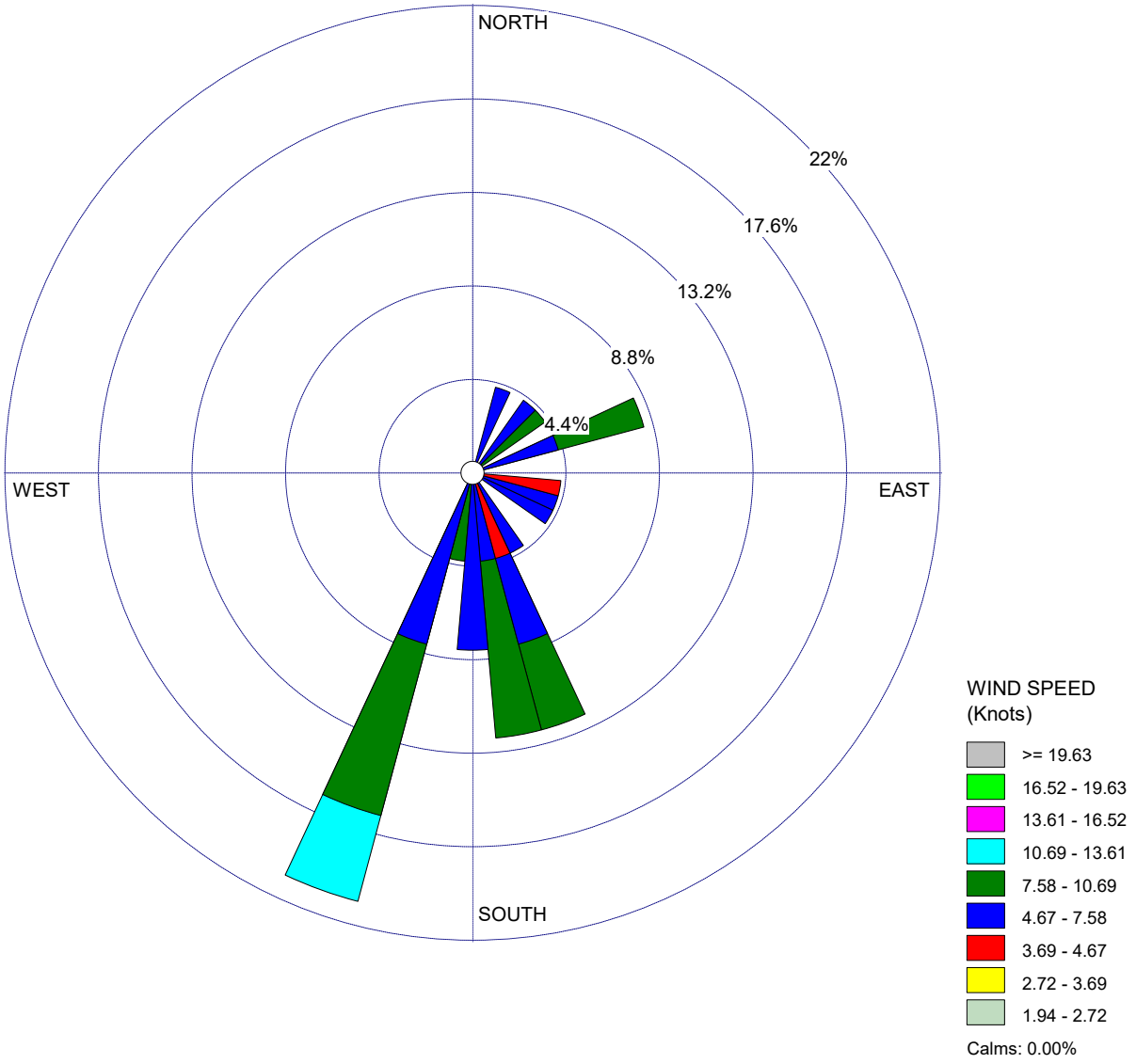
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 10 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/12/2019 - 08:00** **End Date: 9/13/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **37.50%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **4.26 Knots**	DATE: **9/13/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 13 (8am) to September 14 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



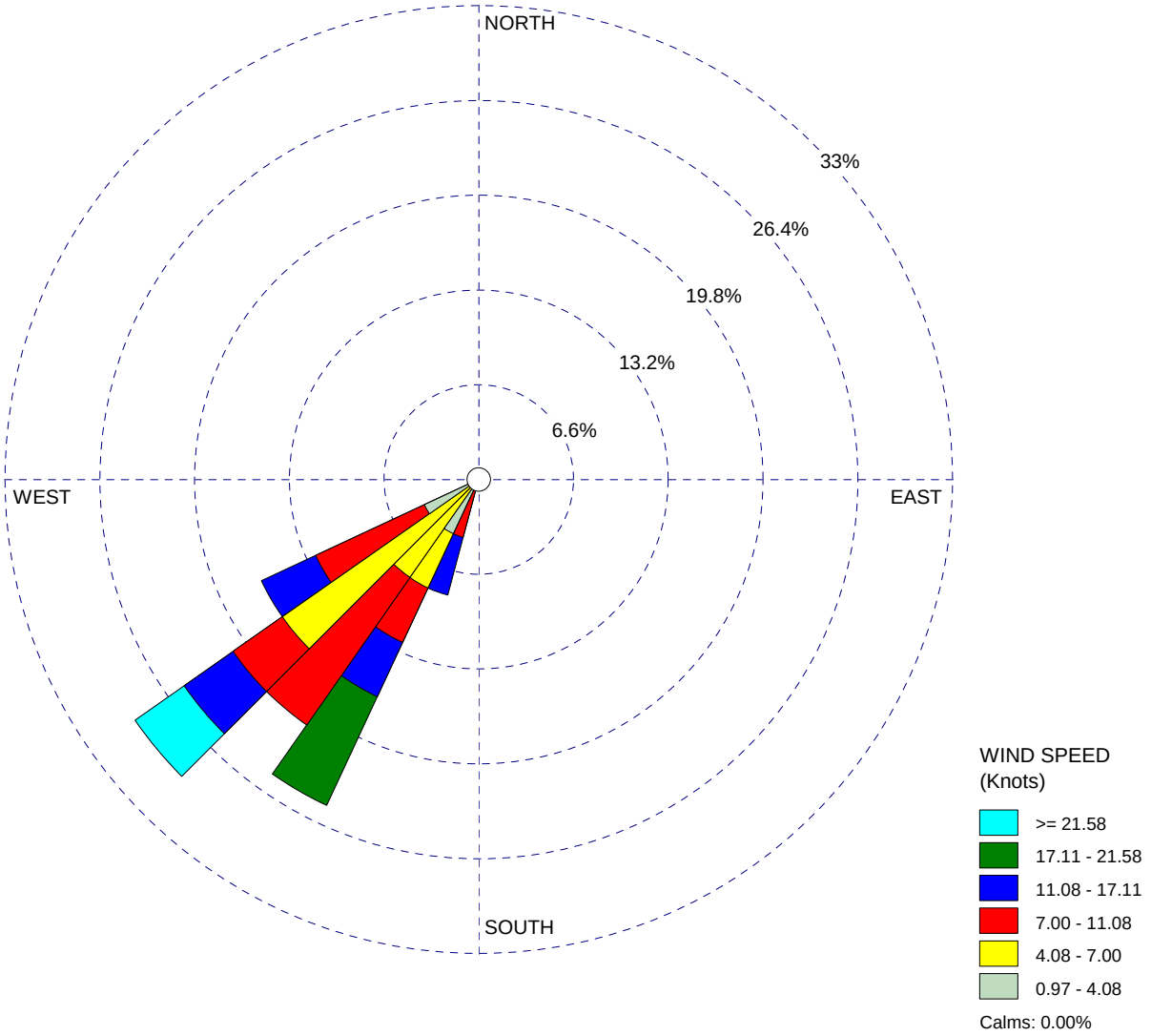
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 1 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/13/2019 - 08:00** **End Date: 9/14/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **0.00%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **6.78 Knots**	DATE: **9/14/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Massena/FAA Airport, NY (Station #94725)
September 14 (8am) to September 15 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



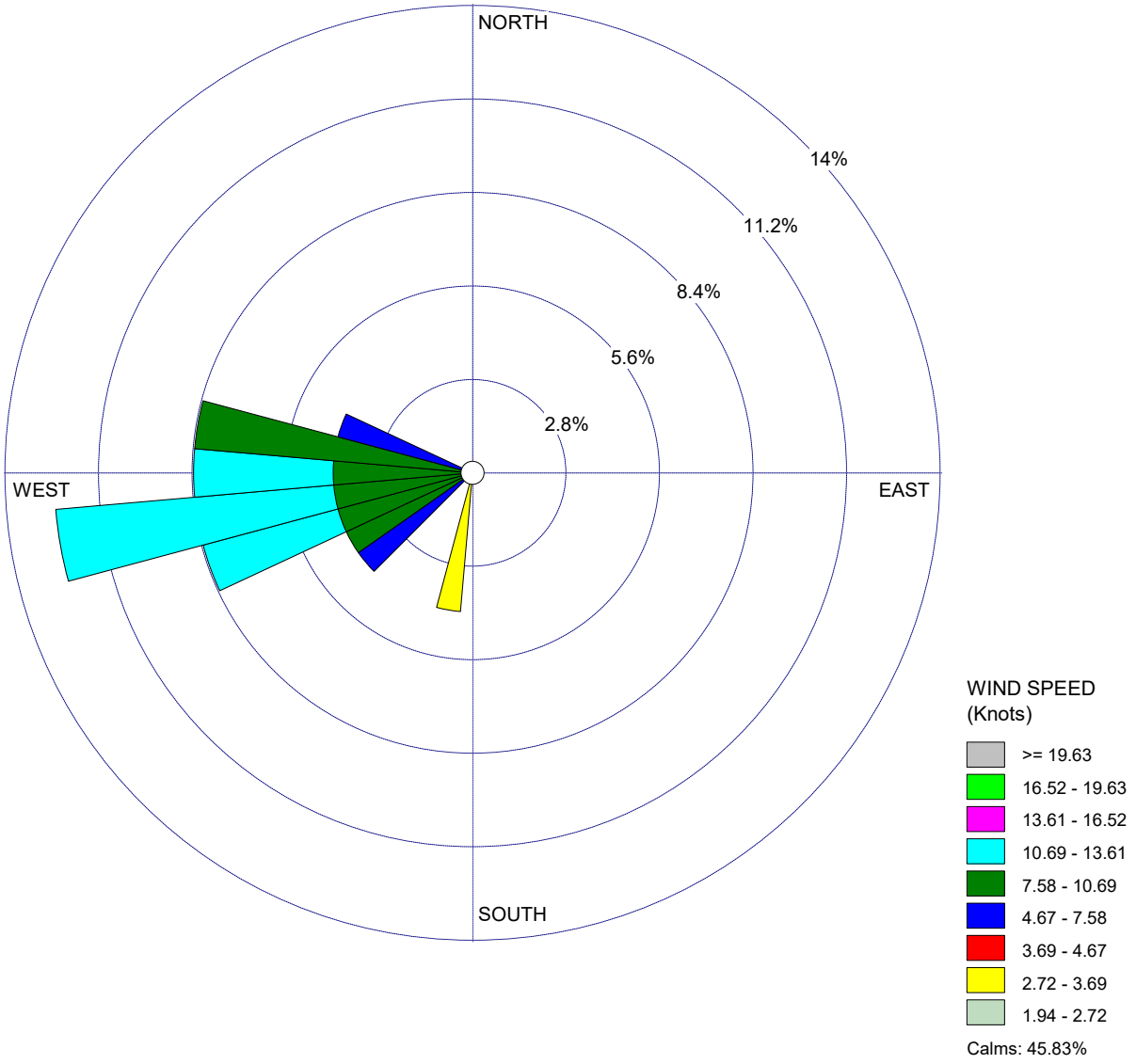
COMMENTS: Blowing FROM Day 1 (8am) - Day 2 (7am) Light and Variable Wind Hours: 0 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/14/2019 - 08:00** **End Date: 9/15/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Maxwell**	
	CALM WINDS: **0.00%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **9.79 Knots**	DATE: **9/15/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 15 (8am) to September 16 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



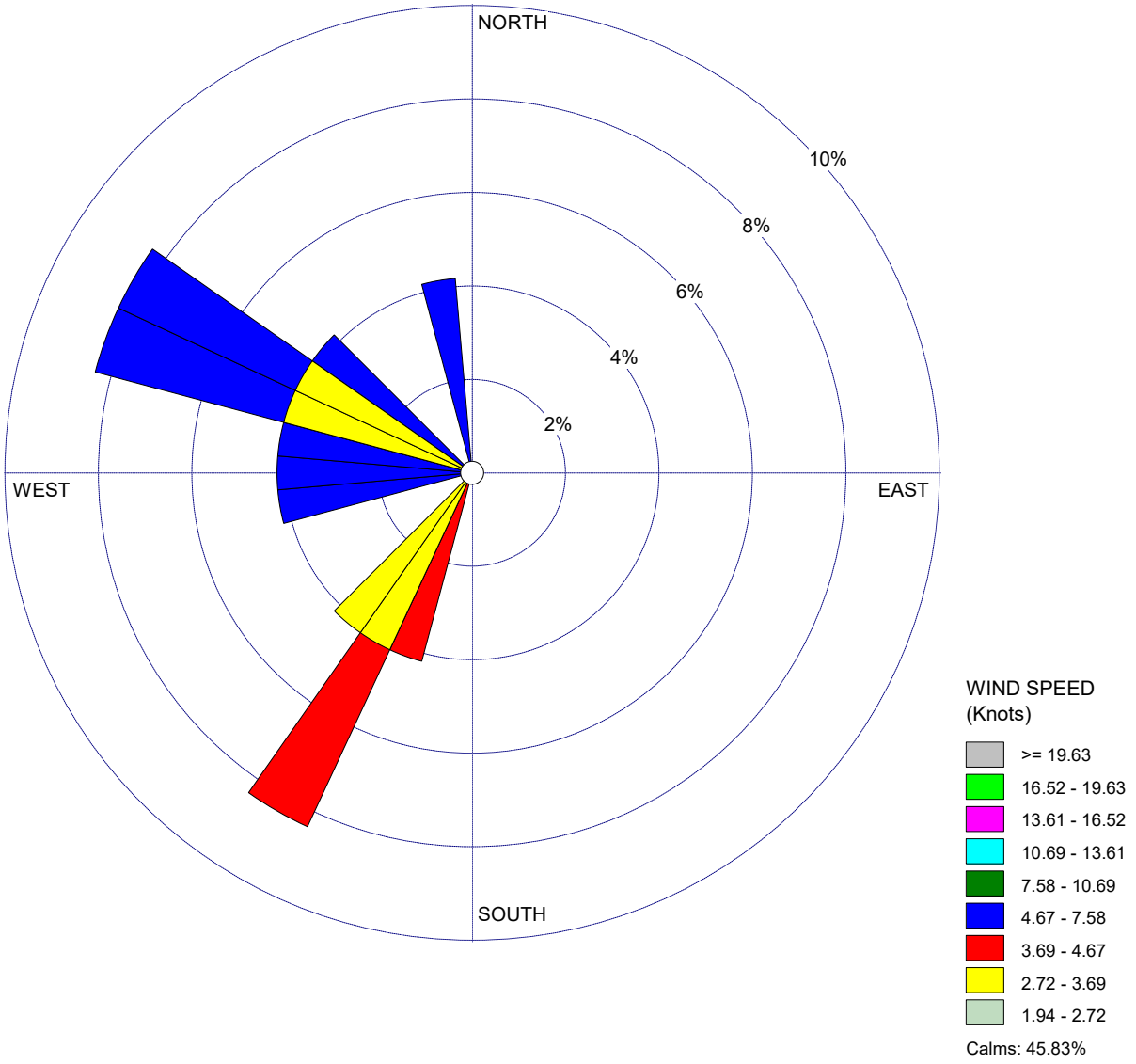
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 11 Missing Data Hours: 0	**Start Date: 9/15/2019 - 08:00** **End Date: 9/16/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **45.83%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **4.88 Knots**	DATE: **9/16/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 16 (8am) to September 17 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



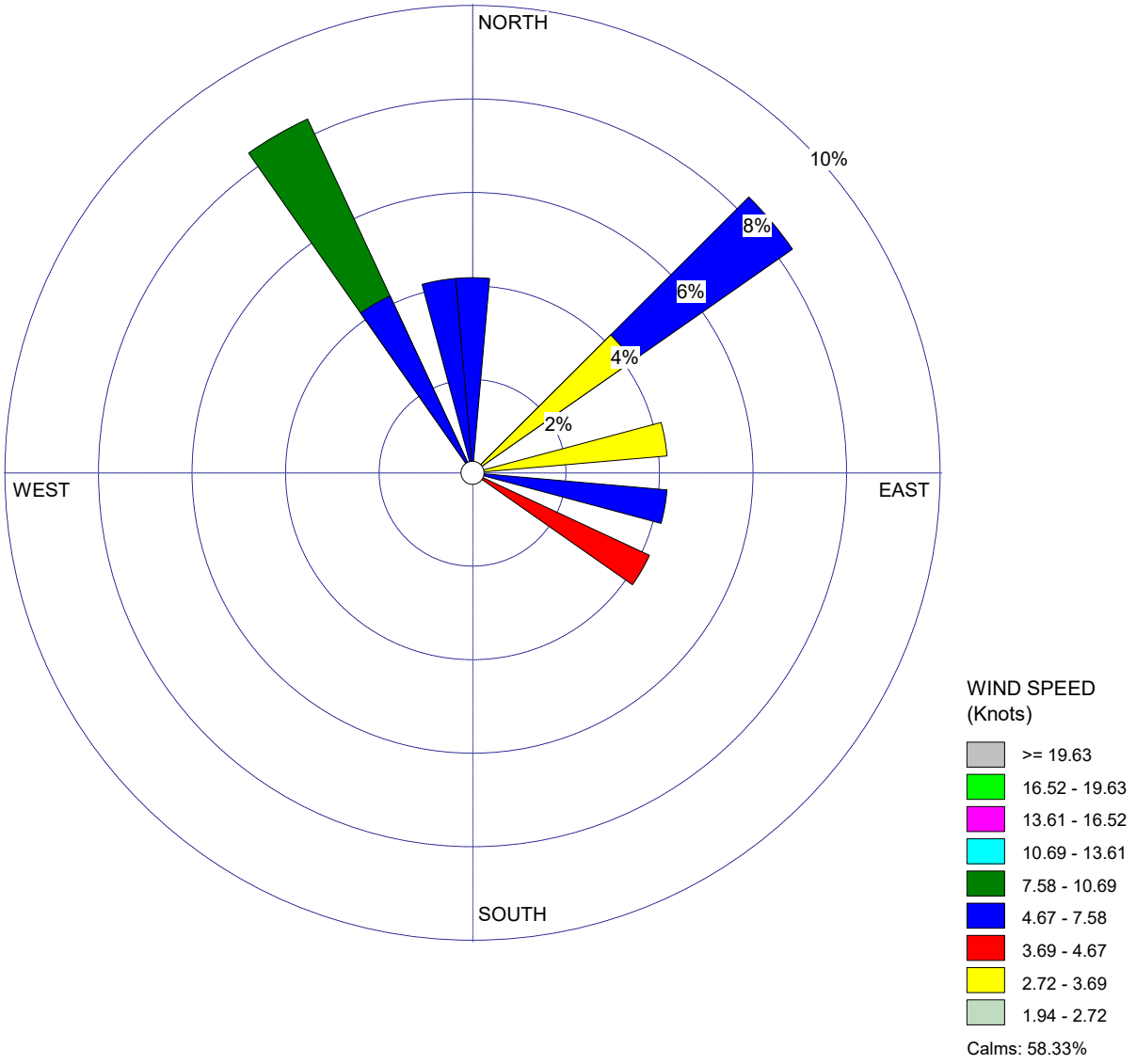
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 11 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/16/2019 - 08:00** **End Date: 9/17/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **45.83%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **2.67 Knots**	DATE: **9/17/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 17 (8am) to September 18 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



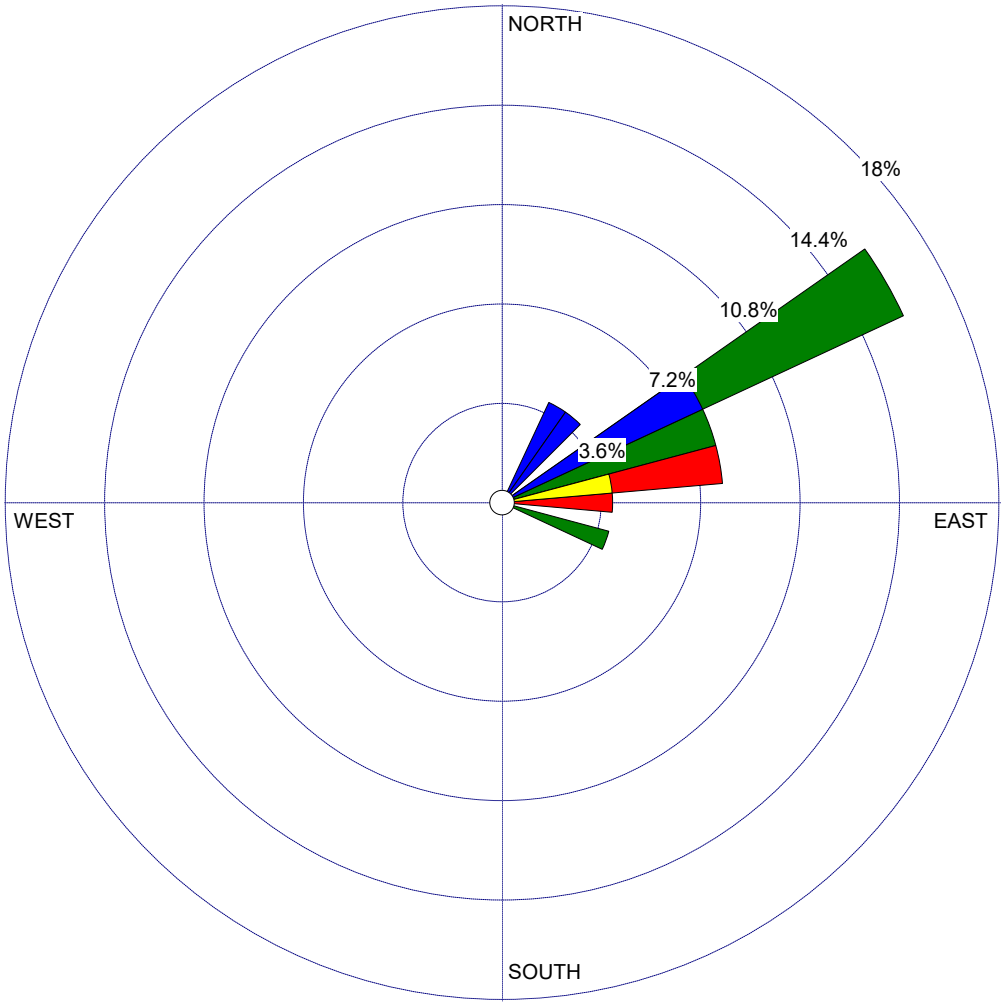
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 15 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/17/2019 - 08:00** **End Date: 9/18/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **58.33%**	TOTAL COUNT: **23 hrs.**	
	AVG. WIND SPEED: **2.17 Knots**	DATE: **9/18/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 18 (8am) to September 19 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(Knots)

- >= 19.63
- 16.52 - 19.63
- 13.61 - 16.52
- 10.69 - 13.61
- 7.58 - 10.69
- 4.67 - 7.58
- 3.69 - 4.67
- 2.72 - 3.69
- 1.94 - 2.72

Calms: 48.00%

COMMENTS:

Blowing from

Day 1 (8a.m.) - Day 2 7(a.m.)

Light and Variable Wind Hours: 11

Missing Data Hours: 0

DATA PERIOD:

Start Date: 9/18/2019 - 08:00
End Date: 9/19/2019 - 07:00

CALM WINDS:

48.00%

AVG. WIND SPEED:

3.42 Knots

COMPANY NAME:

Arcadis

MODELER:

Joshua Miller

TOTAL COUNT:

24 hrs.

DATE:

9/19/2019

PROJECT NO.:

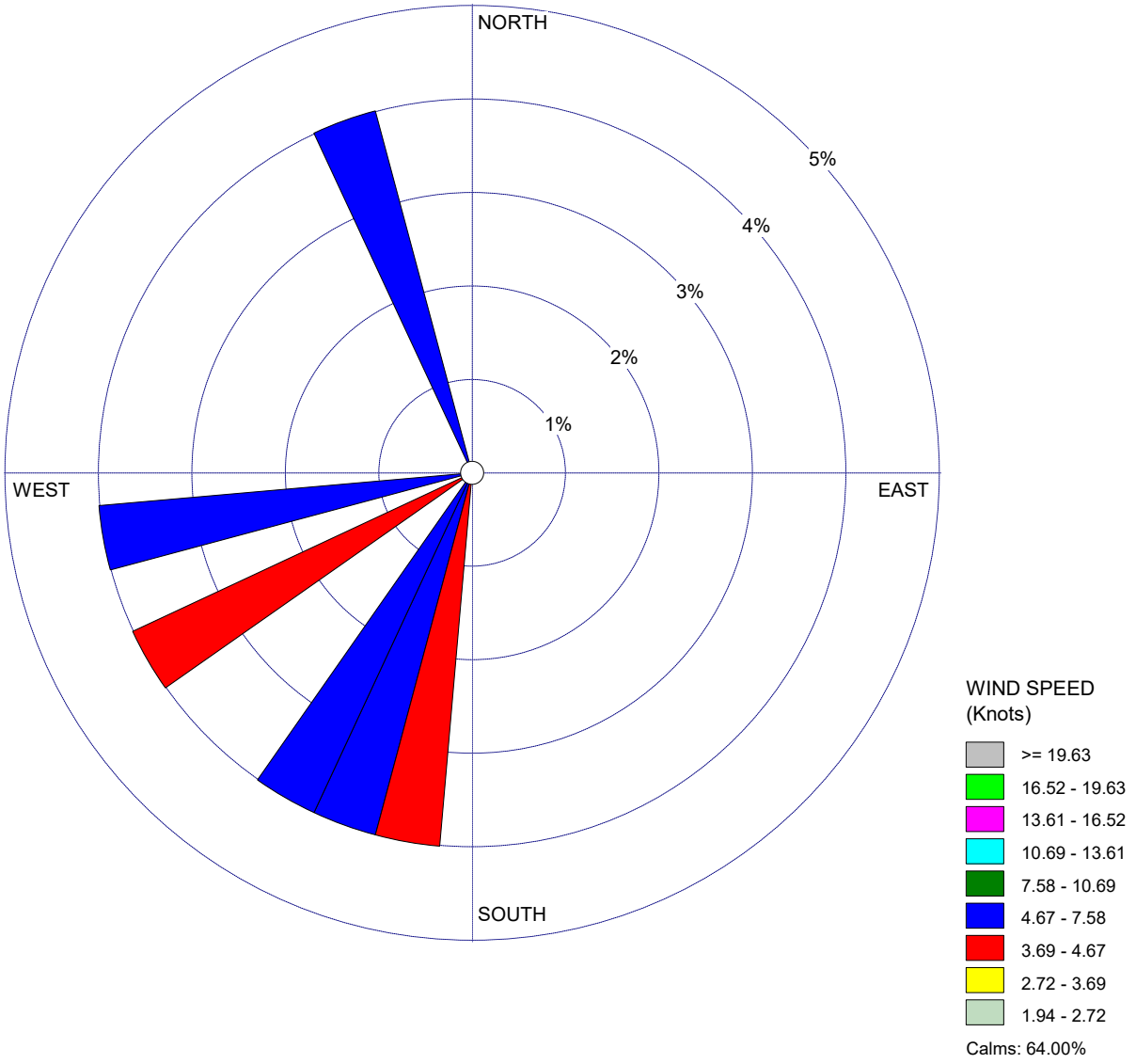
B0010886.2011

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 19 (8am) to September 20 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



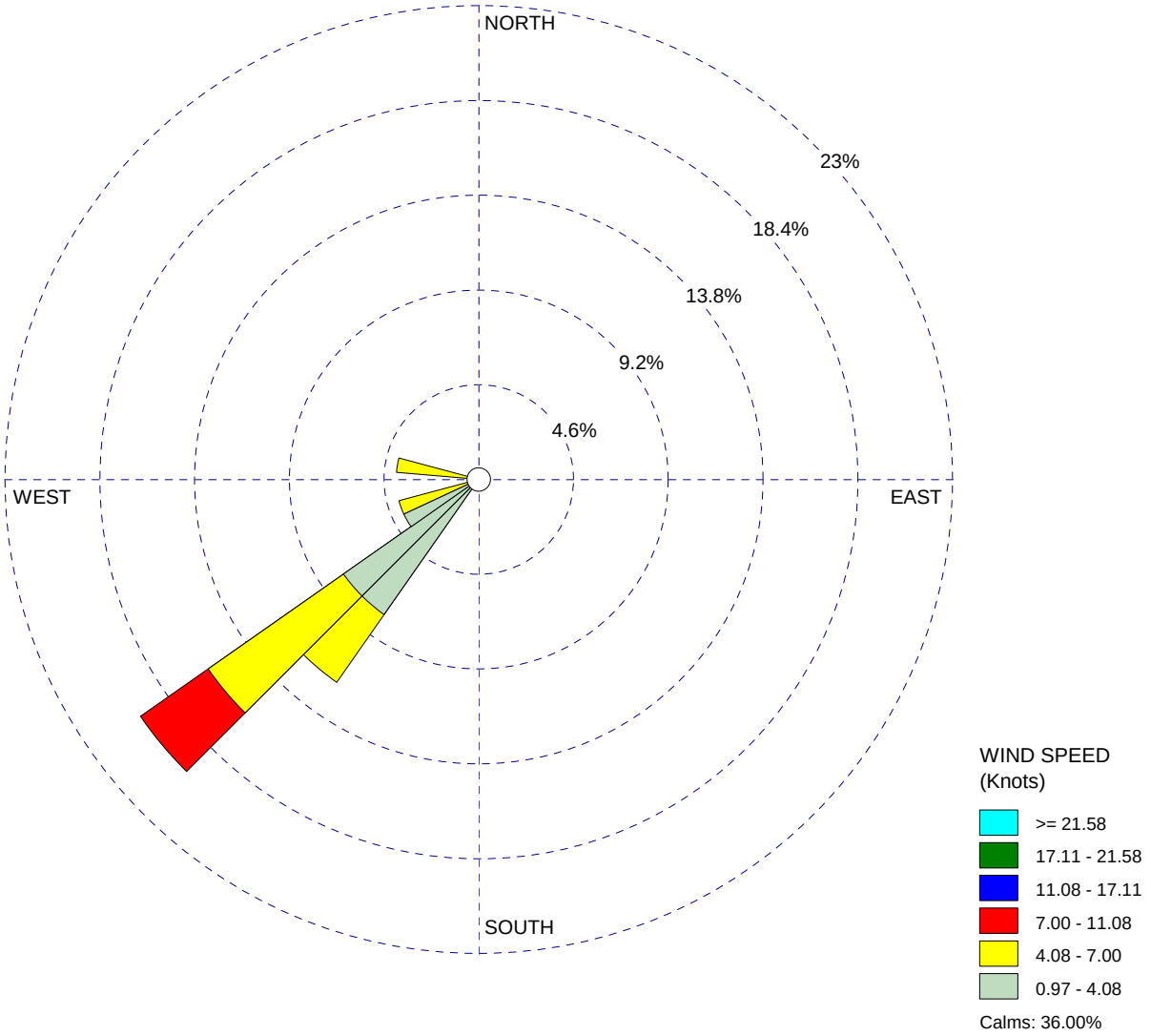
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 17 Missing Data Hours: 1	DATA PERIOD: **Start Date: 9/19/2019 - 08:00** **End Date: 9/20/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **64.00%**	TOTAL COUNT: **22 hrs.**	
	AVG. WIND SPEED: **1.41 Knots**	DATE: **9/20/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Massena/FAA Airport, NY (Station #94725)
September 20 (8am) to September 21 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



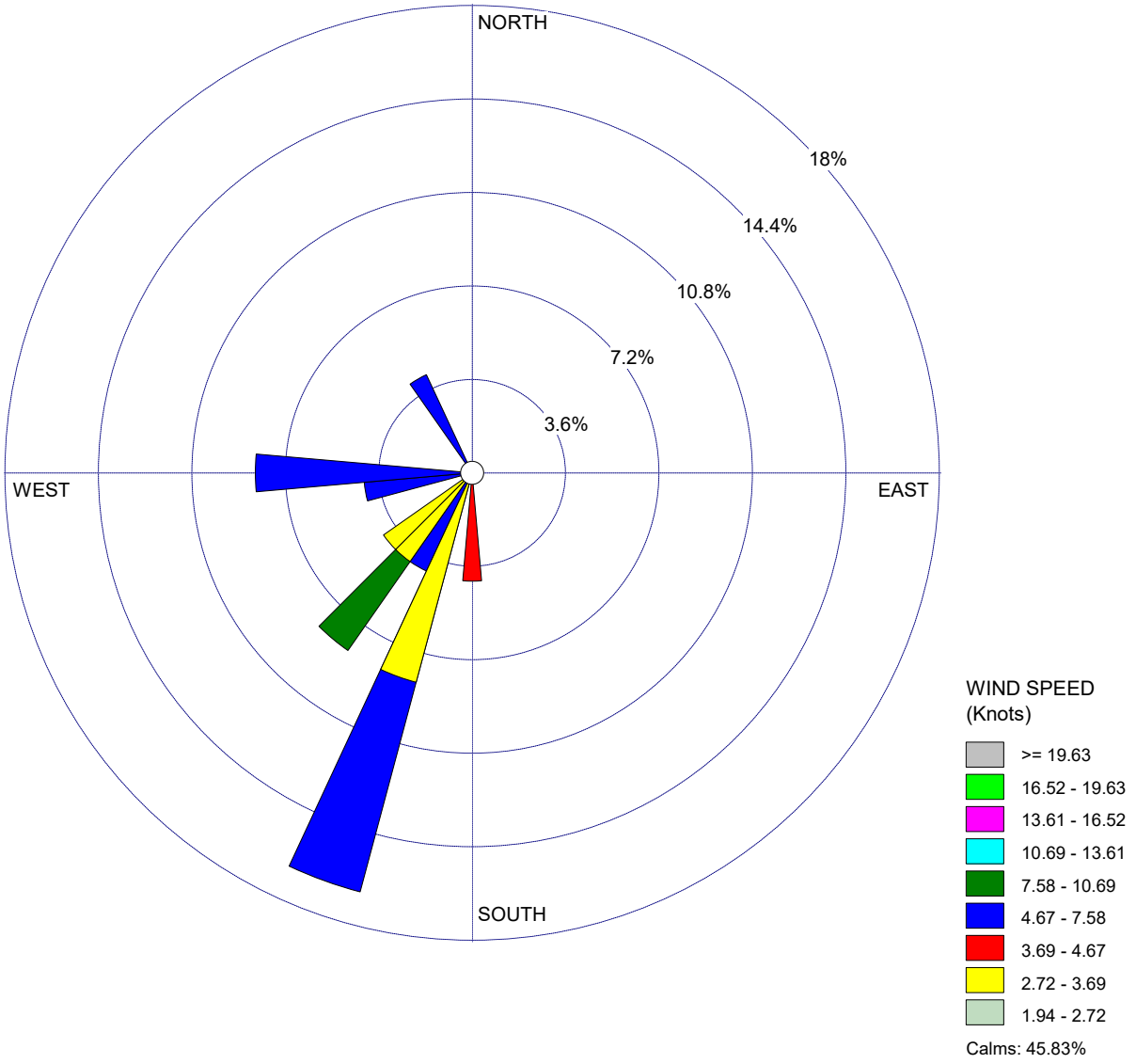
COMMENTS: Blowing FROM Day 1 (8am) - Day 2 (7am) Light and Variable Wind Hours: 13 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/20/2019 - 08:00** **End Date: 9/21/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Maxwell**	
	CALM WINDS: **36.00%**	TOTAL COUNT: **20 hrs.**	
	AVG. WIND SPEED: **2.75 Knots**	DATE: **9/21/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 21 (8am) to September 22 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



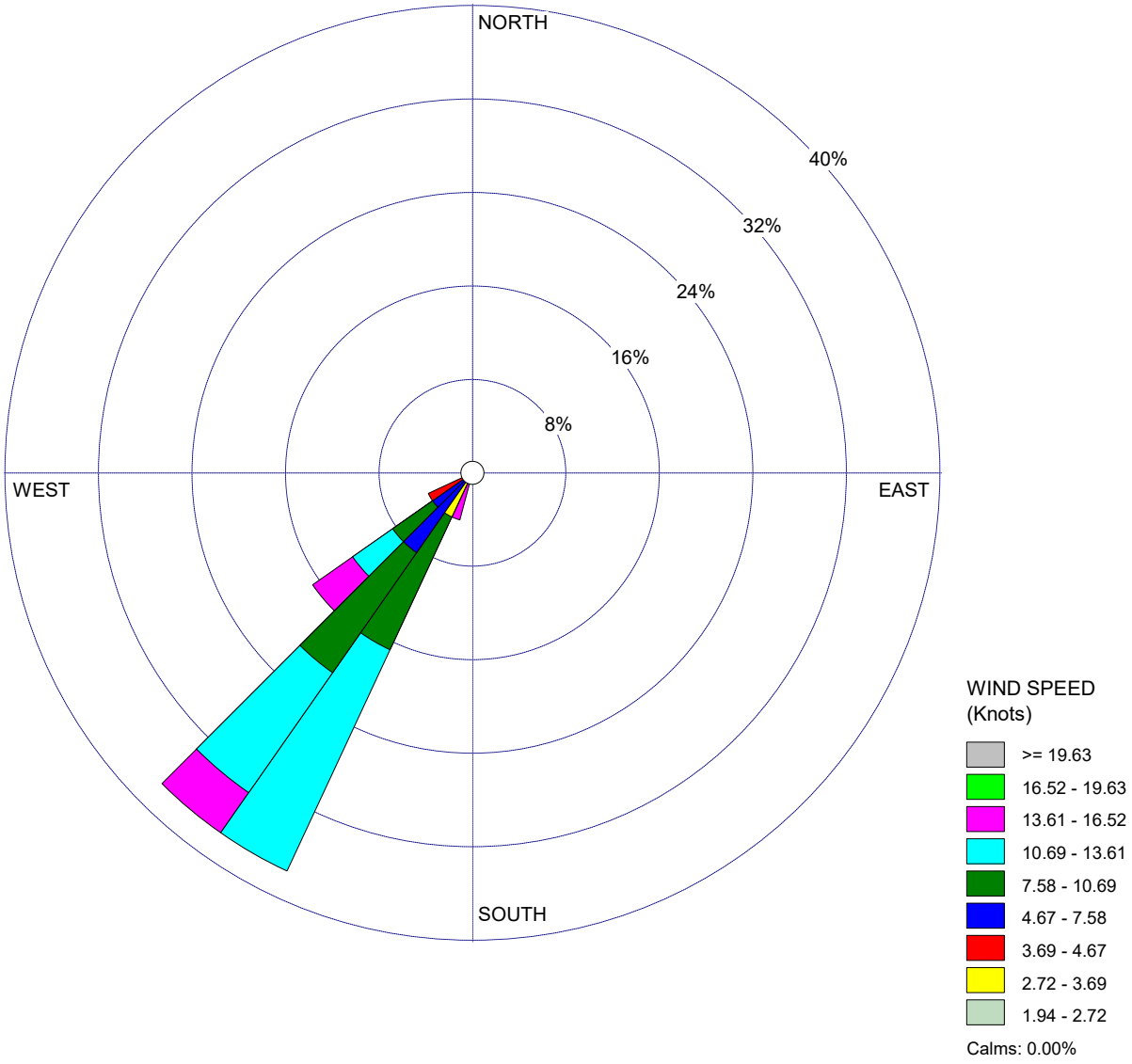
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 11 Missing Data Hours: 0	**Start Date: 9/21/2019 - 08:00** **End Date: 9/22/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **45.83%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **2.63 Knots**	DATE: **9/22/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 22 (8am) to September 23 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

Blowing from

Day 1 (8a.m.) - Day 2 7(a.m.)

Light and Variable Wind Hours: 0

Missing Data Hours: 0

DATA PERIOD:

Start Date: 9/22/2019 - 08:00
End Date: 9/23/2019 - 07:00

CALM WINDS:

0.00%

AVG. WIND SPEED:

10.25 Knots

COMPANY NAME:

Arcadis

MODELER:

Joshua Miller

TOTAL COUNT:

24 hrs.

DATE:

9/23/2019

PROJECT NO.:

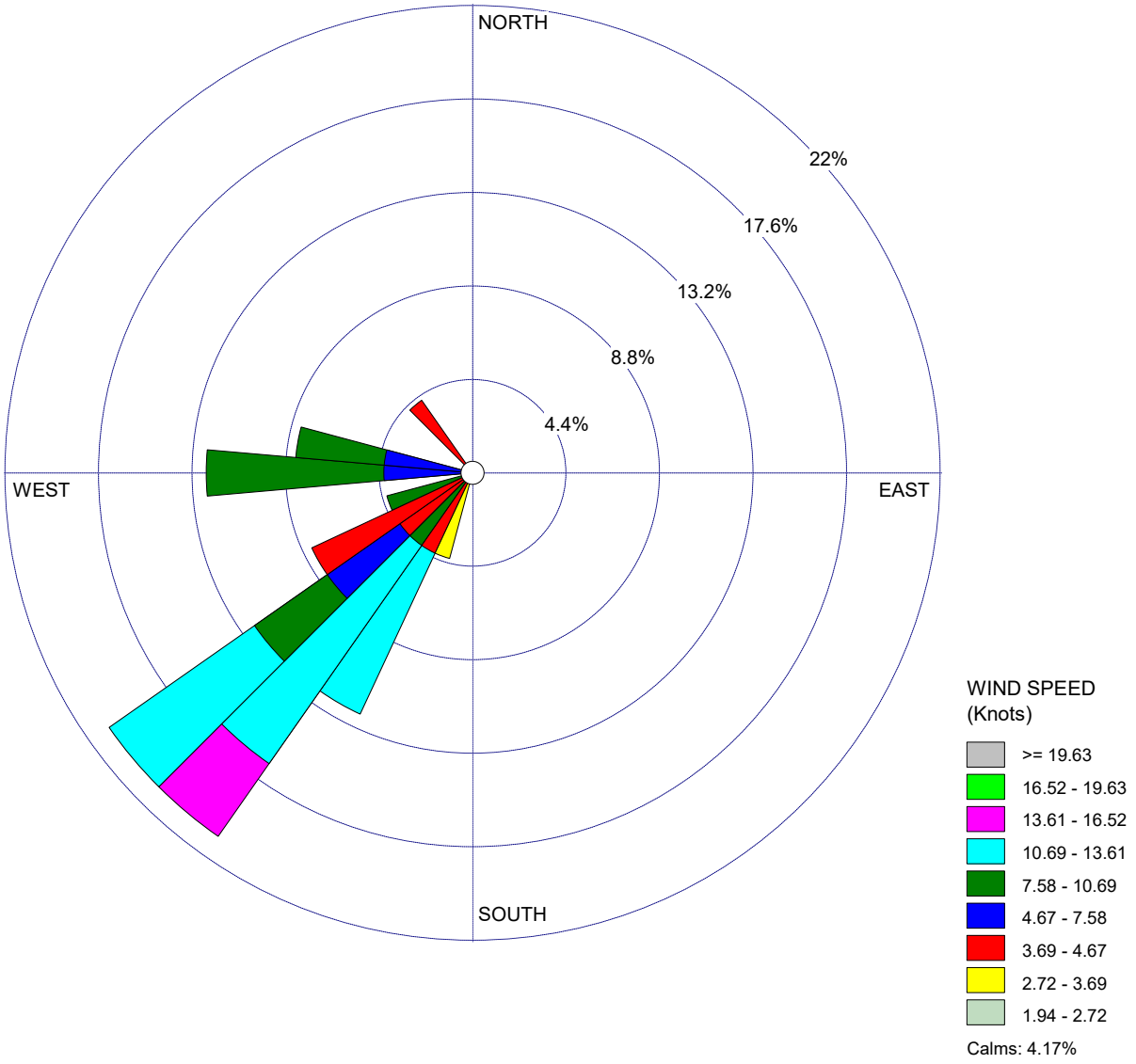
B0010886.2011

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 23 (8am) to September 24 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



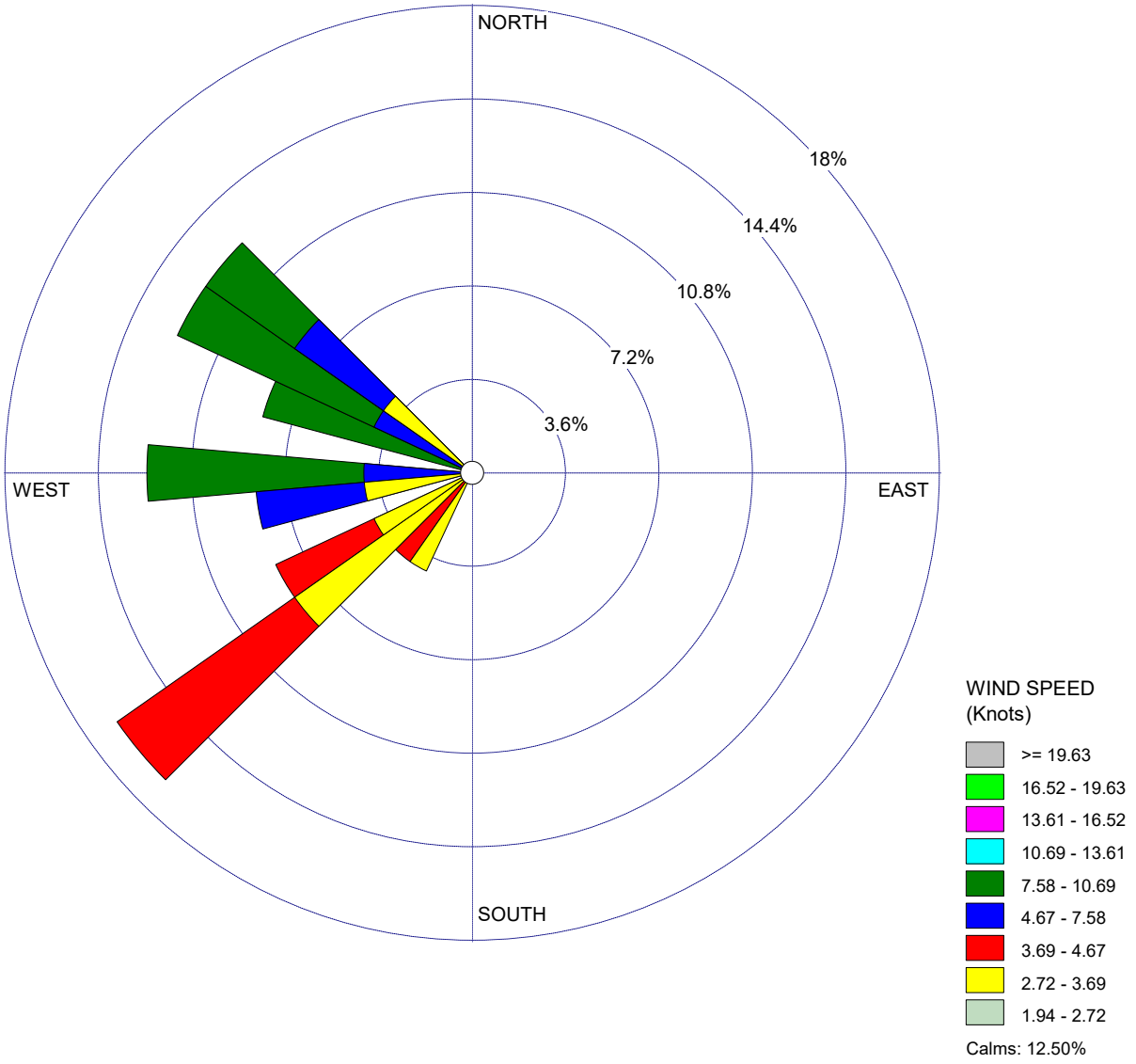
COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 1 Missing Data Hours: 0	DATA PERIOD: **Start Date: 9/23/2019 - 08:00** **End Date: 9/24/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **4.17%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **8.04 Knots**	DATE: **9/24/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 24 (8am) to September 25 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



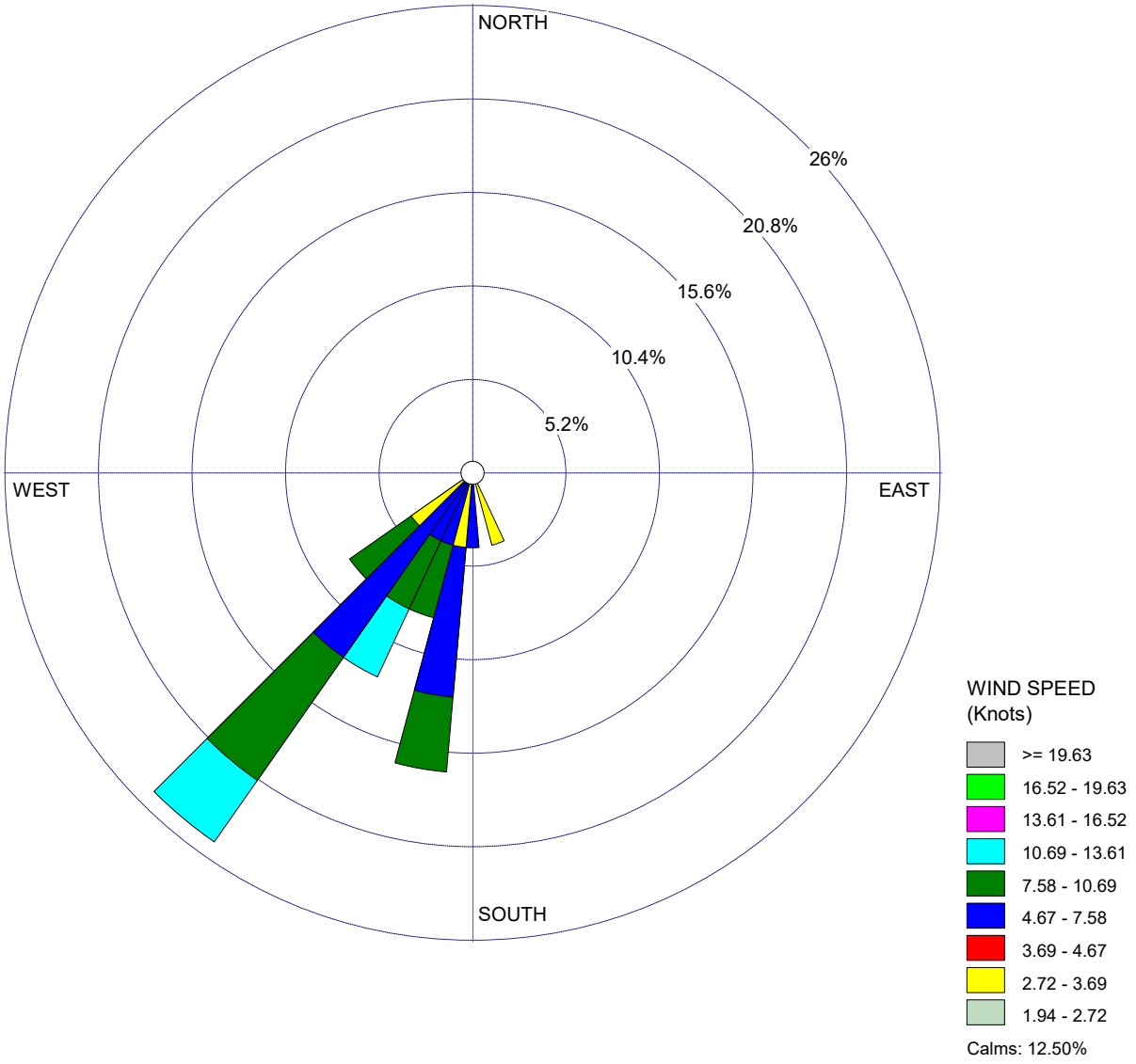
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 3 Missing Data Hours: 0	**Start Date: 9/24/2019 - 08:00** **End Date: 9/25/2019 - 07:00**	**Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **12.50%**	TOTAL COUNT: **24 hrs.**	
	AVG. WIND SPEED: **4.88 Knots**	DATE: **9/25/2019**	PROJECT NO.: **B0010886.2011**

WIND ROSE PLOT:

Station #94725 - MASSENA/FAA AIRPORT, NY
September 25 (8am) to September 26 (7am)

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS: Blowing from Day 1 (8a.m.) - Day 2 7(a.m.) Light and Variable Wind Hours: 4 Missing Data Hours: 1	DATA PERIOD: **Start Date: 9/25/2019 - 08:00** **End Date: 9/26/2019 - 07:00**	COMPANY NAME: **Arcadis**	
		MODELER: **Joshua Miller**	
	CALM WINDS: **12.50%**	TOTAL COUNT: **22 hrs.**	
	AVG. WIND SPEED: **5.73 Knots**	DATE: **9/26/2019**	PROJECT NO.: **B0010886.2011**

Appendix D

Arconic-NYSDEC Correspondence

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 6
Dulles State Office Building, 317 Washington Street, Watertown, NY 13601-3787
P: (315) 785-2513 I F: (315) 785-2422
www.dec.ny.gov

July 18, 2019

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

Re: 645019, Unnamed Tributary (UNT), Massena (T), St. Lawrence County
Remedial Action Work Plan for Operable Unit 3

Dear Mr. Furnia:

This letter follows our July 16, 2019, telephone call regarding the above. During the call we discussed Arconic's preference to dredge and backfill areas immediately following dredging rather than utilizing the typical dredge and confirm approach. This approach has been proposed by Arconic due to concerns regarding slope stability. The following points were highlighted by CDM during the call:

1. History shows that slope failures are quite common along the Grasse River and in the area of the UNT.

2. The slope stability analysis performed by CDM illustrates a potential for slope failure with factors of safety just above 1.0 following dredging and there is significant concern regarding the horizontal extent to which failure might occur.

3. CDM indicated in the slope stability analysis that the areas will be over dredged to depths of 2.5' and 5' on the west and east banks respectively and in all likelihood will remove all the soft sediment and extend to some degree into the top of the clay layer. It was also noted that in areas of OU2, immediately upstream of OU3, where sediment was removed to the clay layer, all confirmation results met the 1.0 ppm cleanup level for PCBs.

Considering the above, we are rescinding our June 20, 2019, letter and agree to dredging using a dredge and documentation approach versus a dredge and confirmation approach with the following conditions:

A. Since the extent of PCB contamination is not completely delineated, we are requesting that in the event documentation sample results are received prior to backfilling an area and the results indicate the cleanup goal has not been met, additional dredging will be performed in that area, and

B. In areas where results are received after it has been backfilled and the results indicate the cleanup goal has not been met, the Department reserves the right to require re-dredging and additional removal.

Please be advised that since the call we have noticed that Section 5.1 in the June 11, 2019, Remedial Action Work Plan (RAWP) states, "Over-excavation will occur in areas where the deepest existing sample location contained total PCB concentrations greater than 1 ppm...equipment." This would require dredging to depths of at least 2.5' along the west bank and 4.5' along the northern portion of the east bank. However, sectional view T27.3N in Figure U-2 indicates a dredge depth of only 2.0' along both banks. Also, Figures 3-1, 6-1, D-1, U-1 and U-2 (T27.2N) identify a dredge depth of 2.0' along the western bank, which is not consistent with the text in Section 5.1 (see above).

In consideration of the above, we are approving the June 11, 2019 RAWP with the following modifications:

1. In the event documentation sample results are received prior to backfilling an area and the results indicate the cleanup goal has not been met, Arconic will discuss the need for and feasibility of additional dredging with the Department, which may include a geotechnical engineering evaluation of the additional excavation.

2. In areas where results are received after it has been backfilled and the results indicate the cleanup goal has not been met, Arconic will discuss the need for or feasibility of re-dredging with the Department, which may also include a geotechnical engineering evaluation of the additional excavation.

3. All text and figures in the RAWP are modified to indicate the depth of dredging within the UNT OU3 will be 2.5' in all areas except for the 4.5' polygon located on the northern portion of the east bank.

In accordance with Part 375-1.6(d)(3) we are requesting that you respond in writing within fifteen (15) days of this letter, indicating whether you:

A. accept the modified work plan within 30 days or,

B. invoke dispute resolution.

We appreciate your cooperation and patience in this matter and if you have any questions, please feel free to give me a call.

Sincerely,

Lincoln D. Fancher /for K.H.

Kelly Hale
Environmental Program Specialist Trainee 2
Environmental Remediation, Region 6
kelly.hale@dec.ny.gov
315-785-2381

ec: Peter Taylor (NYSDEC)
Lincoln Fancher (NYSDEC)
Thomas Voss (NYSDEC)
Scarlett McLaughlin (NYSDOH)
Maureen Schuck (NYSDOH)
Christopher Balk (NYSDEC)

ARCONIC

PO Box 150
Massena, NY 13662

July 23, 2019

Lincoln B. Fancher
Engineering Geologist II
Region 6 Division of Environmental Remediation
New York State Department of Environmental Conservation
317 Washington St., Watertown, NY 13601

Re: Arconic Massena Operations, NYSDEC Site # 645019, Unnamed Tributary Remedial Action Plan (RAWP) for Operable Unit 3 (OU-3)

Dear Mr. Fancher:

Acronic Inc. (Arconic) has received the New York State Department of Environmental Conservation's (NYSDEC) correspondence, dated July 18, 2019, regarding modifications to the Unnamed Tributary Remedial Action Plan (RAWP) for Operable Unit 3 (OU-3). The following modifications were included in the above referenced correspondence:

1. In the event documentation sample results are received prior to backfilling an area and the results indicate the cleanup goal has not been met, Arconic will discuss the need for and feasibility of additional dredging with the Department, which may include a geotechnical engineering evaluation of the additional excavation.

2. In areas where results are received after it has been backfilled and the results indicate the cleanup goal has not been met, Arconic will discuss the need for or feasibility of re-dredging with the Department, which may also include a geotechnical engineering evaluation of the additional excavation.

3. All text and figures in the RAWP are modified to indicate the depth of dredging within the UNT OU3 will be 2.5' in all areas except for the 4.5' polygon located on the northern portion of the east bank.

In accordance with Part 375-1.6(d)(3), Arconic Inc. accepts the modifications by the NYSDEC to the Unnamed Tributary Remedial Action Plan (RAWP) for Operable Unit 3 (OU-3).

Please contact me at 315-212-9069 or Todd.Furnia@Arconic.com with any questions.

Sincerely,

Todd J. Furnia
Environmental and Security Manager

Cc: Env. File Copy – Arconic

Enc.

From: Chang, Young <Chang.Young@epa.gov>
Sent: Friday, August 16, 2019 8:26 AM
To: Dan Casey; Mark Riordan
Cc: Mark Riordan; Jay Wilkins; David Tromp; Scarlett Mclaughlin; Michael Elsner; Larry Mcshea; Chuck Guest; Kevyn Bollinger; whalenjw@cdmsmith.com; tlee@jfbrennan.com; Sarah Hill; Jathal, Jagrut; tlee@jfbrennan.com; Paul LaRosa; whalenjw@cdmsmith.com; topatj@cdmsmith.com
Subject: RE: ECN-2019-011 UNT Design Change

EPA has reviewed the attached responses and the ECN. We have also heard from DEC and SRMT, they have no other comments. ECN 2019-011 for the UNT design change is approved by EPA.

Thanks.
Young

From: Casey, Dan <Dan.Casey@arcadis.com>
Sent: Thursday, August 15, 2019 7:46 AM
To: Chang, Young <Chang.Young@epa.gov>; mriordan@mjels.com
Cc: mriordan@mjels.com; jay.wilkins@srmt-nsn.gov; Tromp, David (DEC) <david.tromp@dec.ny.gov>; McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>; michael.elsner@arconic.com; larry.mcshea@arconic.com; cguest@anchorqea.com; kbollinger@anchorqea.com; whalenjw@cdmsmith.com; tlee@jfbrennan.com; Hill, Sarah <Sarah.Hill@arcadis.com>; Jathal, Jagrut <jathalj@cdmsmith.com>; tlee@jfbrennan.com; Paul LaRosa <plarosa@anchorqea.com>; whalenjw@cdmsmith.com; topatj@cdmsmith.com
Subject: RE: ECN-2019-011 UNT Design Change

Young,

Attached here is the email correspondence which provides the comments and responses, design modifications, and the approval from NYSDEC to proceed with the UNT work.

Please let me know if there are any additional questions.

Thanks.
Dan

From: Chang, Young <Chang.Young@epa.gov>
Sent: Tuesday, August 13, 2019 8:42 AM
To: Casey, Dan <Dan.Casey@arcadis.com>; mriordan@mjels.com
Cc: mriordan@mjels.com; jay.wilkins@srmt-nsn.gov; david.tromp@dec.ny.gov; McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>; michael.elsner@arconic.com; larry.mcshea@arconic.com; cguest@anchorqea.com; kbollinger@anchorqea.com; whalenjw@cdmsmith.com; tlee@jfbrennan.com; Hill, Sarah <Sarah.Hill@arcadis.com>; Jathal, Jagrut <jathalj@cdmsmith.com>; tlee@jfbrennan.com; Paul LaRosa <plarosa@anchorqea.com>; whalenjw@cdmsmith.com; topatj@cdmsmith.com
Subject: RE: ECN-2019-011 UNT Design Change

Dan,

Can you forward DEC Region 6 comments to us all?

Thanks.
Young

From: Casey, Dan <Dan.Casey@arcadis.com>
Sent: Monday, August 12, 2019 5:35 PM
To: Chang, Young <Chang.Young@epa.gov>; mriordan@mjels.com
Cc: mriordan@mjels.com; jay.wilkins@srmt-nsn.gov; Tromp, David (DEC) <david.tromp@dec.ny.gov>; McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>; michael.elsner@arconic.com; larry.mcshea@arconic.com; cguest@anchorqea.com; kbollinger@anchorqea.com; whalenjw@cdmsmith.com; tlee@jfbrennan.com; Hill, Sarah <Sarah.Hill@arcadis.com>; Jathal, Jagrut <jathalj@cdmsmith.com>; tlee@jfbrennan.com; Paul LaRosa <plarosa@anchorqea.com>; whalenjw@cdmsmith.com; topatj@cdmsmith.com
Subject: RE: ECN-2019-011 UNT Design Change

Young,

Attached here for your review and approval is ECN-2019-011 which provides a revision to the remedial design of the Unnamed Tributary (UNT) based on additional sample data collected from the area. The new data resulted in an increased dredge depth which drove additional redesign detail due to related geotechnical concerns in the area. In addition, based on comments from NYSDEC associated revisions and adjustments were also required at the adjacent DMU – N20B.

This attachment includes the ECN form and explanation of work, data tables and figures, and revised design drawings for your review and approval.

Please let me know if you have any questions.

Thanks,
Dan

Dan Casey | Principal Engineer | dan.casey@arcadis.com
Arcadis | Arcadis NA, Inc.
One Lincoln Ctr, 110 West Lafayette St, Suite 300, Syracuse NY 13202 USA
T. +1 315 764 2239 | M. +1 315 391 0445

Arconic Inc. - Grasse River Remediation
Engineering Change Notice

Revision Number: ECN-2019-011 **Date:** 08/12/2019

Requested Change:
Adjustments to the Dredge Management Unit (DMU) extents, target dredge depths, backfill extents, and post-dredge verification sampling locations for the in-river work. Also, adjustments to the excavation depths and the verification sample locations in the Unnamed Tributary (UNT) Area III Operable Unit (OU) 3.

Basis for Change:
Additional upland sampling data were collected in the UNT to gain information on the vertical delineation of PCB contamination (Table 1). As a result of the new data, the target excavation depth in a portion of the UNT remedial area changed from 2 to 4.5 feet (Figure 1). A geotechnical evaluation of the increased removal depths indicated the potential for slope instability. As a result, slope stability grading from the edge of the UNT remedial extent was incorporated into the excavation plans. A slope of 3 horizontal to 1 vertical (3H:1V) was applied along the western UNT boundary, while a slope of 1.5H:1V was applied along the northern boundary. Also to address geotechnical concerns, construction in the UNT will follow specific sequencing prescribed by the geotechnical engineers, as shown on drawing D-400 (Attachment 1). Based on comments from New York State Department of Environmental Conservation (NYSDEC) Region 6, the UNT remedial extent was expanded to include a small area at the mouth of the UNT which was previously considered part of the Grasse River. As such, the verification location Flood_UNT_B_1 was shifted into the expanded portion of the UNT remedial area, as shown on Figure 1.

Also based on comments from NYSDEC Region 6, the extent of the adjacent DMU (subarea DMU-N20B) was expanded along the shoreline near the mouth of the UNT and verification sample location N20-V-2 was shifted into the expanded portion of this dredge area. The UNT design sampling results, target verification sampling locations, and the revised UNT and in-river designs, are presented in Figure 1.

Schedule Impact/Documents Affected:
As summarized below, this change results in increases to the in-river dredging and upland removal volume.

Resolution:
The increased UNT target excavation depth and addition of slope stability grading outside the remedial extent increases the target upland excavation extent by approximately 3,300 square feet and increases the target excavation volume (with 3-inch overdredge allowance) by approximately 590 cubic yards.

The in-river design adjustments described herein result in an increase of DMU-N20B by approximately 1,300 square feet. Based on the design (pre-2018) bathymetry information, the target design dredging volume (with 6-inch overdredge allowance) of DMU-N20 has increased by approximately 40 in-situ cubic yards. In-river dredge areas will be backfilled to grade consistent with the approach for other near shore areas as described in the Final Design Report.

Revised Drawings and Dredge Prism XYZ Files
Revised Drawings are attached to this ECN (Attachment 1) to address the changes described herein. The drawing revisions are marked and clouded to indicate the design revisions described herein.

The design revisions described herein necessitate revisions to previously issued Dredge Prism XYZ Files. These revised Dredge Prism XYZ Files will be provided to the Contractor for use when completing the targeted excavation and dredging.

Arconic Inc. - Grasse River Remediation
Engineering Change Notice

Revision Number: ECN-2019-011 **Date:** 06/21/2019

Revised Verification Sampling Locations
Based on comments from NYSDEC Region 6, the following adjustments were made to target verification sample locations:

- UNT: Location Flood_UNT_B_1 was shifted into the expanded portion of the UNT remedial area at the mouth of the tributary; and
- In-River: Location N20-V-2 was shifted into the expanded portion of DMU-N20B.

The revised target verification locations are shown on Figure 1.

Level of Approval Required[1]: Agency on-site representative _____ **OR**
USEPA Project Manager _____
(with appropriate Agency review)

Approval:

Arconic Representative:	_____	Date:	08/12/2019
Agency On-Site Representative:	_____	Date:	_____
USEPA Project Manager: (if necessary)	_____	Date:	_____

Distribution:

USEPA Representative	Lawrence McShea, Arconic
USACE Representative	Mike Elsner, Arconic
SRMT Representative	Dan Casey, Arcadis
NYSDEC Representative	Paul LaRosa, Anchor QEA
Agency Onsite Representative	Mike Schultz, CDMS
	Chuck Guest, Anchor QEA
	Contractor Representative

[1] Level of approval required will be based on type of change being requested. Minor adjustments (e.g., movement of sampling locations, times) can be approved by the Agency on-site representative. The Agency on-site representative will be responsible for determining the level of approval required for each change.

Enclosures:

- Table 1 - Unnamed Tributary Design Data Update
- Figure 1 – Unnamed Tributary (Area III OU3) Design Revisions and Verification Sampling Targets
- Attachment 1 – Revised Drawings

Table 1
Unnamed Tributary Design Data Update

Location ID	Start Depth (ft)	End Depth (ft)	Total PCB (mg/kg)	Data Collected May 2019
UNT-A3-T77.25a	0.0	0.5	2.9	N
	0.5	1.0	4.0	N
	1.0	1.5	1.2	N
	1.5	2.0	1.1	N
UNT-A3-T77.25a2	2.0	3.0	Void	Y
	3.0	3.5	5.1	Y
	3.5	4.0	7.0	Y
UNT-A3-T77c	0.0	0.5	1.8	N
	0.5	1.0	2.0	N
	1.0	1.5	2.0	N
	1.5	2.0	1.9	N
UNT-A3-T77c2	2.0	2.5	2.9	Y
	2.5	3.0	2.5	Y
	3.0	3.5	1.6	Y
	3.5	4.0	3.3	Y
UNT-A3-T78a	0.0	0.5	0.43	N
	0.5	1.0	0.20	N
	1.0	1.5	0.58	N
	1.5	2.0	1.80	N
UNT-A3-T78a3	2.0	2.5	0.9 (0.92)	Y
	2.5	3.0	0.3	Y
	3.0	3.5	0.2	Y
	3.5	4.0	0.2	Y

Note:

1. May 2019 sampling targeted previously sampled locations where the Total PCB levels of the last measured sections exceeded 1 mg/kg. Additional samples were collected at depth to inform the vertical delineation of PCBs.

Location: UNT-A3-FP15	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.450

Location: UNT-A3-SED-T76	
Sample Depth (ft)	TPCB (mg/kg)
0-0.1	0.434

Location: UNT-A3-T76.25	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	1.2
0.5-1	0.620
1-1.5	0.590
1.5-2	0.130

Location: UNT-A3-T76.5a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.790 (1.4)
0.5-1	0.370
1-1.5	0.470
1.5-2	0.450
2-2.5	0.058
2.5-3	ND

Location: UNT-A3-FP16	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	3.9
0.5-1	3.7
Location: UNT-A3-FP16a	
1-1.5	4.1
1.5-2	0.2
2-2.5	0.03

Location: UNT-A3-T76.75a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	1.2
0.5-1	0.410
1-1.5	0.630
1.5-2	1.4
Deeper sections attempted, not recovered	

Location: UNT-A3-T77	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	ND
0.5-1	ND

Location: UNT-A3-END	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.3

Location: UNT-A3-T77.5a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.160 (0.230)
0.5-1	0.130
1-1.5	0.026
1.5-2	ND
2-2.5	ND
2.5-3	ND
3-3.5	ND
3.5-4	ND

Location: UNT-A3-T78d	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	ND
0.5-1	ND
1-1.5	0.057

Location: UNT-A3-T78b	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.680
0.5-1	1.2
1-1.5	0.071
1.5-2	0.490

Location: UNT-A3-T76b	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.037
0.5-1	0.027
1-1.5	0.022
1.5-2	ND

Location: UNT-A3-T76.5b	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	1.1
0.5-1	3.0
1-1.5	0.021
1.5-2	ND
2-2.5	ND
2.5-3	ND

Location: UNT-A3-T77b	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	2.6
0.5-1	3.2
1-1.5	1.9
1.5-2	1.9
Deeper sections attempted, not recovered	

Location: UNT-A3-T77.25a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	2.9
0.5-1	4.0
1-1.5	1.2
1.5-2	1.1
Location: UNT-A3-T77.25a2	
2-3	Void
3-3.5	5.1
3.5-4	7.0

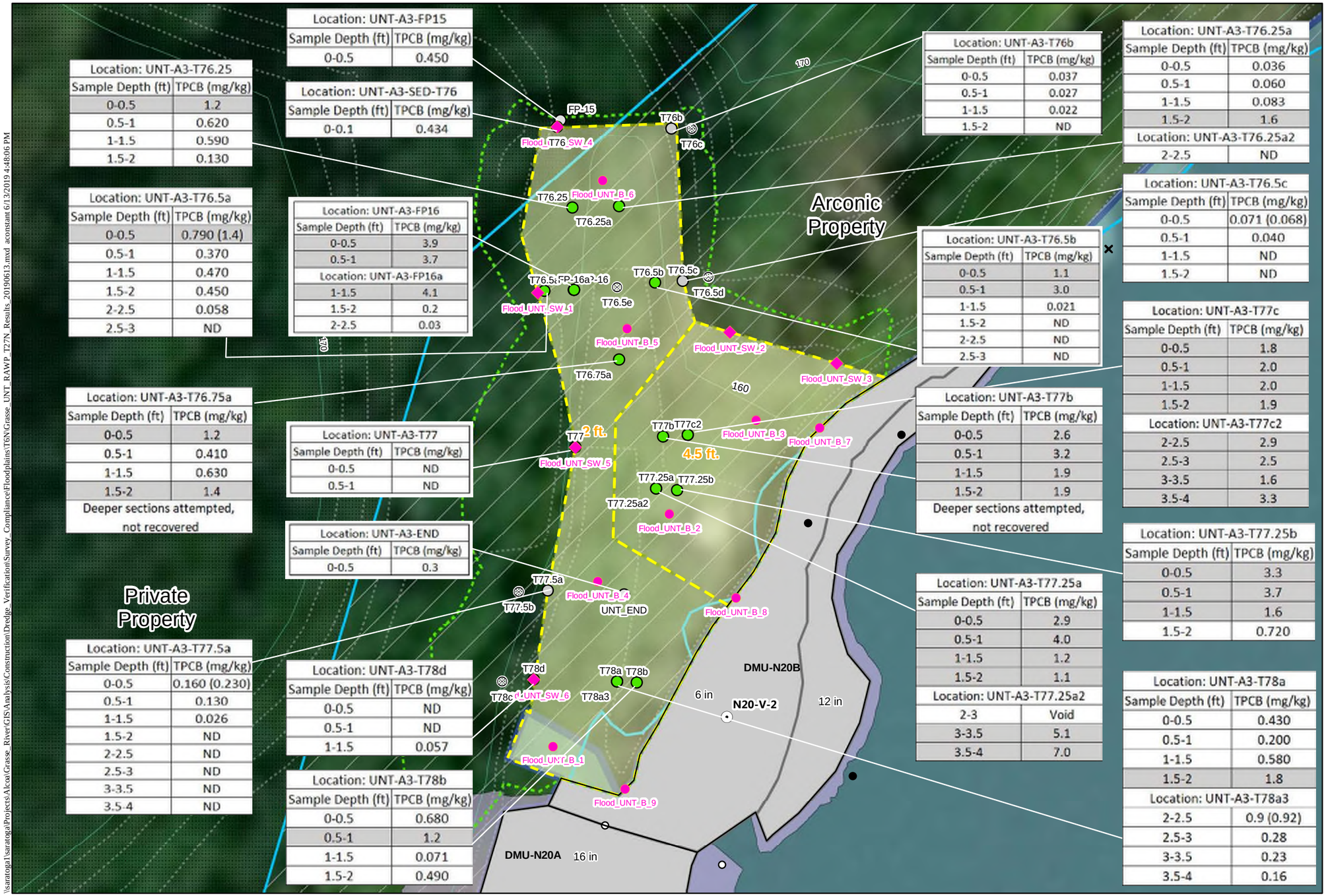
Location: UNT-A3-T76.25a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.036
0.5-1	0.060
1-1.5	0.083
1.5-2	1.6
Location: UNT-A3-T76.25a2	
2-2.5	ND

Location: UNT-A3-T76.5c	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.071 (0.068)
0.5-1	0.040
1-1.5	ND
1.5-2	ND

Location: UNT-A3-T77c	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	1.8
0.5-1	2.0
1-1.5	2.0
1.5-2	1.9
Location: UNT-A3-T77c2	
2-2.5	2.9
2.5-3	2.5
3-3.5	1.6
3.5-4	3.3

Location: UNT-A3-T77.25b	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	3.3
0.5-1	3.7
1-1.5	1.6
1.5-2	0.720

Location: UNT-A3-T78a	
Sample Depth (ft)	TPCB (mg/kg)
0-0.5	0.430
0.5-1	0.200
1-1.5	0.580
1.5-2	1.8
Location: UNT-A3-T78a3	
2-2.5	0.9 (0.92)
2.5-3	0.28
3-3.5	0.23
3.5-4	0.16



Locator Map

NOTES:
Proposed remedial extents are labeled with their proposed excavation depths in orange. Shaded rows indicate Total PCB concentrations greater than or equal to 1 mg/kg. Duplicates are shown in parentheses. ND = non-detect
Grasse River shoreline extent is based on the high-water elevation of 155.5 feet (USLS 1935). Dredge areas are based on revised Final Design as of June 2019 and are labeled with their associated target dredge depth (inches).

LEGEND

Proposed Post-Constuction Sample
- UNT Bottom Sample Location
- UNT Sidewall Sample Location
- Grasse River Verification Location

UNT Sampling Locations
Maximum Total PCB (mg/kg)
- < 1
- > 1
- Location Sampled but Archived
- Target UNT Remedial Extent
- UNT Dredge Grading Limits

Grasse River Sediment Locations
- Above Remedial Criteria
- Below Remedial Criteria
- No Recovery
- Grasse River Dredge Areas
- Grasse River Dredge Grading Limits
- Current Topo Contours (2ft)
- Current Topo Contours (10ft)
- Grasse River

Parcels Along the Grasse River
- Non-Arconic Properties
- Arconic Property

GRAPHIC SCALE
0 10 20 40 Feet

ARCONIC

Figure 1
Unnamed Tributary (Area III OU3) Design Revisions and Verification Sampling Targets
ECN-2019-011

ATTACHMENT 1
REVISED DRAWINGS

D-13

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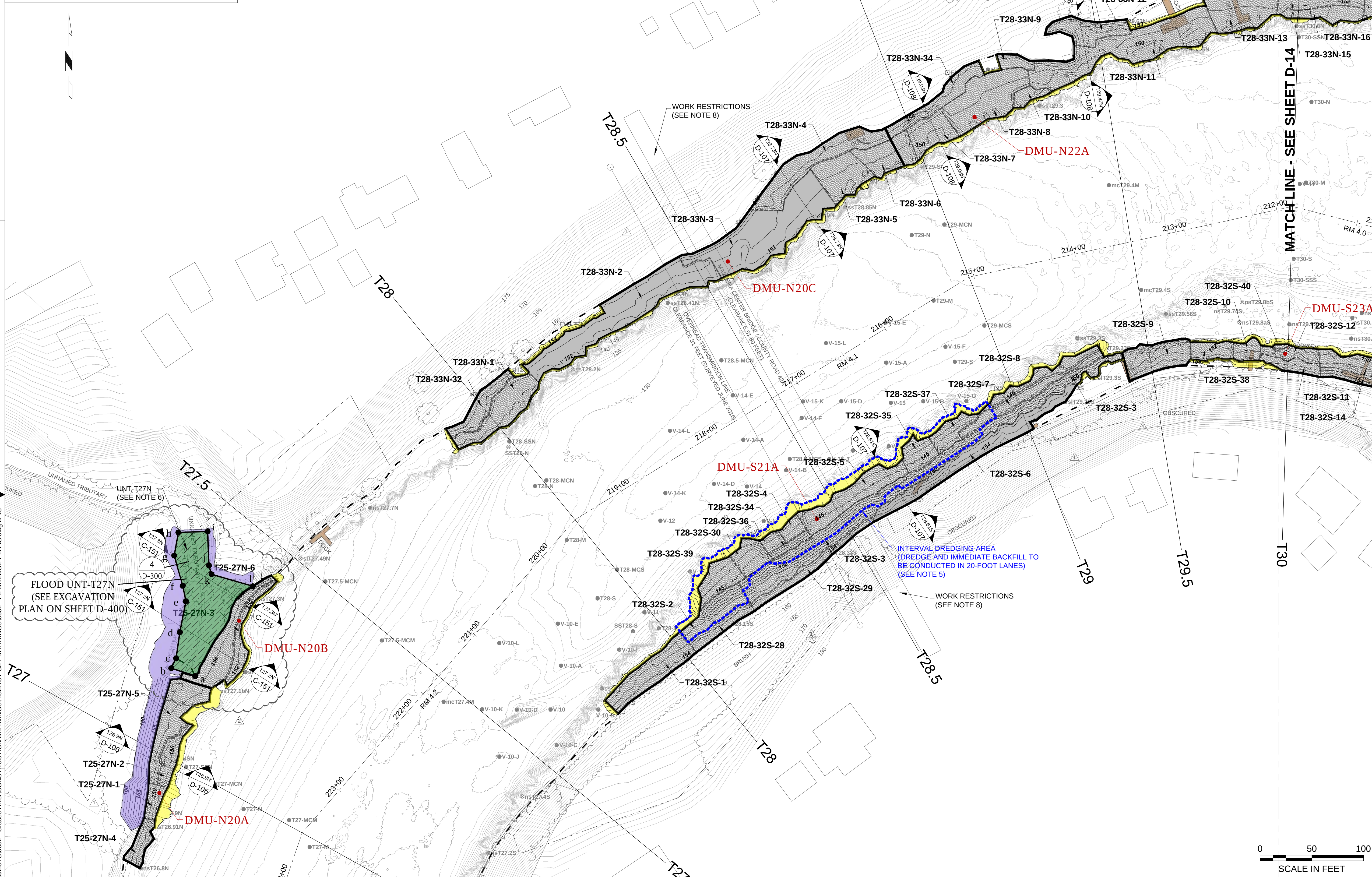

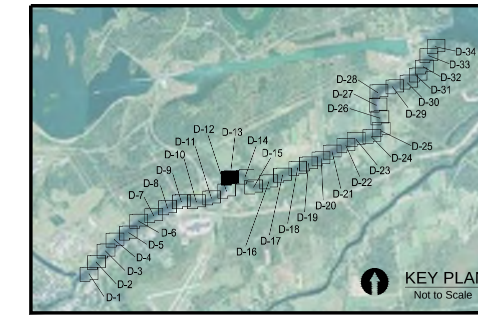

LEGEND:

- 140 / 141 — EXISTING CONTOURS (FEET USLS35) (1-FOOT INTERVAL)
- RIVER SHORELINE BOUNDARY (155.5 FEET USLS35)
- ALCOA/ARCONIC PROPERTY LINE
- 196+00 195+00 RM 3.7 — RIVER CENTERLINE AND STATIONING
- T1.5 — T1.5 — TRANSECT LOCATION
- ● T24-8 — SEDIMENT CORE LOCATION
- ⊗ T14-N — NO RECOVERY SEDIMENT LOCATION
- ⊡ FLT3 — FLOODPLAIN SAMPLE LOCATION
- FIXED WATER QUALITY MONITORING STATION
- RIPRAP (APPROXIMATE)
- DMU-S15A — DREDGE MANAGEMENT UNIT (DMU) BOUNDARY
- T23-24S-1 — TARGET ENGINEERED DREDGE PRISM AND PRISM ID (DOES NOT INCLUDE DAYLIGHTING)
- PROPOSED DREDGE DESIGN SURFACE CONTOUR (1 AND 5 FOOT INTERVALS)
- DREDGE AREA IN-RIVER GRADING (1 AND 5 FOOT INTERVALS)
- DREDGE AREA UPLAND GRADING (1 AND 5 FOOT INTERVALS)
- CROSS SECTION LOCATION
- FLOODPLAIN REMOVAL AREAS AND REQUIRED REMOVAL DEPTH
- PREVIOUS REMEDIAL/PILOT STUDY AREA
- INTERVAL DREDGING AREA (DREDGE AND IMMEDIATE BACKFILL) (SEE NOTE 5)

HORIZONTAL DATUM: NEW YORK STATE PLANE EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), U.S. SURVEY FEET.

VERTICAL DATUM: UNITED STATES LAKE SURVEY OF 1935, (USLS35), U.S. SURVEY FEET.

NOTES:

1. SEE SHEET G-1 FOR GENERAL NOTES AND LEGEND.
2. REQUIRED ELEVATIONS FOR DREDGING ARE SHOWN ON THE ELECTRONIC DREDGE PRISM XYZ FILES. DREDGING SHALL BE CONDUCTED IN ACCORDANCE WITH REQUIREMENTS OUTLINED IN SPECIFICATION 35 20 23 DREDGING. UPLAND GRADING IS BASED ON AREAS WHERE DREDGING ABOVE THE SHORELINE ELEVATION IS SHOWN IN THE DREDGE PRISM XYZ FILE.
3. DEPICTED IN-RIVER AND UPLAND DREDGING CONTOURS ARE BASED ON THE DREDGE PRISM DESIGN SURFACE, AND DO NOT INCLUDE ALLOWABLE OVERDREDGE. CONTOURS SHOWN WITHIN FLOODPLAIN REMEDIAL AREAS REPRESENT EXISTING GRADE. CONTOURS SHOWN FOR BIDDING PURPOSES ONLY. ACTUAL EXCAVATION DEPTH BASED ON REQUIRED THICKNESS OF CUT AND PRE-EXCAVATION SURVEY.
4. DREDGE PRISMS FOOTPRINTS AND ELEVATIONS ARE SUBJECT TO CHANGE BASED ON ADDITIONAL DATA COLLECTION OR DESIGN REFINEMENT FOLLOWING THE SELECTION OF A REMEDIAL CONTRACTOR.
5. AREAS DESIGNATED FOR INTERVAL DREDGING (DREDGE AND IMMEDIATE BACKFILL) SHALL BE DREDGED AND BACKFILLED AS DESCRIBED IN SECTION 35 20 23 - DREDGING AND SECTION 31 23 23 - CAPPING AND BACKFILLING.
6. SEDIMENT REMOVAL WITHIN THE UNNAMED TRIBUTARY SHOWN SHALL PROCEED SIMILAR TO FLOODPLAIN REMOVALS.
7. WORK NEAR HISTORIC BRIDGE SHALL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATION 01 14 00.

ISSUED JUNE 10, 2019

A-XXXXXX-JM

REFERENCE DRAWINGS

ARCONIC
Innovation, engineered.
MASSENA OPERATIONS

DRAWING INTENDED TO BE VIEWED IN COLOR. IMAGE TO RIGHT IS "GREEN"

ONE INCH — AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

YEAR	MONTH	DAY	NO.	REVISION RECORD	DR.	CK.	ZONE
19	06	10	2	Flood Plain T27N Revisions	PS	CG	
19	04	10	1	Final Design Revisions	PS	CG	
18	08	15	0	ORIGINAL DRAWING DATE	PS	CG	

PREPARED BY: ARCADIS
PREPARED BY: ANCHOR QEA
PREPARED BY: CDM Smith

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BLDG. NO.

STA 225+00 TO STA 212+00 DREDGE PLAN

ENGINEER	PLANT CODE: JM	DESIGNED BY: A. CONSTANT, M. REEMTS
SCALE / ORIGIN: JM	DWG. CLASS: CAD	DRAWN BY: P. SCIABA
DRAWING NUMBER: D-13	54 OF 181	CHECKED BY: C. GUEST
		APPROVED BY: P. LaROSA

A:\CAD - Boston\PROJECTS\0002 - Grasse River\CONSTRUCTION DRAWINGS\AGENCY SET DRAWINGS\0002 - PL-DREDGE-PLANS.dwg D-13
Jun 17, 2019 3:09pm psciaba

REMOVAL DEPTHS AND VERTICES FOR FLOODPLAIN REMOVAL AREAS

△ 1 D-2 1 C-2

FLOOD-T3.2N
REMOVAL DEPTH = 18 INCHES

VERTEX ID	EASTING	NORTHING
a	396364.27	2225958.68
b	396361.85	2225962.23
c	396376.27	2225973.51
d	396407.37	2225988.83
e	396420.35	2226000.53
f	396422.16	2225998.37

△ 2 D-2 2 C-2

FLOOD-T4N
REMOVAL DEPTH = 18 INCHES

VERTEX ID	EASTING	NORTHING
a	396470.72	2226041.62
b	396468.29	2226044.40
c	396486.75	2226060.25
d	396521.42	2226096.74
e	396536.39	2226109.56
f	396550.86	2226127.03
g	396618.93	2226192.36
h	396645.68	2226234.06
i	396669.84	2226251.19
j	396683.55	2226266.18
k	396686.83	2226262.88

△ 3 D-3 3 C-3

FLOOD-T6.3N
REMOVAL DEPTH = 18 INCHES

VERTEX ID	EASTING	NORTHING
a	397249.49	2226975.51
b	397245.57	2226974.96
c	397245.71	2226980.08
d	397239.49	2226985.14
e	397245.24	2227000.89
f	397229.10	2227000.58
g	397220.25	2227013.63
h	397226.24	2227026.96
i	397237.15	2227033.03
j	397239.09	2227042.86
k	397235.87	2227051.89
l	397236.00	2227064.35
m	397244.94	2227077.23
n	397257.67	2227089.15
o	397263.26	2227089.01

△ 4 D-13 4 C-13

UNT-T27N
REMOVAL DEPTH VARIES - SEE SHEET D-400

Vertex ID	Easting	Northing
a	406027.37	2231961.90
b	406004.23	2231969.59
c	406008.93	2231979.10
d	406012.63	2232004.57
e	406018.39	2232034.43
f	406015.37	2232049.37
g	406007.18	2232078.47
h	406011.14	2232100.92
i	406039.43	2232101.92
j	406040.80	2232069.00
k	406043.26	2232060.49
l	406083.14	2232048.92

5 D-20 5 C-20

FLOOD-T43.2S
REMOVAL DEPTH = 18 INCHES

Vertex ID	Easting	Northing
a	412903.24	2233199.21
b	412905.77	2233160.92
c	412942.46	2233155.51
d	412944.00	2233170.12
e	412998.23	2233167.37
f	413067.88	2233191.44
g	413076.19	2233171.14
h	413118.26	2233185.07
i	413114.20	2233211.32

6 D-29 6 C-29

FLOOD-T64S
REMOVAL DEPTH = 18 INCHES

Vertex ID	Easting	Northing
a	419024.35	2238718.41
b	419064.16	2238720.89
c	419099.57	2238733.77
d	419127.82	2238736.12
e	419169.57	2238760.76
f	419156.33	2238791.10
g	419118.84	2238813.35

DRAWING INTENDED TO BE VIEWED IN COLOR. IMAGE TO RIGHT IS "GREEN"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

STATE OF NEW YORK — ERIC T. LANDAU — LICENSED PROFESSIONAL ENGINEER

YEAR	MONTH	DAY	NO.	REVISION RECORD	DR.	CK.	ZONE
19	06	10	2	Flood Plain T27N Revisions	PS	CG	
19	04	10	1	Final Design Revisions	PS	CG	
18	08	15	//	ORIGINAL DRAWING DATE	PS	CG	

PREPARED BY: ARCADIS

PREPARED BY: ANCHOR QEA

PREPARED BY: CDM Smith

ISSUED JUNE 10, 2019

A-XXXXXX-JM

REFERENCE DRAWINGS

ARCONIC
Innovation, engineered.
MASSENA OPERATIONS
PREPARED BY:

BLDG. NO.

Floodplain Remedial Extents

ENGINEER	PLANT CODE: JM	DESIGNED BY: A. CONSTANT, M. REEMTS	
SCALE	ORIGIN: JM	DWG. CLASS: CAD	DRAWN BY: P. SCIABA
DRAWING NUMBER: D-300			CHECKED BY: C. GUEST
92 OF 181			APPROVED BY: P. LaROSA

D-400

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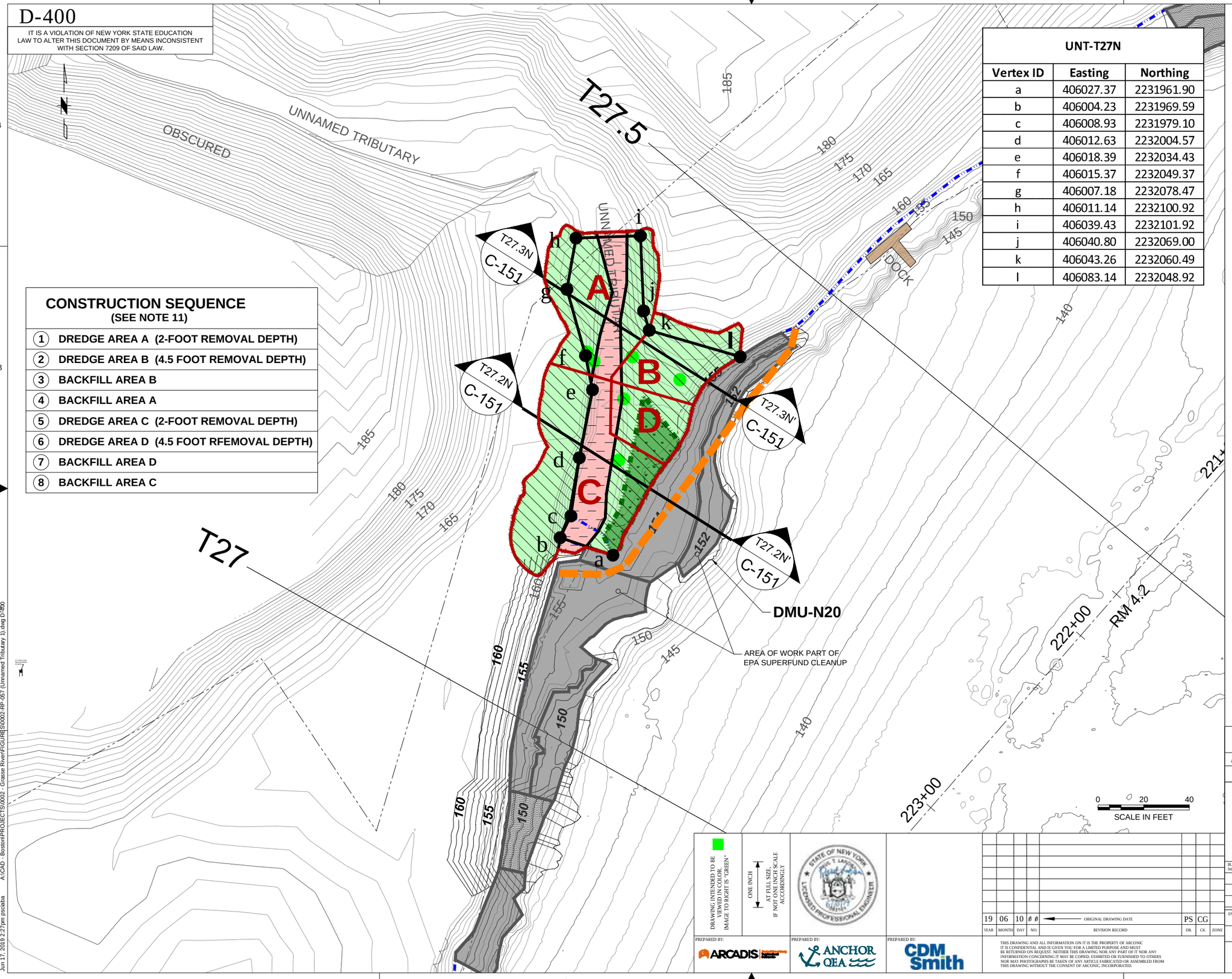

CONSTRUCTION SEQUENCE
(SEE NOTE 11)

1	DREDGE AREA A (2-FOOT REMOVAL DEPTH)
2	DREDGE AREA B (4.5 FOOT REMOVAL DEPTH)
3	BACKFILL AREA B
4	BACKFILL AREA A
5	DREDGE AREA C (2-FOOT REMOVAL DEPTH)
6	DREDGE AREA D (4.5 FOOT RFEMOVAL DEPTH)
7	BACKFILL AREA D
8	BACKFILL AREA C

UNT-T27N

Vertex ID	Easting	Northing
a	406027.37	2231961.90
b	406004.23	2231969.59
c	406008.93	2231979.10
d	406012.63	2232004.57
e	406018.39	2232034.43
f	406015.37	2232049.37
g	406007.18	2232078.47
h	406011.14	2232100.92
i	406039.43	2232101.92
j	406040.80	2232069.00
k	406043.26	2232060.49
l	406083.14	2232048.92

LEGEND:

- EXISTING CONTOURS (FEET USLS35) (1-FOOT INTERVAL)
- GRASSE RIVER SHORELINE BOUNDARY (155.5 FEET USLS35)
- ALCOA / ARCONIC PROPERTY LINE
- RIVER CENTERLINE AND STATIONING
- TRANSECT LOCATION
- IN-RIVER DREDGE AREA
- TYPE B BACKFILL WITH 0.5-FOOT OF TOPSOIL
- TYPE C BACKFILL
- UNNAMED TRIBUTARY REMEDIAL AREA
- EXISTING WETLANDS (TYPE B BACKFILL WITH 0.5-FOOT OF TOPSOIL)
- EXISTING TREE (DBH>6 INCHES)
- FLOOD PLAIN BOUNDARY
- SILT CURTAIN (APPROXIMATE) (SEE NOTE 10)
- CONSTRUCTION SEQUENCE

HORIZONTAL DATUM: NEW YORK STATE PLANE EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), U.S. SURVEY FEET.

VERTICAL DATUM: UNITED STATES LAKE SURVEY OF 1935, (USLS35), U.S. SURVEY FEET.

NOTES:

1. BACKFILL EXTENTS SHOWN WILL BE PROVIDED TO THE CONTRACTOR IN ELECTRONIC FORMAT.
2. EXISTING TREES WITH GREATER THAN 6 INCH DIAMETER AT BREAST HEIGHT (DBH) WITHIN THE EXCAVATION EXTENT ARE SHOWN.
3. WETLAND DELINEATION CONDUCTED BY ARCADIS ON SEPTEMBER 5, 2018.
4. UNT STREAM CHANNEL SHOWN IN "PINK" (R3) = 124 LINEAR FEET.
5. WETLAND SHOWN IN "GREEN" WITH STIPLING (PSS) = 744 SQUARE FEET.
6. UPLAND AREA SHOWN IN "GREEN".
7. WORK AREA TO BE ACCESSED FROM WATERSIDE. USE OF COFFERDAM OR OTHER DEWATERING MECHANISM IS NOT INCLUDED IN THIS WORK.
8. RESTORATION SHALL BE COMPLETED TO MATCH EXISTING GRADE/CONDITIONS, AS FEASIBLE.
9. SEE SPECIFICATIONS 32 90 13 - SHORELINE SEEDING FOR SEEDING REQUIREMENTS.
10. THE SILT CURTAIN WILL BE A 2 FOOT IMPERMEABLE TYPE 3 TURBIDITY CURTAIN. SILT CURTAIN ALIGNMENT IS APPROXIMATE AND REPRESENTS POSITIONING DURING CONSTRUCTION IN THE UNNAMED TRIBUTARY.
11. THE CONTRACTOR SHALL FOLLOW THE CONSTRUCTION SEQUENCE SHOWN. BACKFILL PLACEMENT OF EACH AREA SHALL NOT COMMENCE UNTIL DIRECTED BY THE CONSTRUCTION MANAGER.

ISSUED JUNE 10, 2019

A-XXXXXX-JM

REFERENCE DRAWINGS

DRAWING INTENDED TO BE VIEWED IN COLOR. IMAGE TO RIGHT IS "GREEN"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

PREPARED BY: ARCADIS | ANCHOR QEA | CDM Smith

PREPARED BY: ARCONIC — Innovation, engineered. MASSENA OPERATIONS

BLDG. NO.

UNNAMED TRIBUTARY EXCAVATION AND RESTORATION PLAN

YEAR	MONTH	DAY	NO.	REVISION RECORD	DR.	CK.	ZONE
19	06	10	0 0	← ORIGINAL DRAWING DATE	PS	CG	

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ENGINEER		PLANT CODE JM	DESIGNED BY A. CONSTANT, M. REEMTS
SCALE	ORIGIN JM	DWG. CLASS CAD	DRAWN BY P. SCIABA
DRAWING NUMBER D-400			CHECKED BY C. GUEST
	92a OF 181		APPROVED BY P. LaROSA

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C-13

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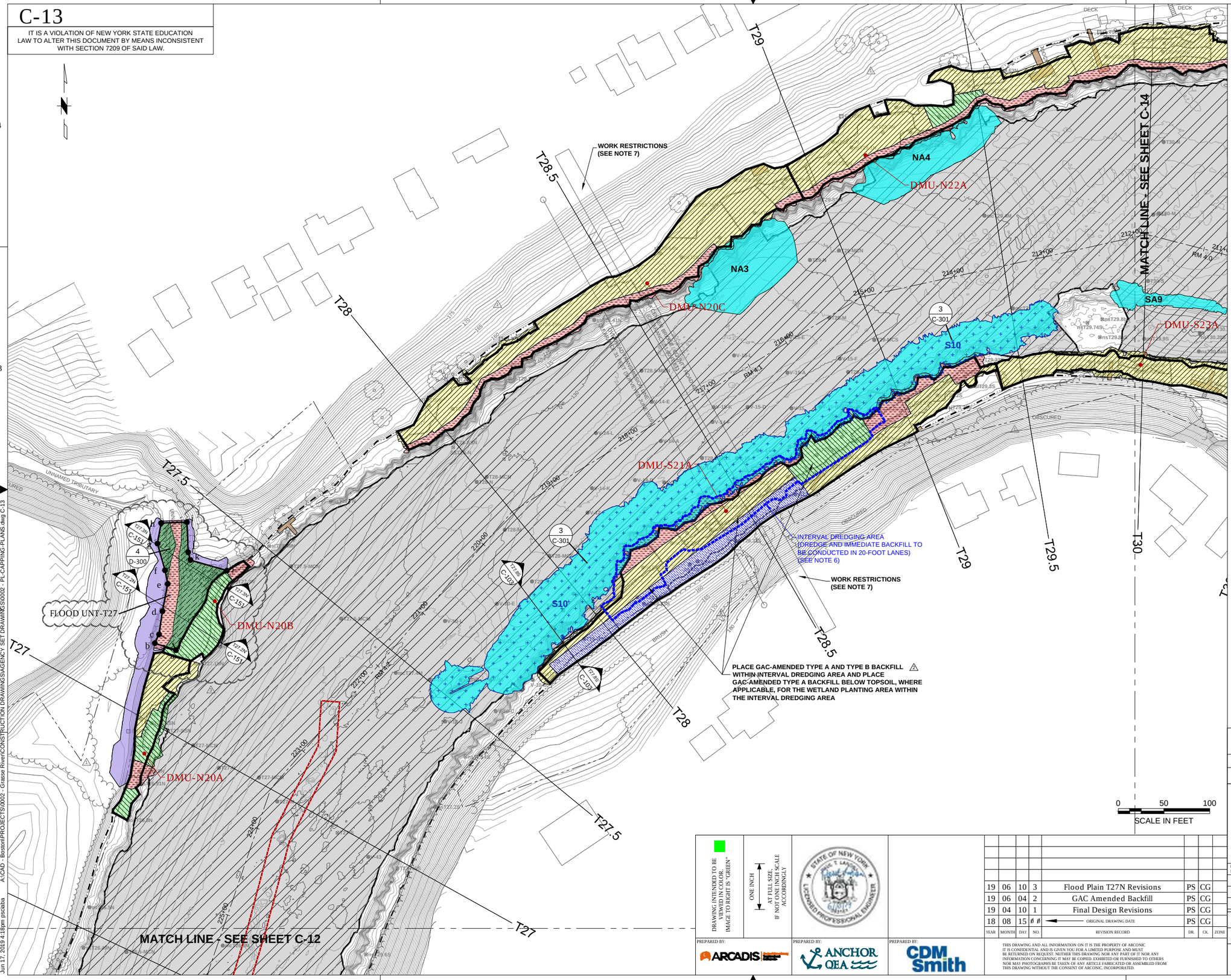

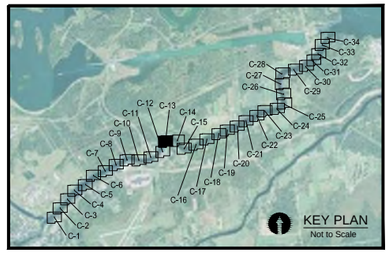

LEGEND:

- 140 / 141 — EXISTING CONTOURS (FEET USLS35) (1-FOOT INTERVAL)
- RIVER SHORELINE BOUNDARY (155.5 FEET USLS35)
- ALCOA / ARCONIC PROPERTY LINE
- 196+00 / 195+00, RM 3.7 — RIVER CENTERLINE AND STATIONING
- ● T24-8 — SEDIMENT CORE LOCATION
- ⊗ T14-N — NO RECOVERY SEDIMENT LOCATION
- ⊡ FLT3 — FLOODPLAIN SAMPLE LOCATION
- ◉ — FIXED WATER QUALITY MONITORING STATION
- T1.5 — T1.5 — TRANSECT LOCATION
- RIPRAP (APPROXIMATE)
- DMU-S15A — DREDGE MANAGEMENT UNIT (DMU) BOUNDARY
- TARGET ENGINEERED DREDGE PRISM AND PRISM ID (DOES NOT INCLUDE DAYLIGHTING)
- MAIN CHANNEL SAND CAP AREA
- MAIN CHANNEL ARMORED CAP AREA
- MAIN CHANNEL MODIFIED ARMORED CAP AREA
- MAIN CHANNEL ARMORED CAP/MODIFIED ARMORED CAP WITH HABITAT LAYER (SEE DETAIL 3 ON SHEET C-200)
- CAP RUNOUT EXTENTS
- STAGED CONSTRUCTION PILOT TEST AREA
- N5 — CAP STEEP SLOPE GRADING FILL
- CAP AREA WITH 12-INCH THICK CHEMICAL ISOLATION LAYER (SEE DETAIL 16 ON SHEET C-203)
- CAP AREA WITH COARSE CHEMICAL ISOLATION LAYER MATERIAL
- S1 — STAGED CONSTRUCTION CAP PLACEMENT (SEE NOTE 5)
- TYPE A BACKFILL
- TYPE B BACKFILL
- TYPE C BACKFILL
- DREDGE AREA UPLAND GRADING (SEE DETAIL 23 ON SHEET C-250)
- FLOODPLAIN REMOVAL AREAS (SEE DETAILS ON SHEET C-150 TO C-153)
- INTERVAL DREDGING AREA (DREDGE AND IMMEDIATE BACKFILL) (SEE NOTE 6)
- EMERGENT WETLAND VEGETATION PLANTING AREAS (WITH 0.5-FOOT OF TOPSOIL)

HORIZONTAL DATUM: NEW YORK STATE PLANE EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), U.S. SURVEY FEET.

VERTICAL DATUM: UNITED STATES LAKE SURVEY OF 1935, (USLS35), U.S. SURVEY FEET.

NOTES:

1. SEE SHEET G-1 FOR GENERAL NOTES AND LEGEND.
2. BACKFILL FOOTPRINTS INCLUDE DESIGN DAYLIGHT GRADING AREAS OUTSIDE THE DREDGE MANAGEMENT UNITS. THE CONTRACTOR SHALL PLACE BACKFILL IN ALL DREDGED AREAS. BACKFILL IS NOT REQUIRED IN DAYLIGHT GRADING AREAS NOT DREDGED.
3. A HABITAT LAYER WILL BE APPLIED ABOVE PORTIONS OF THE ARMORED CAP LAYER AND MODIFIED ARMORED CAP LAYER BETWEEN T4.5 AND T20, AS SHOWN.
4. REQUIRED CAPPING AND BACKFILL EXTENTS SHOWN WILL BE PROVIDED TO THE CONTRACTOR IN ELECTRONIC FORMAT. CAPPING AND BACKFILL SHALL BE CONDUCTED IN ACCORDANCE WITH REQUIREMENTS OUTLINED IN SPECIFICATION SECTION 31 23 23 - CAPPING AND BACKFILLING.
5. SEE SHEETS C-300 AND C-301 AND SPECIFICATION SECTION 21 23 23 - CAPPING AND BACKFILLING FOR STAGED CAP CONSTRUCTION REQUIREMENTS.
6. AREAS DESIGNATED FOR INTERVAL DREDGING (DREDGE AND IMMEDIATE BACKFILL) SHALL BE DREDGED AND BACKFILLED AS DESCRIBED IN SECTION 35 20 23 - DREDGING AND SECTION 31 23 23 - CAPPING AND BACKFILLING.
7. WORK NEAR HISTORIC BRIDGE SHALL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATION 01 14 00.

0 50 100
SCALE IN FEET

DRAWING INTENDED TO BE VIEWED IN COLOR. IMAGE TO RIGHT IS "GREEN"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

STATE OF NEW YORK — ERIC T. LAROSA — LICENSED PROFESSIONAL ENGINEER — 075174

YEAR	MONTH	DAY	NO.	REVISION RECORD	DR.	CK.	ZONE
19	06	10	3	Flood Plain T27N Revisions	PS	CG	
19	06	04	2	GAC Amended Backfill	PS	CG	
19	04	10	1	Final Design Revisions	PS	CG	
18	08	15	0	ORIGINAL DRAWING DATE	PS	CG	

PREPARED BY: ARCADIS

PREPARED BY: ANCHOR QEA

PREPARED BY: CDM Smith

ISSUED JUNE 10, 2019

A-XXXXXX-JM

REFERENCE DRAWINGS

ARCONIC
Innovation, engineered.
MASSENA OPERATIONS
PREPARED BY:

BLDG. NO.

STA 225+00 TO STA 212+00 CAP AND COVER PLAN

ENGINEER		PLANT CODE	JM	DESIGNED BY	A. CONSTANT, M. REEMTS
SCALE	ORIGIN JM	DWG. CLASS	CAD	DRAWN BY	P. SCIABA
DRAWING NUMBER C-13				CHECKED BY	C. GUEST
				APPROVED BY	P. LaROSA

106 OF 181

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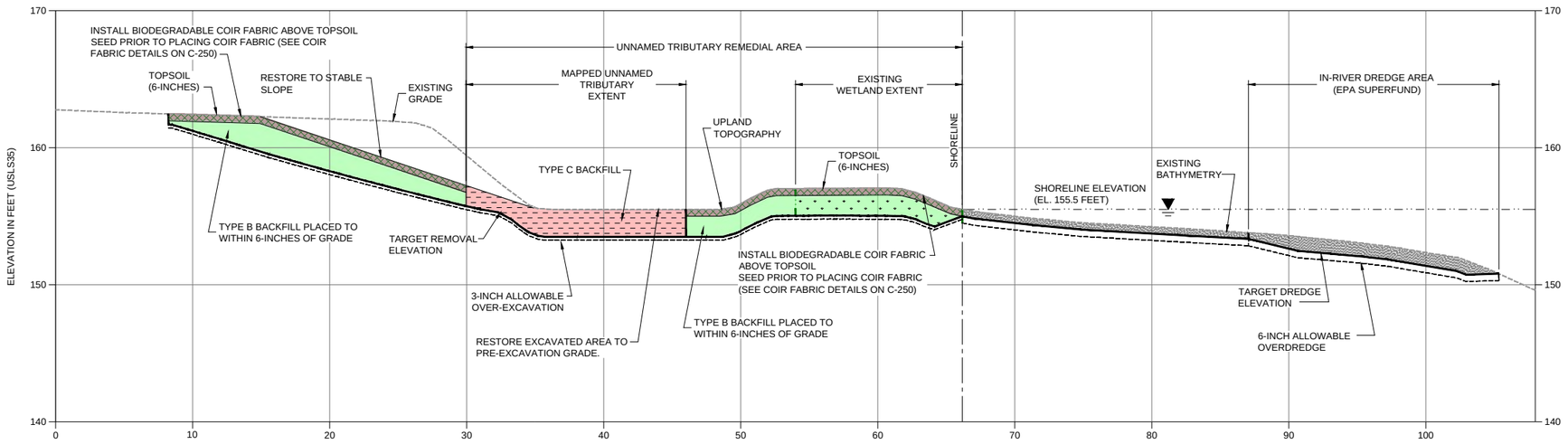
Jun 17, 2019 4:18pm psciaba

C-151

T27.2N

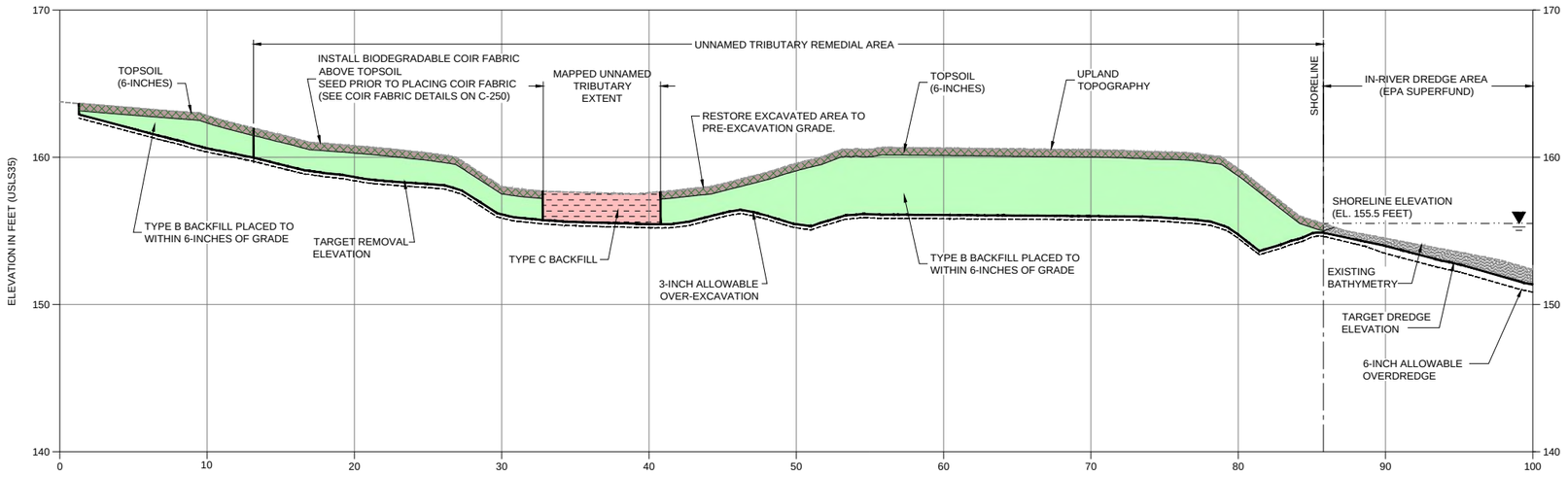
T27.2N'



T27.2N C-13 / T27.2N D-13 SECTION
SCALE:1" = 5'
HORIZONTAL DISTANCE IN FEET
1X VERTICAL EXAGGERATION

T27.3N

T27.3N'



T27.3N C-13 / T27.3N D-13 SECTION
SCALE:1" = 5'
HORIZONTAL DISTANCE IN FEET
1X VERTICAL EXAGGERATION

LEGEND:

- GRASSE RIVER SHORELINE
- SHORELINE ELEVATION (EL. 155.5 FEET USLS35)
- NEAR SHORE EXTENTS
- EXISTING BATHYMETRY
- TARGET DREDGE ELEVATION
- 6-INCH ALLOWABLE OVERDREDGE
- DMU-XX — DREDGE MANAGEMENT UNIT BOUNDARY
- CAP STEEP SLOPE GRADING FILL
- TOPSOIL
- TYPE A BACKFILL
- TYPE B BACKFILL
- TYPE C BACKFILL

HORIZONTAL DATUM: NEW YORK STATE PLANE EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), U.S. SURVEY FEET.

VERTICAL DATUM: UNITED STATES LAKE SURVEY OF 1935, (USLS35), U.S. SURVEY FEET.

NOTES:

1. SEE SHEET G-1 FOR GENERAL NOTES AND LEGEND.
2. BACKFILL AND TOPSOIL SHALL BE PLACED FROM BOTTOM OF SLOPE TO TOP OF SLOPE.
3. BACKFILL PLACEMENT IN NEAR SHORE DREDGE AREAS ADJACENT TO UPLAND REMOVAL AREAS SHALL BE FEATHERED INTO EXISTING GRADE AT EDGE OF SHORELINE.
4. SEE SPECIFICATION SECTION 31 23 23 - CAPPING AND BACKFILLING FOR MATERIAL SPECIFICATIONS, PLACEMENT TOLERANCES, AND PLACEMENT VERIFICATION.
5. CONDUCT SEEDING AND COIR FABRIC INSTALLATION IN ACCORDANCE WITH SECTION 32 92 21 - SHORELINE SEEDING. SEEDING NOT REQUIRED WHERE TYPE C BACKFILL IS PLACED. ⚠
6. PROPOSED CONSTRUCTION METHODS AND MATERIALS FOR UPLAND RESTORATION MUST BE APPROVED BY THE CONSTRUCTION MANAGER.

DRAWING INTENDED TO BE VIEWED IN COLOR. IMAGE TO RIGHT IS "GREEN"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

YEAR	MONTH	DAY	NO.	REVISION RECORD	DR.	CK.	ZONE
19	06	10	2	Flood Plain T27N Revisions	PS	CG	
19	04	10	1	Final Design Revisions	PS	CG	
18	08	15	⚠⚠	← ORIGINAL DRAWING DATE	PS	CG	

PREPARED BY: ARCADIS | PREPARED BY: ANCHOR QEA | PREPARED BY: CDM Smith

ISSUED JUNE 10, 2019

A-XXXXXX-JM

REFERENCE DRAWINGS

ARCONIC
Innovation, engineered.
MASSENA OPERATIONS
PREPARED BY:

BLDG. NO.

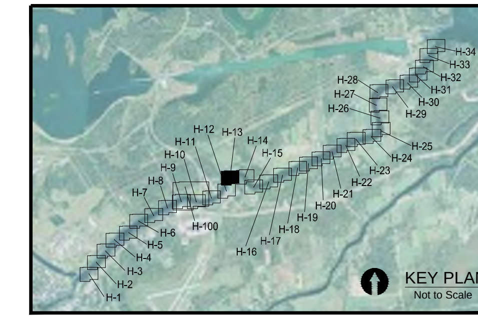
FLOODPLAIN REMEDIAL AREA BACKFILL DETAILS AND SECTIONS

ENGINEER		PLANT CODE: JM	DESIGNED BY: A. CONSTANT, M. REEMTS
SCALE	ORIGIN: JM	DWG. CLASS: CAD	DRAWN BY: P. SCIABA
DRAWING NUMBER: C-151			CHECKED BY: C. GUEST
		136 OF 181	APPROVED BY: P. LaROSA

Jun 17, 2019 3:00pm psciaba A:\CAD - Boston\PROJECTS\0002 - Grasse River\CONSTRUCTION DRAWINGS\AGENCY SET DRAWINGS\0002 - PL-CAPPING-SECTIONS-ONE.dwg C-151

H-13

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW TO ALTER THIS DOCUMENT BY MEANS INCONSISTENT WITH SECTION 7209 OF SAID LAW.



LEGEND:

- 140 / 141 — POST BACKFILL CONTOURS (FEET USLS35) (1-FOOT INTERVAL)
- RIVER SHORELINE BOUNDARY (155.5 FEET USLS35)
- ALCOA/ARCONIC PROPERTY LINE
- 196+00 195+00 RM 3.7 — RIVER CENTERLINE AND STATIONING
- T1.5 — T1.5 TRANSECT LOCATION
- RIPRAP (APPROXIMATE)
- MAIN CHANNEL SAND CAP AREA
- MAIN CHANNEL ARMORED CAP AREA
- MAIN CHANNEL MODIFIED ARMORED CAP AREA
- MAIN CHANNEL ARMORED CAP/MODIFIED ARMORED CAP WITH HABITAT LAYER (SEE DETAIL 3 ON SHEET C-200)
- EXISTING SUBMERGED AQUATIC VEGETATION AREA
- EXISTING EMERGENT VEGETATION
- EXISTING WETLANDS
- SHORELINE RESTORATION AREA
- B-T10.4 — ROCK CLUSTER
- W-T42.2 — ANCHORED ROOTWAD (ALIGNMENT SHOWN IS APPROXIMATE)

HORIZONTAL DATUM: NEW YORK STATE PLANE EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), U.S. SURVEY FEET.

VERTICAL DATUM: UNITED STATES LAKE SURVEY OF 1935, (USLS35), U.S. SURVEY FEET.

NOTES:

1. SEE SHEET G-1 FOR GENERAL NOTES AND LEGEND.
2. A HABITAT LAYER (SAND) WILL BE APPLIED ABOVE PORTIONS OF THE ARMORED CAP AND MODIFIED ARMORED CAP BETWEEN T6 AND T20, EXCLUDING SIDE SLOPE AREAS. SEE SPECIFICATION SECTION 31 23 23 FOR HABITAT LAYER REQUIREMENTS.
3. PLANTINGS AND OTHER RESTORATION ELEMENTS TO BE INSTALLED BY OTHERS. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ROCK CLUSTERS, ANCHORED ROOTWADS, AND SHORELINE RESTORATION AT LOCATIONS OF UPLAND DREDGING AS SHOWN. SEE SHEET H-100 AND C-250 FOR DETAILS.
4. WORK NEAR HISTORIC BRIDGE WILL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATION 01 14 00.

ISSUED JUNE 10, 2019

A-XXXXXX-JM

REFERENCE DRAWINGS

ARCONIC
Innovation, engineered.
MASSENA OPERATIONS

DRAWING INTENDED TO BE VIEWED IN COLOR. IMAGE TO RIGHT IS "GREEN"

ONE INCH — AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

YEAR	MONTH	DAY	NO.	REVISION RECORD	DR.	CK.	ZONE
19	06	10	2	Flood Plain T27N Revisions	PS	CG	
19	04	10	1	Final Design Revisions	PS	CG	
18	08	15	0 0	ORIGINAL DRAWING DATE	PS	CG	

PREPARED BY: ARCADIS — PREPARED BY: ANCHOR QEA — PREPARED BY: CDM Smith

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STA 225+00 TO STA 212+00 HABITAT PLAN

ENGINEER	PLANT CODE: JM	DESIGNED BY	R. DAVIS
SCALE	ORIGIN: JM — DWG. CLASS: CAD	DRAWN BY	P. SCIABA
DRAWING NUMBER: H-13	159 OF 181	CHECKED BY	C. GUEST
		APPROVED BY	P. LaROSA

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Jun 17, 2019 3:04pm psciaba

Arconic Inc. - Grasse River Remediation
Engineering Change Notice

Revision Number: ECN-2019-012 **Date:** 09/20/2019

Requested Change:
Adjustment to the species included in the seed mix and timing for seeding in areas of upland soil removal per Specification Section 32 92 21, Part 2.02.

Basis for Change:
Based on communication from the Saint Regis Mohawk Tribe (SRMT) on June 20, 2019 and June 27, 2019, a meeting conducted on August 8, 2019, and SRMT comments on August 21, 2019 and August 30, 2019; specific native species seeds were requested for seeding. This request results in additional species being added to the Riparian Buffer Mix and Wetland Seed Mix listed in Specification Section 32 92 21, Part 2.02.

Schedule Impact/Documents Affected:
As summarized below, these changes result in changes to Specification Section 32 92 21, Part 2.02 identifying the required seed mixture for the Riparian Buffer Mix and Wetland Seed Mix. It is assumed the overall project duration will not be affected.

Resolution:
Based on communication from SRMT on June 20, 2019 and June 27, 2019 as well as SRMT comments on August 21, 2019 and August 30, 2019, specific native seed species have been included in the seed mixes for seeding in floodplain removal and upland grading areas. Attachment A includes Specification Section 32 92 21, Part 2.02, which has been revised to reference the species in the Contractor's proposed Riparian Buffer Mix and Wetland Seed Mix for 2019 seeding activities.

The seeding subcontractor was provided with the list of 74 species from the two tables included in SRMT's August 30, 2019 comments on a prior version of this ECN. The seeding subcontractor was asked to incorporate as many of these species as possible in revised seed mixes. The revised riparian and wetland seed mixes and an explanation as to how these seed mixes were developed are provided in Attachment B. The seed mixes presented in Attachment B are proposed for use during 2019. It is understood that SMRT may have other comments on seed mixes used in future construction seasons.

Due to unseasonably high water levels on the Grasse River in 2019, seeding of inundated portions of the upland dredge grading areas and floodplain removal areas will not be conducted. If water elevations decrease such that the areas become exposed before the end of 2019, the Construction Manager may require the Contractor to seed these areas. Areas where seeding cannot be completed in upland dredge grading areas and floodplain removal areas due to elevated water levels will be added to the scope of work for habitat construction by others in 2020.

The Contractor's Record Drawings will show the extents of areas where seeding is performed, and identification of the seed mix used.

SRMT requested to attend a site visit prior to seeding. Arconic notified the Agencies (including SRMT) prior to initiating seeding in the 2019 construction season. Specification Section 32 92 21 was revised to indicate that the Contractor will notify the Construction Manager a minimum of three days before seeding an area. The Construction Manager will provide notice to the Agencies prior to seeding. It is expected that this notification will be provided during daily construction meetings with the Agencies.

Arconic Inc. - Grasse River Remediation
Engineering Change Notice

Revision Number: ECN-2019-012 **Date:** 09/20/2019

Level of Approval Required[1]:	Agency on-site representative _____	**OR**
	USEPA Project Manager _____	
	(with appropriate Agency review)	

Approval:

Arconic Representative:	_____	Date: 09/20/2019
Agency On-Site Representative:	_____	Date: _____
USEPA Project Manager: (if necessary)	_____	Date: _____

Distribution:	USEPA Representative	Lawrence McShea, Arconic
	USACE Representative	Mike Elsner, Arconic
	SRMT Representative	Dan Casey, Arcadis
	NYSDEC Representative	Paul LaRosa, Anchor QEA
	Agency Onsite Representative	Mike Schultz, CDMS
		Chuck Guest, Anchor QEA
		Contractor Representative

[1] Level of approval required will be based on type of change being requested. Minor adjustments (e.g., movement of sampling locations, times) can be approved by the Agency on-site representative. The Agency on-site representative will be responsible for determining the level of approval required for each change.

Enclosures:

- Attachment A – Revised Specification Section 32 92 21, Shoreline Seeding
- Attachment B – Proposed Riparian Buffer Mix and Wetland Seed Mix for 2019 and rationale for seed mix selection.

Attachment A

SECTION 32 92 21

SHORELINE SEEDING

PART 1 – GENERAL

1.01 REFERENCED SECTIONS

A. Section 01 33 00 – Submittal Procedures

B. Section 31 23 23 – Capping and Backfilling

1.02 REFERENCES

A. 6 New York Codes, Rules, and Regulations (6NYCRR) Part 575, Prohibited and Regulated Invasive Species

B. New York Environmental Conservation Law (ECL) Article 17, Title 21, Nutrient Runoff Law

1.03 DESCRIPTION

A. The Contractor shall seed, fertilize, and install shoreline protection fabric in areas of upland soil removal as shown on the Drawings and described in this Specification.

1.04 SUBMITTALS

A. Seeding Plan. The Contractor shall submit to the Construction Manager for approval a Seeding Plan in accordance with Section 01 33 00 – Submittal Procedures. At a minimum, the Seeding Plan shall include the following:

1. Means by which subgrade will be checked and verified by the Contractor prior to seeding and installation of shoreline protection fabric.

2. Methods, equipment, procedures, and sequence for seeding, fertilizer application, shoreline protection fabric placement, and watering.

3. Seed. Product datasheets, certificates, and source information for proposed seed mixes. The seed certificates shall include the following: botanical name and common name of all species included in the seed mixture; percentage of each species of seed by weight in a mixture; percentage of pure seed for each species included in the mixture; germination percentage; amount of undesirable plant seed present in the mixture; date of packaging; name and address of supplier; and county and state of origin.

4. Fertilizer Certificate. Product datasheet and certificate confirming conformance with this Specification.

5. Shoreline Protection Fabric. Submit manufacturer product data, as well as delivery, handling, storage, installation, and repair methods.

6. A maintenance and inspection schedule.

1.05 DELIVERY, STORAGE, AND HANDLING

A. The Contractor shall ensure fertilizer is delivered in manufacturer's standard size bags or cartons showing weight, analysis, and the name of the manufacturer. The Contractor shall store as approved by the Construction Manager.

B. The Contractor shall ensure seed is delivered in vendor's unopened packages bearing labels showing vendor's name and seed analysis by weight.

C. The Contractor shall store all seed at the Project Site in a cool, dry place at locations approved by the Construction Manager. The Contractor shall replace any seed damaged during storage.

D. The Contractor shall store seed in weather- and rodent-proof enclosures.

PART 2 – PRODUCTS

2.01 SHORELINE PROTECTION FABRIC – SHORELINE SLOPE AREAS

A. Coir Fiber Fabric shall be Coir Mat 700 or approved equivalent.

2.02 SEED

A. Seed shall be as follows:

1. Riparian Buffer Mix: Shall include the following species or approved equivalent, subject to availability, as approved by the Construction Manager.

SCIENTIFIC NAME	COMMON NAME
Agrostis perennans	Autumn Bent Grass
Andropogon gerardii	Big Bluestem
Asclepias incarnata	Swamp Milkweed
Chamaecrista fasciculata	Partridge Pea
Doellingeria umbellata	Flat-Top Aster
Elymus virginicus	Virginia Wild Rye
Eupatorium perfoliatum	Common Boneset
Eutrochium fistulosum	Hollow Joe-Pye Weed
Helenium autumnale	Sneezeweed
Heliopsis helianthoides	False Sunflower
Juncus effusus	Common Rush
Lobelia siphilitica	Great Blue Lobelia
Monarda fistulosa	Wild Bergamot
Panicum virgatum	Switch Grass
Pycnanthemum tenuifolium	Mountain Mint
Rudbeckia hirta	Black-Eyed Susan
Solidago patula	Swamp Goldenrod
Sorghastrum nutans	Indian Grass
Symphyotrichum lateriflorum	Side-Flowering Aster
Symphyotrichum novae-angliae	New England Aster
Verbena hastata	Blue Vervain
Vernonia fasciculata	Common Ironweed
Achillea millefolium	Yarrow
Arisaema triphyllum	Jack-in-the-pulpit
Asarum canadense	Wild Ginger

SCIENTIFIC NAME	COMMON NAME
Asclepias syriaca	Common milkweed
Cichorium intybus	Chicory
Maianthemum racemosum	Solomon's seal, False
Mondarda fistulosa	Bergamont
Sanguinaria canadensis	Bloodroot
Trifolium pratense	Red Clover
Verbascum Thapsus	Mullein

~~ERNMX-178 Riparian Buffer Seed Mix or approved equivalent.~~

~~1.~~2. Cover Crop: *Secale cereale* or approved equivalent.

3. Wetland Seed Mix: Shall include the following species or approved equivalent, subject to availability, as approved by the Construction Manager.

SCIENTIFIC NAME	COMMON NAME
Alisma subcordatum	Common Water Plantain
Asclepias incarnata	Swamp Milkweed
Carex lupulina	Common Hop Sedge
Carex scoparia	Lance-Fruited Oval Sedge
Carex vulpinoidea	Brown Fox Sedge
Chelone glabra	Turtlehead
Cinna arundinacea	Common Wood Reed
Doellingeria umbellata	Flat-Top Aster
Elymus virginicus	Virginia Wild Rye
Eupatorium perfoliatum	Common Boneset
Eutrochium fistulosum	Hollow Joe-Pye Weed
Helenium autumnale	Sneezeweed
Heliopsis helianthoides	False Sunflower
Juncus effusus	Common Rush
Lobelia siphilitica	Great Blue Lobelia
Mimulus ringens	Monkey Flower
Penthorum sedoides	Ditch Stonecrop
Scirpus atrovirens	Dark Green Rush
Scirpus cyperinus	Wool Grass
Symphyotrichum lateriflorum	Side-Flowering Aster
Symphyotrichum novae-angliae	New England Aster
Thelypteris palustris	Marsh Shield Fen
Verbena hastata	Blue Vervain
Acorus americanus	Sweet flag
Angelica atropurpurea	Angelica, Purple-stemmed
Arisaema triphyllum	Jack-in-the-pulpit
Eupatorium perfaliatum	Boneset
Eutrochium maculatum	Joe-pye-weed, spotted
Impatiens capensis	Jewelweed
Iris versicolor	Iris spp
Lobelia cardinalis	Cardinal Flower
Sagittaria latifolia	Common arrowhead
Scutellaria lateriflora	Mad dog skullcap

~~ERNMX-122 FACW Meadow Mix or approved equivalent.~~

B. All seed shall have the proper stratification or scarification, in accordance with the producer's instructions, to break seed dormancy.

C. Seed mixtures should be delivered in original sealed containers. Seed in wet, torn, or otherwise obviously damaged packaging are not acceptable. The Contractor shall label containers with the following information: analysis of seed mixture; percentage of pure seed by species; percentage of weed seed; year of production; net weight; date tagged and location; percentage of germination; and name and address of distributor.

2.03 FERTILIZERS

A. Fertilizer mixes and rates of application shall be made based on laboratory testing of the backfill and the recommendations of the Cornell Cooperative Extension.

2.04 WATER

A. Water shall be from a source approved by the Construction Manager.

PART 3 – EXECUTION

3.01 INSPECTION

A. The Contactor shall verify the prepared soil base is ready to receive the Work described in this Specification.

3.02 PREPARATION – SUBGRADE

A. The Contractor shall prepare subgrade to eliminate uneven areas and low spots. The Contractor shall maintain lines, levels, profiles, and contours. The Contractor shall make changes in grade gradual and blend slopes into level areas.

B. The Contractor shall remove surface debris, roots, vegetation, lumps, and stones larger than 1 inch. The Contractor shall remove foreign materials, weeds, and undesirable plants and their roots.

C. The Contractor shall scarify subgrade to a depth of 3 inches where topsoil will be placed. The Contractor shall repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

3.03 SEEDING

A. Unless otherwise approved by the Construction Manager, seeding shall only occur immediately after approval of backfill placement by the Construction Manager.

B. The Contractor shall not apply seed if the ground is frozen.

C. Seeding shall not be performed when the temperature may drop below 35 degrees Fahrenheit (°F) or rise above 90°F.

D. The Contractor shall provide notice to the Construction Manager at least ~~48~~ 72 hours prior to seeding.

E. The Contractor shall schedule topsoil placement to permit seeding operations under optimum conditions during normal planting seasons.

F. The Contractor shall use the seed mixes specified in Part 2.02 unless alternative mixtures and application formulae have been approved by the Construction Manager. Seed shall be applied as follows, unless otherwise approved by the Construction Manager:

1. Wetland Seed Mix and Cover Crop shall be used in the Floodplain Removal Area at unnamed tributary at Transect T27N and the Floodplain Removal Areas at T43.2S and T64S.

2. Riparian Buffer Mix and Cover Crop shall be used in other Floodplain Removal Areas and disturbed shoreline slopes.

G. Seeding rates shall be as follows, unless otherwise approved by the Construction Manager:

1. 20 pounds per acre for the Riparian Buffer Mix

2. 30 pounds per acre for the Cover Crop

3. 20 pounds per acre for the Wetland Seed Mix

H. Seed shall not be applied when wind conditions are such that materials would be carried beyond designated areas or that materials would not be uniformly applied and when wind velocity exceeds 15 miles per hour.

I. Seeding activities shall not be carried out on days with heavy precipitation that may result in the washing out of seed.

J. The Contractor shall immediately notify the Construction Manager if conditions are encountered that prevent seeding.

K. The Contractor shall apply seed in a way that ensures the entire area receives seed. The Contractor shall reseed areas where gaps in the seeded areas exceed 4 square feet.

L. The Contractor shall lightly rake seeded areas within 12 hours to ensure proper soil-seed contact.

M. The Contractor shall not seed areas inundated by water.

N. The Contractor shall apply fertilizer if recommended by the Cornell Cooperative Extension. Fertilizer application (if any) shall be performed in compliance with the requirements of the Nutrient Runoff Law under New York ECL Article 17, Title 21.

O. Seeding shall overlap adjoining vegetation by at least 12 inches for upland areas and 24 inches on shoreline areas. The Contractor shall water seeded areas to promote seed germination and growth. The Contractor shall avoid creating rills and furrows as a result of watering and repair and reseed any rills and furrows resulting from overwatering.

P. The Contractor shall mark seeded areas to prevent intrusion from foot traffic and equipment.

3.04 SHORELINE PROTECTION FABRIC

A. The Contractor shall install shoreline protection fabric where upland removal occurs as shown on the Drawings.

B. Shoreline protection fabric shall be installed after seeding is accepted by the Construction Manager.

C. The Contractor shall notify the Construction Manager at least 3 work days prior to the installation of shoreline protection fabric.

D. The surface shall be free of rocks, clods, sticks, and grass prior to fabric installation. Fabric shall be placed to have good contact with the soil.

E. The Contractor shall install shoreline protection fabric as depicted on the Drawings and as described herein.

F. The Contractor shall lay shoreline protection fabric loosely and stake or staple the fabric to the slope to maintain direct contact with the soil. The fabric shall not be stretched during installation.

G. The Contractor shall install the fabric blankets vertically from top of slope to bottom of slope.

H. The Contractor shall place the shoreline protection fabric to avoid existing trees and tree stumps.

I. The Contractor shall install the shoreline protection fabric in a controlled manner. The Contractor shall install wood stakes as the fabric is unrolled down the slope. The fabric shall not be allowed to roll down the slope without control.

J. The Contractor shall install the shoreline protection fabric such that upstream panels overlap with downstream panels.

K. The Contractor shall bury and anchor the top of slope and toe of slope portions of the fabric as depicted on the Drawings.

3.05 SEQUENCING

A. The Contractor shall complete backfilling and topsoil placement of floodplain removal areas and upland removal areas in accordance with Section 31 23 23 – Capping and Backfilling and as shown on the Drawings.

B. The Contractor shall seed areas prior to installing the shoreline protection fabric.

C. The Contractor shall install shoreline protection fabric as soon as possible following upland soil removal and seeding to prevent erosion.

3.06 MAINTENANCE – SEEDED AREAS

A. The Contractor shall maintain the seeded areas for a period of one full growing season following seeding. Maintenance responsibilities begin immediately after seeding and continue for one full growing season after the Construction Manager has accepted the seeding.

B. The Contractor is responsible for maintaining the seeded vegetation for one full growing season, including control of herbivores and other vectors that threaten the establishment of the

seeding. The Contractor shall remove undesirable plant material that interferes or inhibits the growth of the plants installed by the Contractor. The Contractor shall take necessary action to correct and restore the unacceptable areas.

C. The Contractor shall maintain vegetative cover by watering, fertilizing, weeding, and reseeding. In addition, the Contractor shall control prohibited and regulated invasive plant species listed in 6NYCRR Part 575, preferably by physical removal. Restricted hand application of glyphosate, subject to the appropriate limitations of local and state regulations, is acceptable during mid- to late-summer and fall, though only with the approval of the Construction Manager.

D. The Contractor shall repeat watering weekly for at least 4 weeks after seeding if natural rainfall is less than 1/ inch per week.

E. The Contractor shall reseed areas that are unacceptable during the 1-year maintenance period. Bare areas greater than 4 square feet shall be reseeded with the specified seed mix.

F. During the growing season, the Contractor shall conduct corrective action and maintenance within 30 days to address unacceptable areas if notified by the Construction Manager.

G. The Contractor shall notify the Construction Manager 48 hours prior to and following any maintenance activity.

H. Approval of seeded areas will be by the Construction Manager at the end of the growing season the year after seeding. Approval will be provided if all requirements have been met, including the following:

1. Seed areas are properly established.

2. Turf is free of eroded, bare, or dead spots and free of prohibited and regulated plant species.

3.07 CLEANING

A. The Contractor shall perform cleaning during construction and upon completion of the Work.

B. The Contractor shall remove all excess materials, soil, debris, and equipment and repair any damage resulting from the operations.

C. The Contractor shall clean up soil, mulch, broken sod, or other debris spilled and dispose of deleterious materials.

D. The Contractor shall take precautions and prevent misplaced seeding slurry on structures, signs, guardrails, fences, utilities, or other surfaces not specified to be seeded. Where misplacement occurs, the Contractor shall remove seeding slurry to the satisfaction of, and by means approved by, the Construction Manager.

- END OF SECTION -

Attachment B

From:	Anthony St. Aubin
To:	Tyler Lee
Cc:	Ryan Davis
Subject:	Revised Seed Mixes
Date:	Monday, September 16, 2019 11:21:59 AM
Attachments:	image001.jpg image002.png image003.png image004.png image005.png 20190913_REVISED_SeedMixes.xlsx

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Good morning -

As an update to the request to revise the seed mixes, I would like to provide some insight into the process Cardno used. During the custom seed mix design process Cardno attempts to balance a few different metrics (Total Seeds/ SF, % mix for each species (by weight and composition). Cardno typically puts more value on the % mix by composition (instead of weight) as it's a better indicator for how much of each species is included in the total mix as weight is NOT an accurate representation due to varying size of seeds. For example, 1 ounce of Flat Top Aster represents 315,000 seeds while 1 ounce of Jack in the Pulpit represents 425 seeds.

Cardno utilized the original 74 requested species and created a table to better understand/ track the applicability of the species (attached). The following categories were used to refine the design process:

1. Wetland Indicator Status: This allowed us to then assign each species to either riparian or wetland seed mixes depending upon the wetland preferences.
2. Type: We classified each species as forb/herb, tree, shrub, or vine. We filtered out everything that was NOT a forb/ herb as the woody species are not commercially available or appropriate to include in the seed mixes. These species are better planted in containers/ bare root stock.
3. Native Status.
4. Commercially Available: After an extensive search we filtered out any species that are not commercially available or do not have certifications. Without proper certifications from the vendors we cannot verify if the seed is viable or if it contains other undesirable/ noxious seeds.

Once we were able to allocate species to appropriate seed mixes and determine commercial availability Cardno adjusted the original seed mix quantities and added the supplemental species to create a mix the, hopefully, fulfills the request while also maintaining a balanced and feasible approach.

Please let me know if you have questions or comments.

Thanks in advance.

Tony St. Aubin
BUSINESS UNIT LEADER, RESTORATION SERVICES

REGIONAL SENIOR PRINCIPAL - RESTORATION ECOLOGY, STREAMBANKS AND SHORELINES
CARDNO

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Email tony.st.aubin@cardno.com Web www.cardno.com

CONNECT WITH CARDNO 

RIPARIAN SEED MIX (Revised 9/13/19)								
	Species	Common	Oz./ Acre	Seeds/ Oz.	Seeds/ Ac	Seeds/ SF	% Mix (Weight)	% Mix (Composition)
ORIGINAL	*Agrostis perennans*	Autumn Bent Grass	0.60	500,000.00	300,000.00	6.89	0.33%	2.38%
	Andropogon gerardii	Big Bluestem	14.18	8,187.50	116,057.81	2.66	7.71%	0.92%
	Asclepias incarnata	Swamp Milkweed	1.20	4,540.00	5,448.00	0.13	0.65%	0.04%
	Chamaecrista fasciculata	Partridge Pea	4.80	3,800.00	18,240.00	0.42	2.61%	0.14%
	Doellingeria umbellata	Flat-Top Aster	0.83	315,000.00	259,875.00	5.97	0.45%	2.06%
	Elymus virginicus	Virginia Wild Rye	24.00	4,375.00	105,000.00	2.41	13.06%	0.83%
	Eupatorium perfoliatum	Common Boneset	0.83	125,000.00	103,125.00	2.37	0.45%	0.82%
	Eutrochium fistulosum	Hollow Joe-Pye Weed	0.38	78,125.00	29,296.88	0.67	0.20%	0.23%
	Helenium autumnale	Sneezeweed	0.60	141,750.00	85,050.00	1.95	0.33%	0.68%
	Heliopsis helianthoides	False Sunflower	2.40	6,500.00	15,600.00	0.36	1.31%	0.12%
	Juncus effusus	Common Rush	3.60	1,000,000.00	3,600,000.00	82.64	1.96%	28.59%
	Lobelia siphilitica	Great Blue Lobelia	0.23	520,000.00	117,000.00	2.69	0.12%	0.93%
	Monarda fistulosa	Wild Bergamot	0.60	78,000.00	46,800.00	1.07	0.33%	0.37%
	Panicum virgatum	Switch Grass	42.00	28,356.25	1,190,962.50	27.34	22.85%	9.46%
	Pycnanthemum tenuifolium	Mountain Mint	0.45	375,000.00	168,750.00	3.87	0.24%	1.34%
	Rudbeckia hirta	Black-Eyed Susan	3.60	110,000.00	396,000.00	9.09	1.96%	3.15%
	Solidago patula	Swamp Goldenrod	0.45	71,875.00	32,343.75	0.74	0.24%	0.26%
	Sorghastrum nutans	Indian Grass	12.60	8,515.63	107,296.88	2.46	6.86%	0.85%
	Symphyotrichum lateriflorum	Side-Flowering Aster	0.23	200,000.00	45,000.00	1.03	0.12%	0.36%
	Symphyotrichum novae-angliae	New England Aster	0.83	76,000.00	62,700.00	1.44	0.45%	0.50%
	Verbena hastata	Blue Vervain	4.80	125,000.00	600,000.00	13.77	2.61%	4.77%
	Vernonia fasciculata	Common Ironweed	0.60	21,875.00	13,125.00	0.30	0.33%	0.10%
ADDITIONAL	*Achillea millefolium*	Yarrow	7.00	180,000.00	1,260,000.00	28.93	3.81%	10.01%
	Arisaema triphyllum	Jack-in-the-pulpit	1.00	425.00	425.00	0.01	0.54%	0.00%
	Asarum canadense	Wild Ginger	1.00	4,400.00	4,400.00	0.10	0.54%	0.03%
	Asclepias syriaca	Common milkweed	1.00	4,000.00	4,000.00	0.09	0.54%	0.03%
	Cichorium intybus	Chicory	10.00	17,958.00	179,580.00	4.12	5.44%	1.43%
	Maianthemum racemosum	Solomon's seal, False	1.00	400.00	400.00	0.01	0.54%	0.00%
	Mondarda fistulosa	Bergamont	25.00	78,000.00	1,950,000.00	44.77	13.60%	15.49%
	Sanguinaria canadensis	Bloodroot	1.00	1,700.00	1,700.00	0.04	0.54%	0.01%
	Trifolium pratense	Red Clover	10.00	2,200.00	22,000.00	0.51	5.44%	0.17%
	Verbascum Thapsus	Mullein	7.00	250,000.00	1,750,000.00	40.17	3.81%	13.90%
	TOTAL		**183.78**	**4,340,982.38**	**12,590,175.81**	**289.03**	**100.00%**	**100.00%**

Original	**65.17%**	**58.92%**
Additional	**34.83%**	**41.08%**

WETLAND SEED MIX (Revised 9/13/19)								
	Species	Common	Oz./ Acre	Seeds/ Oz.	Seeds/ Ac	Seeds/ SF	% Mix (Weight)	% Mix (Composition)
ORIGINAL	Alisma subcordatum	Common Water Plantain	0.40	70,175.00	28,070.00	0.64	0.30%	0.18%
	Asclepias incarnata	Swamp Milkweed	2.00	4,540.00	9,080.00	0.21	1.51%	0.06%
	Carex lupulina	Common Hop Sedge	6.40	3,634.56	23,261.20	0.53	4.83%	0.15%
	Carex scoparia	Lance-Fruited Oval Sedge	6.40	83,250.00	532,800.00	12.23	4.83%	3.46%
	Carex vulpinoidea	Brown Fox Sedge	26.57	125,000.00	3,320,833.33	76.24	20.03%	21.60%
	Chelone glabra	Turtlehead	0.08	96,875.00	8,072.92	0.19	0.06%	0.05%
	Cinna arundinacea	Common Wood Reed	2.40	308,750.00	741,000.00	17.01	1.81%	4.82%
	Doellingeria umbellata	Flat-Top Aster	0.97	315,000.00	304,500.00	6.99	0.73%	1.98%
	Elymus virginicus	Virginia Wild Rye	16.00	4,375.00	70,000.00	1.61	12.06%	0.46%
	Eupatorium perfoliatum	Common Boneset	0.80	125,000.00	100,000.00	2.30	0.60%	0.65%
	Eutrochium fistulosum	Hollow Joe-Pye Weed	0.23	78,125.00	18,229.17	0.42	0.18%	0.12%
	Helenium autumnale	Sneezeweed	0.80	141,750.00	113,400.00	2.60	0.60%	0.74%
	Heliopsis helianthoides	False Sunflower	1.60	6,500.00	10,400.00	0.24	1.21%	0.07%
	Juncus effusus	Common Rush	2.40	1,000,000.00	2,400,000.00	55.10	1.81%	15.61%
	Lobelia siphilitica	Great Blue Lobelia	0.40	520,000.00	208,000.00	4.78	0.30%	1.35%
	Mimulus ringens	Monkey Flower	0.08	283,500.00	23,625.00	0.54	0.06%	0.15%
	Penthorum sedoides	Ditch Stonecrop	0.40	36,062.50	14,425.00	0.33	0.30%	0.09%
	Scirpus atrovirens	Dark Green Rush	0.40	187,500.00	75,000.00	1.72	0.30%	0.49%
	Scirpus cyperinus	Wool Grass	0.40	562,500.00	225,000.00	5.17	0.30%	1.46%
	Symphyotrichum lateriflorum	Side-Flowering Aster	0.97	200,000.00	193,333.33	4.44	0.73%	1.26%
	Symphyotrichum novae-angliae	New England Aster	0.48	76,000.00	36,733.33	0.84	0.36%	0.24%
	Thelypteris palustris	Marsh Shield Fen	0.23	7,300.00	1,703.33	0.04	0.18%	0.01%
	Verbena hastata	Blue Vervain	3.20	125,000.00	400,000.00	9.18	2.41%	2.60%
ADDITIONAL	Acorus americanus	Sweet flag	1.00	7,000.00	7,000.00	0.16	0.75%	0.05%
	Angelica atropurpurea	Angelica, Purple-stemmed	1.00	6,250.00	6,250.00	0.14	0.75%	0.04%
	Arisaema triphyllum	Jack-in-the-pulpit	1.00	425.00	425.00	0.01	0.75%	0.00%
	Eupatorium perfaliatum	Boneset	10.00	125,000.00	1,250,000.00	28.70	7.54%	8.13%
	Eutrochium maculatum	Joe-pye-weed, spotted	11.00	78,125.00	859,375.00	19.73	8.29%	5.59%
	Impatiens capensis	Jewelweed	1.00	4,700.00	4,700.00	0.11	0.75%	0.03%
	Iris versicolor	Iris spp	1.00	1,400.00	1,400.00	0.03	0.75%	0.01%
	Lobelia cardinalis	Cardinal Flower	6.00	437,500.00	2,625,000.00	60.26	4.52%	17.07%
	Sagittaria latifolia	Common arrowhead	12.00	56,700.00	680,400.00	15.62	9.05%	4.42%
	Scutellaria lateriflora	Mad dog skullcap	5.00	65,000.00	325,000.00	7.46	3.77%	2.11%
	Symphyotrichum novae-angliae	Purple Aster	10.00	76,000.00	760,000.00	17.45	7.54%	4.94%
	TOTAL		132.62	5,218,937.06	15,377,016.62	353.01	100.00%	100.00%

Original	53.10%	55.00%
Additional	44.49%	42.40%

Appendix E

Sediment/Soil Sampling Data Usability Report and Analytical Reports

APPENDIX E
SEDIMENT/SOIL SAMPLING DATA USABILITY REPORT AND ANALYTICAL REPORTS

DATA USABILITY REPORT

DRAFT

1201 3rd Ave Suite 2600
Seattle, Washington 98101
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ANCHOR QEA

Data Validation Report – EPA Stage 2A

September 16, 2019

Project: UNT Area III OU3 Soils (2019)

Project Number: E91444-02.01

This report summarizes the review of analytical results for 22 sediment and soil samples, 2 duplicate samples, and two rinse blanks collected August 23 and 28 and September 12, 2019. The samples were collected by Arcadis and submitted to Pace Analytical Mobile Lab Services (Pace). The following analytical parameter results were reviewed in this report:

- Polychlorinated biphenyl Aroclors (PCBs) U.S. Environmental Protection Agency (USEPA) method 8082A
- Total solids (TS) by Standard Method 2540B

Pace sample delivery group numbers (SDGs) F193412, F193413, F193505, F193506, and F193711 were reviewed in this report. Sample IDs, matrices, and analyses of reviewed sample data are presented in Table 1.

Table 1 - Sample IDs, SDGs, Matrices, and Analyses

Sample ID	Lab Sample ID	Matrix	Analyses
FLOOD_UNT-B-03B-190823-0-4	F193412-01	Sediment	PCBs, TS
FLOOD_UNT-B-05B-190823-0-4	F193412-02	Sediment	PCBs, TS
FLOOD_UNT-B-06B-190823-0-4	F193412-03	Sediment	PCBs, TS
DUP-20190823145200	F193412-04	Sediment	PCBs, TS
FLOOD_UNT-B-07B-190823-0-6	F193412-05	Sediment	PCBs, TS
FLOOD_UNT-B-07B-190823-6-9	F193412-06	Sediment	PCBs, TS
FLOOD_UNT-SW-01B-190823-0-6	F193412-07	Soil	PCBs, TS
FLOOD_UNT-SW-02B-190823-0-6	F193412-08	Soil	PCBs, TS
FLOOD_UNT-SW-03B-190823-0-6	F193412-09	Soil	PCBs, TS
FLOOD_UNT-SW-04B-190823-0-6	F193412-10	Soil	PCBs, TS
SO-RB-201908231030	F193413-01	Water	PCBs
FLOOD_UNT-B-01-190828-0-6	F193505-01	Sediment	PCBs, TS
FLOOD_UNT-B-01-190828-6-12	F193505-02	Sediment	PCBs, TS
FLOOD_UNT-B-02-190828-0-6	F193505-03	Sediment	PCBs, TS
FLOOD_UNT-B-04-190828-0-6	F193505-04	Soil	PCBs, TS
FLOOD_UNT-B-04-190828-6-11	F193505-05	Soil	PCBs, TS
FLOOD_UNT-B-08-190828-0-6	F193505-06	Soil	PCBs, TS
FLOOD_UNT-B-09-190828-0-6	F193505-07	Soil	PCBs, TS
FLOOD_UNT-B-09-190828-6-12	F193505-08	Soil	PCBs, TS
FLOOD_UNT-SW-05-190828-0-6	F193505-09	Soil	PCBs, TS
DUP-20190828182400	F193505-10	Soil	PCBs, TS
FLOOD_UNT-SW-06-190828-0-6	F193505-11	Soil	PCBs, TS
SO-RB-201908281831	F193506-01	Water	PCBs
FLOOD_UNT-B-09-190912-0-6	F193711-01	Sediment	PCBs, TS
FLOOD_UNT-B-09-190912-12-18	F193711-02	Sediment	PCBs, TS
FLOOD_UNT-B-09-190912-6-12	F193711-03	Sediment	PCBs, TS

Data Validation and Qualifications

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the analytical procedures. Laboratory results were reviewed using the laboratory quality control limits and the following documents and guidelines:

- Polychlorinated Bipheyl (PCB) Aroclor Data Validation Standard Operating Procedure (USEPA 2015)
- Quality Assurance Project Plan, Grasse River Study Area (QAPP; Anchor QEA 2013)
- USEPA 1986 (SW-846, Third Edition), Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
- USEPA National Functional Guidelines for Organic Superfund Methods Data Review (USEPA 2017a)
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA 2017b)

Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

Field Documentation

Field documentation was checked for completeness and accuracy. The chain-of-custody (COC) forms were signed by Pace the time of sample receipt. Sample conditions and temperatures upon receipt were not recorded, however, the laboratory was located on site and samples were received on ice and extracted within a short time of collection, so data are not expected to be impacted.

Sample Holding Times

Samples were extracted on the same day of collection and analyzed within holding times.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the required frequencies and were free of target analytes.

Field Quality Control

Equipment Rinse Blanks

Two rinse blanks were collected in association with these sample sets and analyzed for PCBs. Results were below detection.

Field Duplicates

Two field duplicates were collected in association with these sample sets. All PCB results were below detection for both sets of parent and duplicate samples. Total solids relative percent difference (RPD) values were within project-required control limits.

Surrogate Standards

Surrogates recovered within laboratory control limits with the exception of tetrachloro-meta-xylene in the analysis of sample Flood_UNT-B-09-190912-0-6. Associated detected results have been qualified "J" to indicate a potentially high bias.

Column Confirmation

Detected results were not confirmed using second column confirmation analyses per the laboratory standard operating procedures.

Laboratory Control and Laboratory Control Sample Duplicates

Laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) were analyzed at the required frequency and resulted in recoveries and/or RPD values within project-required control limits.

Matrix Spike and Matrix Spike Duplicate Samples

Matrix spike (MS) and matrix spike duplicate (MSD) samples were analyzed at the required frequency and recoveries and/or RPD values were within project-required control limits.

Laboratory Duplicates

Laboratory duplicates were analyzed at the required frequency for total solids analyses and resulted in RPD values within project-required control limits.

Method Reporting Limits

Reporting limits were acceptable as reported. All values were reported using the laboratory reporting limits. Values were reported as undiluted or when diluted, the reporting limits reflect the dilution factor.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was acceptable as demonstrated by the surrogate, LCS/LCSD, and MS/MSD recovery values, with the exception noted above. Precision was acceptable as demonstrated by the LCS/LCSD, MS/MSD, laboratory, and field duplicate RPD values.

Most data are acceptable as reported, two results are acceptable as qualified and no results were rejected. Table 2 summarizes the qualifiers applied to the sample results reviewed in this report.

Data Qualifier Definition

J Indicates an estimated value.

Table 2 - Data Qualification Summary

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
FLOOD_UNT-B-09-190912-0-6	PCBs	Aroclor 1242	0.13 mg/kg	0.13J mg/kg	Surrogate %R above control limit
		Aroclor 1260	1.1 mg/kg	1.1J mg/kg	

Note:
%R = percent recovery

References

Alcoa, Inc. 2013. Draft Pre-Design Quality Assurance Project Plan. Grasse River Study Area, Massena, New York.

USEPA 1986. Test methods for Evaluating Solid Waste: Physical/Chemical Methods. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA-530/SW-846.

USEPA 2015. Polychlorinated Biphenyl (PCB) Aroclor Data Validation. Hazardous Waste Support Section, SOP No. HW-37A Revision 0, SOM02.2. June 2015.s

USEPA 2017a. National Functional Guidelines for Organic Superfund Methods Data Review. Office of Superfund Remediation and Technology Innovation. United States Environmental Protection Agency. EPA-540-R-2017-002. January 2017.

USEPA 2017b. National Functional Guidelines for Inorganic Superfund Methods Data Review. Office of Superfund Remediation and Technology Innovation. United States Environmental Protection Agency. EPA-540-R-2017-001. January 2017.

LABORATORY ANALYTICAL REPORTS

2525 Advance Road
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Anchor QEA
4300 Route 50, #202
Saratoga Springs NY, 12866

Project: Grasse River Remedial Action
Project Number: 2837
Project Manager: Adrianne Constant

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FLOOD_UNT-B-03B-190823-0-4	F193412-01	Sediment	08/23/2019	08/23/2019
FLOOD_UNT-B-05B-190823-0-4	F193412-02	Sediment	08/23/2019	08/23/2019
FLOOD_UNT-B-06B-190823-0-4	F193412-03	Sediment	08/23/2019	08/23/2019
DUP-20190823145200	F193412-04	Sediment	08/23/2019	08/23/2019
FLOOD_UNT-B-07B-190823-0-6	F193412-05	Sediment	08/23/2019	08/23/2019
FLOOD_UNT-B-07B-190823-6-9	F193412-06	Sediment	08/23/2019	08/23/2019
FLOOD_UNT-SW-01B-190823-0-6	F193412-07	Soil	08/23/2019	08/23/2019
FLOOD_UNT-SW-02B-190823-0-6	F193412-08	Soil	08/23/2019	08/23/2019
FLOOD_UNT-SW-03B-190823-0-6	F193412-09	Soil	08/23/2019	08/23/2019
FLOOD_UNT-SW-04B-190823-0-6	F193412-10	Soil	08/23/2019	08/23/2019
SO-RB-201908231030	F193413-01	Rinse	08/23/2019	08/23/2019

Case Narrative

There was evidence of severe Aroclor weathering in samples on work order F 193412. Identification of Aroclors was based on analyst interpretation of best fitting Aroclors using identifying congener peaks and peak ratios for quantitation .

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-B-03B-190823-0-4

F193412-01 (Sediment)

Date Sampled
08/23/2019 15:14

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908069**			
PCB-1016	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 20:01	EPA 8082A	U
PCB-1221	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 20:01	EPA 8082A	U
PCB-1232	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 20:01	EPA 8082A	U
PCB-1242	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 20:01	EPA 8082A	U
PCB-1248	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 20:01	EPA 8082A	U
PCB-1254	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 20:01	EPA 8082A	U
PCB-1260	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 20:01	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*99.4 %*		*71.5-118*	*08/23/2019*	*08/23/2019 20:01*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*114 %*		*56.1-132*	*08/23/2019*	*08/23/2019 20:01*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908068**			
% Solids	**88.5**	0.00	% by Weight	1	08/23/2019	08/24/2019 08:39	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-B-05B-190823-0-4

F193412-02 (Sediment)

Date Sampled
08/23/2019 15:10

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Mobile Lab								
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908069**			
PCB-1016	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 20:25	EPA 8082A	U
PCB-1221	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 20:25	EPA 8082A	U
PCB-1232	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 20:25	EPA 8082A	U
PCB-1242	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 20:25	EPA 8082A	U
PCB-1248	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 20:25	EPA 8082A	U
PCB-1254	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 20:25	EPA 8082A	U
PCB-1260	**0.40**	0.056	mg/kg dry	1	08/23/2019	08/23/2019 20:25	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*101 %*		*71.5-118*	*08/23/2019*	*08/23/2019 20:25*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*118 %*		*56.1-132*	*08/23/2019*	*08/23/2019 20:25*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908068**			
% Solids	**89.7**	0.00	% by Weight	1	08/23/2019	08/24/2019 08:39	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-B-06B-190823-0-4

F193412-03 (Sediment)

Date Sampled
08/23/2019 14:57

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908069**			
PCB-1016	ND	0.060	mg/kg dry	1	08/23/2019	08/23/2019 20:49	EPA 8082A	U
PCB-1221	ND	0.060	mg/kg dry	1	08/23/2019	08/23/2019 20:49	EPA 8082A	U
PCB-1232	ND	0.060	mg/kg dry	1	08/23/2019	08/23/2019 20:49	EPA 8082A	U
PCB-1242	ND	0.060	mg/kg dry	1	08/23/2019	08/23/2019 20:49	EPA 8082A	U
PCB-1248	ND	0.060	mg/kg dry	1	08/23/2019	08/23/2019 20:49	EPA 8082A	U
PCB-1254	ND	0.060	mg/kg dry	1	08/23/2019	08/23/2019 20:49	EPA 8082A	U
PCB-1260	**0.36**	0.060	mg/kg dry	1	08/23/2019	08/23/2019 20:49	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*96.7 %*		*71.5-118*	*08/23/2019*	*08/23/2019 20:49*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*108 %*		*56.1-132*	*08/23/2019*	*08/23/2019 20:49*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908068**			
% Solids	**83.5**	0.00	% by Weight	1	08/23/2019	08/24/2019 08:39	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

DUP-20190823145200

F193412-04 (Sediment)

Date Sampled
08/23/2019 14:52

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908069**			
PCB-1016	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 21:13	EPA 8082A	U
PCB-1221	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 21:13	EPA 8082A	U
PCB-1232	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 21:13	EPA 8082A	U
PCB-1242	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 21:13	EPA 8082A	U
PCB-1248	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 21:13	EPA 8082A	U
PCB-1254	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 21:13	EPA 8082A	U
PCB-1260	ND	0.056	mg/kg dry	1	08/23/2019	08/23/2019 21:13	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*92.6 %*		*71.5-118*	*08/23/2019*	*08/23/2019 21:13*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*106 %*		*56.1-132*	*08/23/2019*	*08/23/2019 21:13*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908068**			
% Solids	**89.8**	0.00	% by Weight	1	08/23/2019	08/24/2019 08:39	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-B-07B-190823-0-6

F193412-05 (Sediment)

Date Sampled
08/23/2019 14:52

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908069**			
PCB-1016	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 21:37	EPA 8082A	U
PCB-1221	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 21:37	EPA 8082A	U
PCB-1232	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 21:37	EPA 8082A	U
PCB-1242	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 21:37	EPA 8082A	U
PCB-1248	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 21:37	EPA 8082A	U
PCB-1254	ND	0.057	mg/kg dry	1	08/23/2019	08/23/2019 21:37	EPA 8082A	U
PCB-1260	**0.15**	0.057	mg/kg dry	1	08/23/2019	08/23/2019 21:37	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*92.6 %*		*71.5-118*	*08/23/2019*	*08/23/2019 21:37*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*99.5 %*		*56.1-132*	*08/23/2019*	*08/23/2019 21:37*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908068**			
% Solids	**87.1**	0.00	% by Weight	1	08/23/2019	08/24/2019 08:39	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-B-07B-190823-6-9

F193412-06 (Sediment)

Date Sampled
08/23/2019 14:52

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908069**			
PCB-1016	ND	0.055	mg/kg dry	1	08/23/2019	08/23/2019 22:48	EPA 8082A	U
PCB-1221	ND	0.055	mg/kg dry	1	08/23/2019	08/23/2019 22:48	EPA 8082A	U
PCB-1232	ND	0.055	mg/kg dry	1	08/23/2019	08/23/2019 22:48	EPA 8082A	U
PCB-1242	ND	0.055	mg/kg dry	1	08/23/2019	08/23/2019 22:48	EPA 8082A	U
PCB-1248	ND	0.055	mg/kg dry	1	08/23/2019	08/23/2019 22:48	EPA 8082A	U
PCB-1254	ND	0.055	mg/kg dry	1	08/23/2019	08/23/2019 22:48	EPA 8082A	U
PCB-1260	ND	0.055	mg/kg dry	1	08/23/2019	08/23/2019 22:48	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*92.4 %*		*71.5-118*	*08/23/2019*	*08/23/2019 22:48*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*103 %*		*56.1-132*	*08/23/2019*	*08/23/2019 22:48*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908068**			
% Solids	**90.4**	0.00	% by Weight	1	08/23/2019	08/24/2019 08:39	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-SW-01B-190823-0-6

F193412-07 (Soil)

Date Sampled
08/23/2019 14:45

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908069**			
PCB-1016	ND	0.071	mg/kg dry	1	08/23/2019	08/24/2019 00:01	EPA 8082A	U
PCB-1221	ND	0.071	mg/kg dry	1	08/23/2019	08/24/2019 00:01	EPA 8082A	U
PCB-1232	ND	0.071	mg/kg dry	1	08/23/2019	08/24/2019 00:01	EPA 8082A	U
PCB-1242	ND	0.071	mg/kg dry	1	08/23/2019	08/24/2019 00:01	EPA 8082A	U
PCB-1248	ND	0.071	mg/kg dry	1	08/23/2019	08/24/2019 00:01	EPA 8082A	U
PCB-1254	ND	0.071	mg/kg dry	1	08/23/2019	08/24/2019 00:01	EPA 8082A	U
PCB-1260	**0.56**	0.071	mg/kg dry	1	08/23/2019	08/24/2019 00:01	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*92.3 %*		*71.5-118*	*08/23/2019*	*08/24/2019 00:01*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*101 %*		*56.1-132*	*08/23/2019*	*08/24/2019 00:01*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908068**			
% Solids	**70.2**	0.00	% by Weight	1	08/23/2019	08/24/2019 08:39	SM 2540B	

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4300 Route 50, #202	Project Number: 2837
Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-SW-02B-190823-0-6

F193412-08 (Soil)

Date Sampled
08/23/2019 15:19

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908069**			
PCB-1016	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:25	EPA 8082A	U
PCB-1221	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:25	EPA 8082A	U
PCB-1232	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:25	EPA 8082A	U
PCB-1242	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:25	EPA 8082A	U
PCB-1248	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:25	EPA 8082A	U
PCB-1254	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:25	EPA 8082A	U
PCB-1260	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:25	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*90.6 %*		*71.5-118*	*08/23/2019*	*08/24/2019 00:25*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*96.1 %*		*56.1-132*	*08/23/2019*	*08/24/2019 00:25*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908068**			
% Solids	**88.7**	0.00	% by Weight	1	08/23/2019	08/24/2019 08:39	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-SW-03B-190823-0-6

F193412-09 (Soil)

Date Sampled
08/23/2019 15:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908069**			
PCB-1016	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:49	EPA 8082A	U
PCB-1221	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:49	EPA 8082A	U
PCB-1232	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:49	EPA 8082A	U
PCB-1242	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:49	EPA 8082A	U
PCB-1248	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:49	EPA 8082A	U
PCB-1254	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:49	EPA 8082A	U
PCB-1260	ND	0.056	mg/kg dry	1	08/23/2019	08/24/2019 00:49	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*92.1 %*		*71.5-118*	*08/23/2019*	*08/24/2019 00:49*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*99.3 %*		*56.1-132*	*08/23/2019*	*08/24/2019 00:49*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908068**			
% Solids	**89.6**	0.00	% by Weight	1	08/23/2019	08/24/2019 08:39	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-SW-04B-190823-0-6

F193412-10 (Soil)

Date Sampled
08/23/2019 15:01

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908069**			
PCB-1016	ND	0.067	mg/kg dry	1	08/23/2019	08/24/2019 01:12	EPA 8082A	U
PCB-1221	ND	0.067	mg/kg dry	1	08/23/2019	08/24/2019 01:12	EPA 8082A	U
PCB-1232	ND	0.067	mg/kg dry	1	08/23/2019	08/24/2019 01:12	EPA 8082A	U
PCB-1242	ND	0.067	mg/kg dry	1	08/23/2019	08/24/2019 01:12	EPA 8082A	U
PCB-1248	ND	0.067	mg/kg dry	1	08/23/2019	08/24/2019 01:12	EPA 8082A	U
PCB-1254	ND	0.067	mg/kg dry	1	08/23/2019	08/24/2019 01:12	EPA 8082A	U
PCB-1260	**0.18**	0.067	mg/kg dry	1	08/23/2019	08/24/2019 01:12	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*93.5 %*		*71.5-118*	*08/23/2019*	*08/24/2019 01:12*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*105 %*		*56.1-132*	*08/23/2019*	*08/24/2019 01:12*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908068**			
% Solids	**74.1**	0.00	% by Weight	1	08/23/2019	08/24/2019 08:39	SM 2540B	

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SO-RB-201908231030

F193413-01 (Rinse)

Date Sampled
08/23/2019 10:30

Pace Analytical - Mobile Lab

Polychlorinated Biphenyls by EPA Method 8082 — **Preparation Batch: F908065**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
PCB-1016	ND	0.063	ug/L	1	08/23/2019	08/23/2019 18:14	EPA 8082A	U
PCB-1221	ND	0.10	ug/L	1	08/23/2019	08/23/2019 18:14	EPA 8082A	U
PCB-1232	ND	0.063	ug/L	1	08/23/2019	08/23/2019 18:14	EPA 8082A	U
PCB-1242	ND	0.063	ug/L	1	08/23/2019	08/23/2019 18:14	EPA 8082A	U
PCB-1248	ND	0.063	ug/L	1	08/23/2019	08/23/2019 18:14	EPA 8082A	U
PCB-1254	ND	0.063	ug/L	1	08/23/2019	08/23/2019 18:14	EPA 8082A	U
PCB-1260	ND	0.063	ug/L	1	08/23/2019	08/23/2019 18:14	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*91.3 %*		*68.8-135*	*08/23/2019*	*08/23/2019 18:14*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*104 %*		*82.2-139*	*08/23/2019*	*08/23/2019 18:14*	*EPA 8082A*	

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Project: Grasse River Remedial Action
Project Number: 2837
Project Manager: Adrianne Constant

Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F908065 - EPA 3511										
Blank (F908065-BLK1)				Prepared: 08/23/2019 Analyzed: 08/23/2019 13:14						
PCB-1016	ND	0.063	ug/L							U
PCB-1221	ND	0.10	ug/L							U
PCB-1232	ND	0.063	ug/L							U
PCB-1242	ND	0.063	ug/L							U
PCB-1248	ND	0.063	ug/L							U
PCB-1254	ND	0.063	ug/L							U
PCB-1260	ND	0.063	ug/L							U
Surrogate: Tetrachloro-meta-xylene	*0.694*		*ug/L*	*0.7500*		*92.5*	*68.8-135*			
Surrogate: Decachlorobiphenyl	*0.807*		*ug/L*	*0.7500*		*108*	*82.2-139*			
LCS (F908065-BS1)				Prepared: 08/23/2019 Analyzed: 08/23/2019 12:26						
PCB-1242	11.6	0.063	ug/L	12.50		92.7	60-140			
Surrogate: Tetrachloro-meta-xylene	*0.679*		*ug/L*	*0.7500*		*90.5*	*68.8-135*			
Surrogate: Decachlorobiphenyl	*0.786*		*ug/L*	*0.7500*		*105*	*82.2-139*			
LCS Dup (F908065-BSD1)				Prepared: 08/23/2019 Analyzed: 08/23/2019 12:50						
PCB-1242	11.5	0.063	ug/L	12.50		91.9	60-140	0.857	30	
Surrogate: Tetrachloro-meta-xylene	*0.723*		*ug/L*	*0.7500*		*96.5*	*68.8-135*			
Surrogate: Decachlorobiphenyl	*0.772*		*ug/L*	*0.7500*		*103*	*82.2-139*			
Batch F908069 - EPA 3570										
Blank (F908069-BLK1)				Prepared: 08/23/2019 Analyzed: 08/23/2019 19:37						
PCB-1016	ND	0.050	mg/kg wet							U
PCB-1221	ND	0.050	mg/kg wet							U
PCB-1232	ND	0.050	mg/kg wet							U
PCB-1242	ND	0.050	mg/kg wet							U
PCB-1248	ND	0.050	mg/kg wet							U
PCB-1254	ND	0.050	mg/kg wet							U
PCB-1260	ND	0.050	mg/kg wet							U
Surrogate: Tetrachloro-meta-xylene	*0.216*		*mg/kg wet*	*0.2400*		*90.2*	*71.5-118*			
Surrogate: Decachlorobiphenyl	*0.232*		*mg/kg wet*	*0.2400*		*96.5*	*56.1-132*			
LCS (F908069-BS1)				Prepared: 08/23/2019 Analyzed: 08/23/2019 19:13						
PCB-1242	1.94	0.050	mg/kg wet	2.000		97.2	50-150			
Surrogate: Tetrachloro-meta-xylene	*0.219*		*mg/kg wet*	*0.2400*		*91.4*	*71.5-118*			
Surrogate: Decachlorobiphenyl	*0.249*		*mg/kg wet*	*0.2400*		*104*	*56.1-132*			
Matrix Spike (F908069-MS1)		**Source: F193412-06**		Prepared: 08/23/2019 Analyzed: 08/23/2019 23:12						
PCB-1242	2.16	0.055	mg/kg dry	2.212	ND	97.9	50-150			
Surrogate: Tetrachloro-meta-xylene	*0.244*		*mg/kg dry*	*0.2654*		*91.9*	*71.5-118*			
Surrogate: Decachlorobiphenyl	*0.272*		*mg/kg dry*	*0.2654*		*102*	*56.1-132*			

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F908069 - EPA 3570										
Matrix Spike Dup (F908069-MSD1)	**Source: F193412-06**			Prepared: 08/23/2019 Analyzed: 08/23/2019 23:37						
PCB-1242	2.16	0.055	mg/kg dry	2.212	ND	97.6	50-150	0.271	20	
Surrogate: Tetrachloro-meta-xylene	*0.241*		*mg/kg dry*	*0.2654*		*90.9*	*71.5-118*			
Surrogate: Decachlorobiphenyl	*0.272*		*mg/kg dry*	*0.2654*		*102*	*56.1-132*			

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

Classical Chemistry Parameters - Quality Control

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F908068 - % Solids										
Duplicate (F908068-DUP1)		**Source: F193412-06**		Prepared: 08/23/2019 Analyzed: 08/24/2019 08:39						
% Solids	90.5	0.00	% by Weight		90.4			0.0820	20	

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4300 Route 50, #202	Project Number: 2837
Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

Notes and Definitions

U	Analyte included in the analysis, but not detected
S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
HC	Results may be biased high because of high continuing calibration verification (CCV).
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

ANCHOR QEA
1201 3rd Avenue, Suite 2600, Seattle, WA 98101

ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

F193412

POC: * Adrianne Constant
68 Excelsior Ave, Suite 101, Saratoga Springs, NY

Project: Grasse River - Upland Verification
Client: Alcoa

COC ID: PLS-20190823-152436
Sample Custodian: JM
Lab: Pace Mobile Lab Services

COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected Date	Collected Time	Containers #	Lab QC*	Test Request	Method	TAT**	Preservative
001	FLOOD_UNT-B-03B-190823-0-4	N	SE	08/23/2019	15:14	1	☐				
								Aroclor PCBs	SW8082	24	4 ± 2°C
								Total Solids	SM2540G	24	4 ± 2°C
002	FLOOD_UNT-B-05B-190823-0-4	N	SE	08/23/2019	15:10	1	☐				
								Aroclor PCBs	SW8082	24	4 ± 2°C
								Total Solids	SM2540G	24	4 ± 2°C
003	FLOOD_UNT-B-06B-190823-0-4	N	SE	08/23/2019	14:57	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
004	DUP-20190823145200	FD	SE	08/23/2019		1	☐				
								Aroclor PCBs	SW8082	24	4 ± 2°C
								Total Solids	SM2540G	24	4 ± 2°C
005	FLOOD_UNT-B-07B-190823-0-6	N	SE	08/23/2019	14:52	1	☐				
								Aroclor PCBs	SW8082	24	4 ± 2°C
								Total Solids	SM2540G	24	4 ± 2°C
006	FLOOD_UNT-B-07B-190823-0-9	N	SE	08/23/2019	14:52	2	X				
								Aroclor PCBs	SW8082	24	4 ± 2°C
								Total Solids	SM2540G	24	4 ± 2°C
007	FLOOD_UNT-SW-01B-190823-0-6	N	SO	08/23/2019	14:45	1	☐				
								Aroclor PCBs	SW8082	24	4 ± 2°C
								Total Solids	SM2540G	24	4 ± 2°C
008	FLOOD_UNT-SW-02B-190823-0-6	N	SO	08/23/2019	15:19	1	☐				

Comment: F193412

Relinquished By	Received By	Relinquished By	Received By	Relinquished By	Received By
Signature	Signature	Signature	Signature	Signature	Signature
Print Name: Andrew Gibson	Print Name: Cameron Orth	Print Name	Print Name	Print Name	Print Name
Company: Arcadis	Company: Pace	Company	Company	Company	Company
Date/Time: 8/23/19/1537	Date/Time: 08/23/19/1537	Date/Time	Date/Time	Date/Time	Date/Time

* Lab QC Requested for sample when box is checked ** TAT = Turn Around Time in HOURS # POC = Project Point of Contact

Date Printed: 8/23/2019

ANCHOR QEA
1201 3rd Avenue, Suite 2600, Seattle, WA 98101

ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

F193412

COC ID: PLS-20190823-152436

POC: * Adrianne Constant
68 Excelsior Ave, Suite 101, Saratoga Springs, NY

Project: Grasse River - Upland Verification
Client: Alcoa

Sample Custodian: JM
Lab: Pace Mobile Lab Services

COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected Date	Collected Time	Containers #	Lab QC*	Test Request	Method	TAT**	Preservative
008	FLOOD_UNT-SW-02B-190823-0-6	N	SO	08/23/2019	15:19	1	☐				
								Aroclor PCBs	SW8082	24	4 ± 2°C
								Total Solids	SM2540G	24	4 ± 2°C
009	FLOOD_UNT-SW-03B-190823-0-6	N	SO	08/23/2019	15:23	1	☐				
								Aroclor PCBs	SW8082	24	4 ± 2°C
								Total Solids	SM2540G	24	4 ± 2°C
010	FLOOD_UNT-SW-04B-190823-0-6	N	SO	08/23/2019	15:01	1	☐				
								Aroclor PCBs	SW8082	24	4 ± 2°C
								Total Solids	SM2540G	24	4 ± 2°C

Comment: F193412

Relinquished By	Received By	Relinquished By	Received By	Relinquished By	Received By
Signature	Signature	Signature	Signature	Signature	Signature
Print Name Andrew Gibson	Print Name Cameron Orth	Print Name	Print Name	Print Name	Print Name
Company Arcadis	Company Pace	Company	Company	Company	Company
Date/Time 8/23/19 1537	Date/Time 08/23/19 1537	Date/Time	Date/Time	Date/Time	Date/Time

* Lab QC Requested for sample when box is checked. ** TAT = Turn Around Time in HOURS. # POC = Project Point of Contact

Date Printed: 8/23/2019

ANCHOR QEA
1201 3rd Avenue, Suite 2600, Seattle, WA 98101

ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

F193413

COC ID: PLS-20190823-152442

POC: * Adrianne Constant
68 Excelsior Ave, Suite 101, Saratoga Springs, NY

Project: Grasse River - Upland Verification
Client: Alcoa

Sample Custodian: JM
Lab: Pace Mobile Lab Services

COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected Date	Collected Time	Containers #	Lab QC*	Test Request	Method	TAT**	Preservative
001	SO-RB-201908231030	RB	WQ	08/23/2019	10:30	1	☐				
								Aroclor PCBs	SW8082	24	

Comment: F193413

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature	Signature	Signature	Signature	Signature
Print Name Andrew Gibso	Print Name Cameron Orth	Print Name	Print Name	Print Name	Print Name
Company Arcadis	Company Pace	Company	Company	Company	Company
Date/Time 8/23/19 1537	Date/Time 08/23/19/1537	Date/Time	Date/Time	Date/Time	Date/Time

* Lab QC Requested for sample when box is checked ** TAT = Turn Around Time in HOURS # POC = Project Point of Contact

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Page 1 of 1

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Saratoga Springs NY, 12866

Project: Grasse River Remedial Action
Project Number: 2837
Project Manager: Adrianne Constant

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FLOOD_UNT-B-01-190828-0-6	F193505-01	Sediment	08/28/2019	08/28/2019
FLOOD_UNT-B-01-190828-6-12	F193505-02	Sediment	08/28/2019	08/28/2019
FLOOD_UNT-B-02-190828-0-6	F193505-03	Sediment	08/28/2019	08/28/2019
FLOOD_UNT-B-04-190828-0-6	F193505-04	Soil	08/28/2019	08/28/2019
FLOOD_UNT-B-04-190828-6-11	F193505-05	Soil	08/28/2019	08/28/2019
FLOOD_UNT-B-08-190828-0-6	F193505-06	Soil	08/28/2019	08/28/2019
FLOOD_UNT-B-09-190828-0-6	F193505-07	Soil	08/28/2019	08/28/2019
FLOOD_UNT-B-09-190828-6-12	F193505-08	Soil	08/28/2019	08/28/2019
FLOOD_UNT-SW-05-190828-0-6	F193505-09	Soil	08/28/2019	08/28/2019
DUP-20190828182400	F193505-10	Soil	08/28/2019	08/28/2019
FLOOD_UNT-SW-06-190828-0-6	F193505-11	Soil	08/28/2019	08/28/2019
SO-RB-201908281831	F193506-01	Rinse	08/28/2019	08/28/2019

Case Narrative

There was evidence of severe Aroclor weathering in samples on work order F 193505. Identification of Aroclors was based on analyst interpretation of best fitting Aroclors using identifying congener peaks and peak ratios for quantitation .

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FLOOD_UNT-B-01-190828-0-6

F193505-01 (Sediment)

Date Sampled
08/28/2019 18:20

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908085**			
PCB-1016	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 02:46	EPA 8082A	U
PCB-1221	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 02:46	EPA 8082A	U
PCB-1232	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 02:46	EPA 8082A	U
PCB-1242	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 02:46	EPA 8082A	U
PCB-1248	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 02:46	EPA 8082A	U
PCB-1254	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 02:46	EPA 8082A	U
PCB-1260	**0.068**	0.060	mg/kg dry	1	08/28/2019	08/29/2019 02:46	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*114 %*		*71.5-118*	*08/28/2019*	*08/29/2019 02:46*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*92.3 %*		*56.1-132*	*08/28/2019*	*08/29/2019 02:46*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908084**			
% Solids	**82.7**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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FLOOD_UNT-B-01-190828-6-12

F193505-02 (Sediment)

Date Sampled
08/28/2019 18:20

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Mobile Lab								
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908085**			
PCB-1016	ND	0.063	mg/kg dry	1	08/28/2019	08/29/2019 03:10	EPA 8082A	U
PCB-1221	ND	0.063	mg/kg dry	1	08/28/2019	08/29/2019 03:10	EPA 8082A	U
PCB-1232	ND	0.063	mg/kg dry	1	08/28/2019	08/29/2019 03:10	EPA 8082A	U
PCB-1242	ND	0.063	mg/kg dry	1	08/28/2019	08/29/2019 03:10	EPA 8082A	U
PCB-1248	ND	0.063	mg/kg dry	1	08/28/2019	08/29/2019 03:10	EPA 8082A	U
PCB-1254	ND	0.063	mg/kg dry	1	08/28/2019	08/29/2019 03:10	EPA 8082A	U
PCB-1260	**0.087**	0.063	mg/kg dry	1	08/28/2019	08/29/2019 03:10	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*112 %*		*71.5-118*	*08/28/2019*	*08/29/2019 03:10*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*95.7 %*		*56.1-132*	*08/28/2019*	*08/29/2019 03:10*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908084**			
% Solids	**79.3**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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FLOOD_UNT-B-02-190828-0-6

F193505-03 (Sediment)

Date Sampled
08/28/2019 18:20

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908085**			
PCB-1016	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:34	EPA 8082A	U
PCB-1221	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:34	EPA 8082A	U
PCB-1232	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:34	EPA 8082A	U
PCB-1242	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:34	EPA 8082A	U
PCB-1248	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:34	EPA 8082A	U
PCB-1254	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:34	EPA 8082A	U
PCB-1260	**0.12**	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:34	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*108 %*		*71.5-118*	*08/28/2019*	*08/29/2019 03:34*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*86.9 %*		*56.1-132*	*08/28/2019*	*08/29/2019 03:34*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908084**			
% Solids	**86.8**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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FLOOD_UNT-B-04-190828-0-6

F193505-04 (Soil)

Date Sampled
08/28/2019 18:21

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908085**			
PCB-1016	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:58	EPA 8082A	U
PCB-1221	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:58	EPA 8082A	U
PCB-1232	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:58	EPA 8082A	U
PCB-1242	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:58	EPA 8082A	U
PCB-1248	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:58	EPA 8082A	U
PCB-1254	ND	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:58	EPA 8082A	U
PCB-1260	**1.2**	0.058	mg/kg dry	1	08/28/2019	08/29/2019 03:58	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*108 %*		*71.5-118*	*08/28/2019*	*08/29/2019 03:58*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*84.5 %*		*56.1-132*	*08/28/2019*	*08/29/2019 03:58*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908084**			
% Solids	**86.9**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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FLOOD_UNT-B-04-190828-6-11

F193505-05 (Soil)

Date Sampled
08/28/2019 18:21

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082						**Preparation Batch: F908085**		
PCB-1016	ND	0.056	mg/kg dry	1	08/28/2019	08/29/2019 05:10	EPA 8082A	U
PCB-1221	ND	0.056	mg/kg dry	1	08/28/2019	08/29/2019 05:10	EPA 8082A	U
PCB-1232	ND	0.056	mg/kg dry	1	08/28/2019	08/29/2019 05:10	EPA 8082A	U
PCB-1242	ND	0.056	mg/kg dry	1	08/28/2019	08/29/2019 05:10	EPA 8082A	U
PCB-1248	ND	0.056	mg/kg dry	1	08/28/2019	08/29/2019 05:10	EPA 8082A	U
PCB-1254	ND	0.056	mg/kg dry	1	08/28/2019	08/29/2019 05:10	EPA 8082A	U
PCB-1260	ND	0.056	mg/kg dry	1	08/28/2019	08/29/2019 05:10	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*105 %*		*71.5-118*	*08/28/2019*	*08/29/2019 05:10*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*85.0 %*		*56.1-132*	*08/28/2019*	*08/29/2019 05:10*	*EPA 8082A*	
Classical Chemistry Parameters						**Preparation Batch: F908084**		
% Solids	**89.3**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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FLOOD_UNT-B-08-190828-0-6

F193505-06 (Soil)

Date Sampled
08/28/2019 18:22

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908085**			
PCB-1016	ND	0.057	mg/kg dry	1	08/28/2019	08/29/2019 05:34	EPA 8082A	U
PCB-1221	ND	0.057	mg/kg dry	1	08/28/2019	08/29/2019 05:34	EPA 8082A	U
PCB-1232	ND	0.057	mg/kg dry	1	08/28/2019	08/29/2019 05:34	EPA 8082A	U
PCB-1242	ND	0.057	mg/kg dry	1	08/28/2019	08/29/2019 05:34	EPA 8082A	U
PCB-1248	ND	0.057	mg/kg dry	1	08/28/2019	08/29/2019 05:34	EPA 8082A	U
PCB-1254	ND	0.057	mg/kg dry	1	08/28/2019	08/29/2019 05:34	EPA 8082A	U
PCB-1260	**0.51**	0.057	mg/kg dry	1	08/28/2019	08/29/2019 05:34	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*104 %*		*71.5-118*	*08/28/2019*	*08/29/2019 05:34*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*84.9 %*		*56.1-132*	*08/28/2019*	*08/29/2019 05:34*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908084**			
% Solids	**88.2**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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FLOOD_UNT-B-09-190828-0-6

F193505-07 (Soil)

Date Sampled
08/28/2019 18:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908085**			
PCB-1016	ND	0.062	mg/kg dry	1	08/28/2019	08/29/2019 05:58	EPA 8082A	U
PCB-1221	**4.1**	0.062	mg/kg dry	1	08/28/2019	08/29/2019 05:58	EPA 8082A	
PCB-1232	ND	0.062	mg/kg dry	1	08/28/2019	08/29/2019 05:58	EPA 8082A	U
PCB-1248	ND	0.062	mg/kg dry	1	08/28/2019	08/29/2019 05:58	EPA 8082A	U
PCB-1254	ND	0.062	mg/kg dry	1	08/28/2019	08/29/2019 05:58	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*104 %*		*71.5-118*	*08/28/2019*	*08/29/2019 05:58*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*101 %*		*56.1-132*	*08/28/2019*	*08/29/2019 05:58*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908084**			
% Solids	**80.6**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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FLOOD_UNT-B-09-190828-0-6

F193505-07RE1 (Soil)

Date Sampled
08/28/2019 18:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082						**Preparation Batch: F908085**		
PCB-1242	**18**	0.25	mg/kg dry	4	08/28/2019	08/29/2019 10:00	EPA 8082A	D
Surrogate: Tetrachloro-meta-xylene		*110 %*		*71.5-118*	*08/28/2019*	*08/29/2019 10:00*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*102 %*		*56.1-132*	*08/28/2019*	*08/29/2019 10:00*	*EPA 8082A*	

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FLOOD_UNT-B-09-190828-0-6

F193505-07RE2 (Soil)

Date Sampled
08/28/2019 18:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082						**Preparation Batch: F908085**		
PCB-1260	**190**	3.1	mg/kg dry	50	08/28/2019	08/29/2019 10:24	EPA 8082A	D
Surrogate: Tetrachloro-meta-xylene		*113 %*	*71.5-118*		*08/28/2019*	*08/29/2019 10:24*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*101 %*	*56.1-132*		*08/28/2019*	*08/29/2019 10:24*	*EPA 8082A*	

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FLOOD_UNT-B-09-190828-6-12

F193505-08 (Soil)

Date Sampled
08/28/2019 18:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908085**			
PCB-1016	ND	0.066	mg/kg dry	1	08/28/2019	08/29/2019 06:22	EPA 8082A	U
PCB-1232	ND	0.066	mg/kg dry	1	08/28/2019	08/29/2019 06:22	EPA 8082A	U
PCB-1248	ND	0.066	mg/kg dry	1	08/28/2019	08/29/2019 06:22	EPA 8082A	U
PCB-1254	ND	0.066	mg/kg dry	1	08/28/2019	08/29/2019 06:22	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*112 %*		*71.5-118*	*08/28/2019*	*08/29/2019 06:22*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*116 %*		*56.1-132*	*08/28/2019*	*08/29/2019 06:22*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908084**			
% Solids	**76.1**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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FLOOD_UNT-B-09-190828-6-12

F193505-08RE1 (Soil)

Date Sampled
08/28/2019 18:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908085**			
PCB-1221	**37**	0.66	mg/kg dry	10	08/28/2019	08/29/2019 10:48	EPA 8082A	D
PCB-1242	**76**	0.66	mg/kg dry	10	08/28/2019	08/29/2019 10:48	EPA 8082A	D
Surrogate: Tetrachloro-meta-xylene		*122 %*	*71.5-118*		*08/28/2019*	*08/29/2019 10:48*	*EPA 8082A*	*DO*
Surrogate: Decachlorobiphenyl		*116 %*	*56.1-132*		*08/28/2019*	*08/29/2019 10:48*	*EPA 8082A*	

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FLOOD_UNT-B-09-190828-6-12

F193505-08RE2 (Soil)

Date Sampled
08/28/2019 18:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082						**Preparation Batch: F908085**		
PCB-1260	**250**	3.3	mg/kg dry	50	08/28/2019	08/29/2019 11:12	EPA 8082A	D
Surrogate: Tetrachloro-meta-xylene		*124 %*	*71.5-118*		*08/28/2019*	*08/29/2019 11:12*	*EPA 8082A*	*DO*
Surrogate: Decachlorobiphenyl		*113 %*	*56.1-132*		*08/28/2019*	*08/29/2019 11:12*	*EPA 8082A*	

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4300 Route 50, #202	Project Number: 2837
Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-SW-05-190828-0-6

F193505-09 (Soil)

Date Sampled
08/28/2019 18:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908085**			
PCB-1016	ND	0.067	mg/kg dry	1	08/28/2019	08/29/2019 06:46	EPA 8082A	U
PCB-1221	ND	0.067	mg/kg dry	1	08/28/2019	08/29/2019 06:46	EPA 8082A	U
PCB-1232	ND	0.067	mg/kg dry	1	08/28/2019	08/29/2019 06:46	EPA 8082A	U
PCB-1242	ND	0.067	mg/kg dry	1	08/28/2019	08/29/2019 06:46	EPA 8082A	U
PCB-1248	ND	0.067	mg/kg dry	1	08/28/2019	08/29/2019 06:46	EPA 8082A	U
PCB-1254	ND	0.067	mg/kg dry	1	08/28/2019	08/29/2019 06:46	EPA 8082A	U
PCB-1260	**1.1**	0.067	mg/kg dry	1	08/28/2019	08/29/2019 06:46	EPA 8082A	
Surrogate: Tetrachloro-meta-xylene		*110 %*		*71.5-118*	*08/28/2019*	*08/29/2019 06:46*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*97.1 %*		*56.1-132*	*08/28/2019*	*08/29/2019 06:46*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908084**			
% Solids	**74.7**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

DUP-20190828182400

F193505-10 (Soil)

Date Sampled
08/28/2019 18:24

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082						**Preparation Batch: F908085**		
PCB-1016	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 07:10	EPA 8082A	U
PCB-1221	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 07:10	EPA 8082A	U
PCB-1232	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 07:10	EPA 8082A	U
PCB-1242	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 07:10	EPA 8082A	U
PCB-1248	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 07:10	EPA 8082A	U
PCB-1254	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 07:10	EPA 8082A	U
PCB-1260	ND	0.060	mg/kg dry	1	08/28/2019	08/29/2019 07:10	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*107 %*		*71.5-118*	*08/28/2019*	*08/29/2019 07:10*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*86.7 %*		*56.1-132*	*08/28/2019*	*08/29/2019 07:10*	*EPA 8082A*	
Classical Chemistry Parameters						**Preparation Batch: F908084**		
% Solids	**83.0**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

FLOOD_UNT-SW-06-190828-0-6

F193505-11 (Soil)

Date Sampled
08/28/2019 18:24

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F908085**			
PCB-1016	ND	0.061	mg/kg dry	1	08/28/2019	08/29/2019 07:34	EPA 8082A	U
PCB-1221	ND	0.061	mg/kg dry	1	08/28/2019	08/29/2019 07:34	EPA 8082A	U
PCB-1232	ND	0.061	mg/kg dry	1	08/28/2019	08/29/2019 07:34	EPA 8082A	U
PCB-1242	ND	0.061	mg/kg dry	1	08/28/2019	08/29/2019 07:34	EPA 8082A	U
PCB-1248	ND	0.061	mg/kg dry	1	08/28/2019	08/29/2019 07:34	EPA 8082A	U
PCB-1254	ND	0.061	mg/kg dry	1	08/28/2019	08/29/2019 07:34	EPA 8082A	U
PCB-1260	ND	0.061	mg/kg dry	1	08/28/2019	08/29/2019 07:34	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*107 %*		*71.5-118*	*08/28/2019*	*08/29/2019 07:34*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*87.0 %*		*56.1-132*	*08/28/2019*	*08/29/2019 07:34*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F908084**			
% Solids	**82.6**	0.00	% by Weight	1	08/28/2019	08/29/2019 09:41	SM 2540B	

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SO-RB-201908281831

F193506-01 (Rinse)

Date Sampled
08/28/2019 18:31

Pace Analytical - Mobile Lab

Polychlorinated Biphenyls by EPA Method 8082 — **Preparation Batch: F908080**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
PCB-1016	ND	0.063	ug/L	1	08/28/2019	08/28/2019 22:15	EPA 8082A	U
PCB-1221	ND	0.10	ug/L	1	08/28/2019	08/28/2019 22:15	EPA 8082A	U
PCB-1232	ND	0.063	ug/L	1	08/28/2019	08/28/2019 22:15	EPA 8082A	U
PCB-1242	ND	0.063	ug/L	1	08/28/2019	08/28/2019 22:15	EPA 8082A	U
PCB-1248	ND	0.063	ug/L	1	08/28/2019	08/28/2019 22:15	EPA 8082A	U
PCB-1254	ND	0.063	ug/L	1	08/28/2019	08/28/2019 22:15	EPA 8082A	U
PCB-1260	ND	0.063	ug/L	1	08/28/2019	08/28/2019 22:15	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*86.4 %*		*68.8-135*	*08/28/2019*	*08/28/2019 22:15*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*85.6 %*		*82.2-139*	*08/28/2019*	*08/28/2019 22:15*	*EPA 8082A*	

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Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F908080 - EPA 3511										
Blank (F908080-BLK1)				Prepared: 08/28/2019 Analyzed: 08/28/2019 13:57						
PCB-1016	ND	0.063	ug/L							U
PCB-1221	ND	0.10	ug/L							U
PCB-1232	ND	0.063	ug/L							U
PCB-1242	ND	0.063	ug/L							U
PCB-1248	ND	0.063	ug/L							U
PCB-1254	ND	0.063	ug/L							U
PCB-1260	ND	0.063	ug/L							U
Surrogate: Tetrachloro-meta-xylene	*0.748*		*ug/L*	*0.7500*		*99.7*	*68.8-135*			
Surrogate: Decachlorobiphenyl	*0.762*		*ug/L*	*0.7500*		*102*	*82.2-139*			
LCS (F908080-BS1)				Prepared: 08/28/2019 Analyzed: 08/28/2019 13:08						
PCB-1242	12.4	0.063	ug/L	12.50		99.2	60-140			
Surrogate: Tetrachloro-meta-xylene	*0.728*		*ug/L*	*0.7500*		*97.1*	*68.8-135*			
Surrogate: Decachlorobiphenyl	*0.746*		*ug/L*	*0.7500*		*99.5*	*82.2-139*			
LCS Dup (F908080-BSD1)				Prepared: 08/28/2019 Analyzed: 08/28/2019 13:32						
PCB-1242	13.2	0.063	ug/L	12.50		105	60-140	6.00	30	
Surrogate: Tetrachloro-meta-xylene	*0.775*		*ug/L*	*0.7500*		*103*	*68.8-135*			
Surrogate: Decachlorobiphenyl	*0.747*		*ug/L*	*0.7500*		*99.6*	*82.2-139*			
Batch F908085 - EPA 3570										
Blank (F908085-BLK1)				Prepared: 08/28/2019 Analyzed: 08/29/2019 02:22						
PCB-1016	ND	0.050	mg/kg wet							U
PCB-1221	ND	0.050	mg/kg wet							U
PCB-1232	ND	0.050	mg/kg wet							U
PCB-1242	ND	0.050	mg/kg wet							U
PCB-1248	ND	0.050	mg/kg wet							U
PCB-1254	ND	0.050	mg/kg wet							U
PCB-1260	ND	0.050	mg/kg wet							U
Surrogate: Tetrachloro-meta-xylene	*0.254*		*mg/kg wet*	*0.2400*		*106*	*71.5-118*			
Surrogate: Decachlorobiphenyl	*0.202*		*mg/kg wet*	*0.2400*		*84.1*	*56.1-132*			
LCS (F908085-BS1)				Prepared: 08/28/2019 Analyzed: 08/29/2019 01:58						
PCB-1242	2.10	0.050	mg/kg wet	2.000		105	50-150			
Surrogate: Tetrachloro-meta-xylene	*0.254*		*mg/kg wet*	*0.2400*		*106*	*71.5-118*			
Surrogate: Decachlorobiphenyl	*0.202*		*mg/kg wet*	*0.2400*		*84.1*	*56.1-132*			
Matrix Spike (F908085-MS1)		**Source: F193505-11**		Prepared: 08/28/2019 Analyzed: 08/29/2019 07:58						
PCB-1242	2.79	0.061	mg/kg dry	2.421	ND	115	50-150			
Surrogate: Tetrachloro-meta-xylene	*0.331*		*mg/kg dry*	*0.2905*		*114*	*71.5-118*			
Surrogate: Decachlorobiphenyl	*0.272*		*mg/kg dry*	*0.2905*		*93.7*	*56.1-132*			

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F908085 - EPA 3570										
Matrix Spike Dup (F908085-MSD1)	**Source: F193505-11**			Prepared: 08/28/2019 Analyzed: 08/29/2019 08:22						
PCB-1242	2.71	0.061	mg/kg dry	2.421	ND	112	50-150	2.83	20	
Surrogate: Tetrachloro-meta-xylene	*0.319*		*mg/kg dry*	*0.2905*		*110*	*71.5-118*			
Surrogate: Decachlorobiphenyl	*0.262*		*mg/kg dry*	*0.2905*		*90.2*	*56.1-132*			

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Classical Chemistry Parameters - Quality Control

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F908084 - % Solids										
Duplicate (F908084-DUP1)		**Source: F193505-11**		Prepared: 08/28/2019 Analyzed: 08/29/2019 09:41						
% Solids	81.9	0.00	% by Weight		82.6			0.868	20	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

Notes and Definitions

U	Analyte included in the analysis, but not detected
DO	Diluted out.
D	Data reported from a dilution
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

ANCHOR QEA
1201 3rd Avenue, Suite 2600, Seattle, WA 98101

ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

F193505

COC ID: PLS-20190828-182615

POC: * Adrianne Constant
68 Excelsior Ave, Suite 101, Saratoga Springs, NY

Project: Grasse River - Upland Verification
Client: Alcoa

Sample Custodian: JM
Lab: Pace Mobile Lab Services

COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected Date	Collected Time	Containers #	Lab QC*	Test Request	Method	TAT**	Preservative
001	Flood_UNT-B-01-190828-0-6	N	SE	08/28/2019	18:20	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
002	Flood_UNT-B-01-190828-6-12	N	SE	08/28/2019	18:20	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
003	Flood_UNT-B-02-190828-0-6	N	SE	08/28/2019	18:20	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
004	Flood_UNT-B-04-190828-0-6	N	SO	08/28/2019	18:21	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
005	Flood_UNT-B-04-190828-6-11	N	SO	08/28/2019	18:21	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
006	Flood_UNT-B-08-190828-0-6	N	SO	08/28/2019	18:22	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
007	Flood_UNT-B-09-190828-0-6	N	SO	08/28/2019	18:23	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
008	Flood_UNT-B-09-190828-6-12	N	SO	08/28/2019	18:23	1	☐				

Comment: Orig. Chain of Custody Seal intact Cus 8/29 F193505

Relinquished By	Received By	Relinquished By	Received By	Relinquished By	Received By
Signature	Signature	Signature	Signature	Signature	Signature
Print Name Andrew Gilson	Print Name Tyler Torelli	Print Name	Print Name	Print Name	Print Name
Company Arcadis	Company PACE	Company	Company	Company	Company
Date/Time 8/28/19 1844	Date/Time 8/28/19 1844	Date/Time	Date/Time	Date/Time	Date/Time

* Lab QC Requested for sample when box is checked ** TAT = Turn Around Time in HOURS # POC = Project Point of Contact

Date Printed: 8/28/2019

ANCHOR QEA
1201 3rd Avenue, Suite 2600, Seattle, WA 98101

ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

COC ID: PLS-20190828-182615

POC: * Adrianne Constant
68 Excelsior Ave, Suite 101, Saratoga Springs, NY

Project: Grasse River - Upland Verification
Client: Alcoa

Sample Custodian: JM
Lab: Pace Mobile Lab Services

F193505

COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected Date	Collected Time	Containers #	Lab QC*	Test Request	Method	TAT**	Preservative
-08	008	Flood_UNT-B-09-190828-6-12	N	SO	08/28/2019	18:23	1	☐			
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
-09	009	Flood_UNT-SW-05-190828-0-6	N	SO	08/28/2019	18:23	1	☐			
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
-10	010	DUP-20190828182400	FD	SO	08/28/2019		1	☐			
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
-11	011	Flood_UNT-SW-06-190828-0-6	N	SO	08/28/2019	18:24	2	☒			
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C

Comment:

F193505

Relinquished By	Received By	Relinquished By	Received By	Relinquished By	Received By
Signature	Signature	Signature	Signature	Signature	Signature
Print Name Andrew Gibson	Print Name Tyler Torelli	Print Name	Print Name	Print Name	Print Name
Company Arcadis	Company PACE	Company	Company	Company	Company
Date/Time 8/28/19 1844	Date/Time 8/28/19 1844	Date/Time	Date/Time	Date/Time	Date/Time

* Lab QC Requested for sample when box is checked. ** TAT = Turn Around Time in HOURS. # POC = Project Point of Contact

Date Printed: 8/28/2019

ANCHOR QEA
1201 3rd Avenue, Suite 2600, Seattle, WA 98101

ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

F193506

COC ID: PLS-20190828-183340

POC: # Adrianne Constant
68 Excelsior Ave, Suite 101, Saratoga Springs, NY

Project: Grasse River - Upland Verification
Client: Alcoa

Sample Custodian: jm
Lab: Pace Mobile Lab Services

COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected Date	Collected Time	Containers #	Lab QC*	Test Request	Method	TAT**	Preservative
001	SO-RB-201908281831	RB	WQ	08/28/2019	18:31	1	☐				
								Aroclor PCBs	SW8082	24	

Comment: on ice w/ custody seal Cwo 8/28/19

F193506

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature	Signature	Signature	Signature	Signature
Print Name Andrew Gibson	Print Name Cameron Orth	Print Name	Print Name	Print Name	Print Name
Company 8/28/19 Arcadis	Company Pace	Company	Company	Company	Company
Date/Time 8/28/19 1844	Date/Time 08/28/19/1844	Date/Time	Date/Time	Date/Time	Date/Time

* Lab QC Requested for sample when box is checked ** TAT = Turn Around Time in HOURS # POC = Project Point of Contact

Date Printed: 8/28/2019

Page 1 of 1

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Anchor QEA
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Saratoga Springs NY, 12866

Project: Grasse River Remedial Action
Project Number: 2837
Project Manager: Adrianne Constant

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Flood_UNT-B-09-190912-0-6	F193711-01	Sediment	09/12/2019	09/12/2019
Flood_UNT-B-09-190912-12-18	F193711-02	Sediment	09/12/2019	09/12/2019
Flood_UNT-B-09-190912-6-12	F193711-03	Sediment	09/12/2019	09/12/2019

Case Narrative

There was evidence of severe Aroclor weathering in samples on work order F193711 . Identification of Aroclors was based on analyst interpretation of best fitting Aroclors using identifying congener peaks and peak ratios for quantitation .

Additionally, samples on F193711 appear to have been spiked at the volumes associated with water sample preparation, namely 1/4 the usual surrogate spike and 1/2 the usual Aroclor-1242 spike. The highly consistent recovery data, combined with instrument QC in control and a brief investigation, permitted the adjustment to the nonstandard spike volumes in the database.

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

Flood_UNT-B-09-190912-0-6

F193711-01 (Sediment)

Date Sampled
09/12/2019 09:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F909037**			**C**
PCB-1016	ND	0.066	mg/kg dry	1	09/12/2019	09/13/2019 12:34	EPA 8082A	U
PCB-1221	ND	0.066	mg/kg dry	1	09/12/2019	09/13/2019 12:34	EPA 8082A	U
PCB-1232	ND	0.066	mg/kg dry	1	09/12/2019	09/13/2019 12:34	EPA 8082A	U
PCB-1242	**0.13**	0.066	mg/kg dry	1	09/12/2019	09/13/2019 12:34	EPA 8082A	
PCB-1248	ND	0.066	mg/kg dry	1	09/12/2019	09/13/2019 12:34	EPA 8082A	U
PCB-1254	ND	0.066	mg/kg dry	1	09/12/2019	09/13/2019 12:34	EPA 8082A	U
PCB-1260	**1.1**	0.066	mg/kg dry	1	09/12/2019	09/13/2019 12:34	EPA 8082A	HC
Surrogate: Tetrachloro-meta-xylene		*120 %*		*71.5-118*	*09/12/2019*	*09/13/2019 12:34*	*EPA 8082A*	*S*
Surrogate: Decachlorobiphenyl		*101 %*		*56.1-132*	*09/12/2019*	*09/13/2019 12:34*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F909039**			
% Solids	**75.2**	0.00	% by Weight	1	09/12/2019	09/13/2019 10:55	SM 2540B	

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ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
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Anchor QEA	Project: Grasse River Remedial Action
4300 Route 50, #202	Project Number: 2837
Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

Flood_UNT-B-09-190912-12-18

F193711-02 (Sediment)

Date Sampled
09/12/2019 09:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F909037**			**C**
PCB-1016	ND	0.070	mg/kg dry	1	09/12/2019	09/13/2019 12:58	EPA 8082A	U
PCB-1221	ND	0.070	mg/kg dry	1	09/12/2019	09/13/2019 12:58	EPA 8082A	U
PCB-1232	ND	0.070	mg/kg dry	1	09/12/2019	09/13/2019 12:58	EPA 8082A	U
PCB-1242	ND	0.070	mg/kg dry	1	09/12/2019	09/13/2019 12:58	EPA 8082A	U
PCB-1248	ND	0.070	mg/kg dry	1	09/12/2019	09/13/2019 12:58	EPA 8082A	U
PCB-1254	ND	0.070	mg/kg dry	1	09/12/2019	09/13/2019 12:58	EPA 8082A	U
PCB-1260	ND	0.070	mg/kg dry	1	09/12/2019	09/13/2019 12:58	EPA 8082A	U
Surrogate: Tetrachloro-meta-xylene		*123 %*		*71.5-118*	*09/12/2019*	*09/13/2019 12:58*	*EPA 8082A*	*S*
Surrogate: Decachlorobiphenyl		*101 %*		*56.1-132*	*09/12/2019*	*09/13/2019 12:58*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F909039**			
% Solids	**71.5**	0.00	% by Weight	1	09/12/2019	09/13/2019 10:55	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

Flood_UNT-B-09-190912-6-12

F193711-03 (Sediment)

Date Sampled
09/12/2019 09:23

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Polychlorinated Biphenyls by EPA Method 8082					**Preparation Batch: F909037**			**C**
PCB-1016	ND	0.072	mg/kg dry	1	09/12/2019	09/13/2019 13:22	EPA 8082A	U
PCB-1221	ND	0.072	mg/kg dry	1	09/12/2019	09/13/2019 13:22	EPA 8082A	U
PCB-1232	ND	0.072	mg/kg dry	1	09/12/2019	09/13/2019 13:22	EPA 8082A	U
PCB-1242	**0.10**	0.072	mg/kg dry	1	09/12/2019	09/13/2019 13:22	EPA 8082A	
PCB-1248	ND	0.072	mg/kg dry	1	09/12/2019	09/13/2019 13:22	EPA 8082A	U
PCB-1254	ND	0.072	mg/kg dry	1	09/12/2019	09/13/2019 13:22	EPA 8082A	U
PCB-1260	**0.71**	0.072	mg/kg dry	1	09/12/2019	09/13/2019 13:22	EPA 8082A	HC
Surrogate: Tetrachloro-meta-xylene		*117 %*		*71.5-118*	*09/12/2019*	*09/13/2019 13:22*	*EPA 8082A*	
Surrogate: Decachlorobiphenyl		*97.7 %*		*56.1-132*	*09/12/2019*	*09/13/2019 13:22*	*EPA 8082A*	
Classical Chemistry Parameters					**Preparation Batch: F909039**			
% Solids	**69.3**	0.00	% by Weight	1	09/12/2019	09/13/2019 10:55	SM 2540B	

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Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F909037 - EPA 3570										
Blank (F909037-BLK1)				Prepared: 09/12/2019 Analyzed: 09/13/2019 06:36						
PCB-1016	ND	0.050	mg/kg wet							C, U
PCB-1221	ND	0.050	mg/kg wet							C, U
PCB-1232	ND	0.050	mg/kg wet							C, U
PCB-1242	ND	0.050	mg/kg wet							C, U
PCB-1248	ND	0.050	mg/kg wet							C, U
PCB-1254	ND	0.050	mg/kg wet							C, U
PCB-1260	ND	0.050	mg/kg wet							C, U
Surrogate: Tetrachloro-meta-xylene	*0.0722*		*mg/kg wet*	*0.06000*		*120*	*71.5-118*			*C, S*
Surrogate: Decachlorobiphenyl	*0.0604*		*mg/kg wet*	*0.06000*		*101*	*56.1-132*			*C*
LCS (F909037-BS1)				Prepared: 09/12/2019 Analyzed: 09/13/2019 07:00						
PCB-1242	1.17	0.050	mg/kg wet	1.000		117	50-150			C
Surrogate: Tetrachloro-meta-xylene	*0.0717*		*mg/kg wet*	*0.06000*		*119*	*71.5-118*			*C*
Surrogate: Decachlorobiphenyl	*0.0590*		*mg/kg wet*	*0.06000*		*98.4*	*56.1-132*			*C*
Matrix Spike (F909037-MS1)	**Source: F193710-25**			Prepared: 09/12/2019 Analyzed: 09/13/2019 09:23						
PCB-1242	2.26	0.091	mg/kg dry	1.819	0.0943	119	50-150			C
Surrogate: Tetrachloro-meta-xylene	*0.135*		*mg/kg dry*	*0.1091*		*124*	*71.5-118*			*C*
Surrogate: Decachlorobiphenyl	*0.118*		*mg/kg dry*	*0.1091*		*109*	*56.1-132*			*C*
Matrix Spike Dup (F909037-MSD1)	**Source: F193710-25**			Prepared: 09/12/2019 Analyzed: 09/13/2019 09:47						
PCB-1242	2.30	0.091	mg/kg dry	1.819	0.0943	121	50-150	2.00	20	C
Surrogate: Tetrachloro-meta-xylene	*0.137*		*mg/kg dry*	*0.1091*		*125*	*71.5-118*			*C, S*
Surrogate: Decachlorobiphenyl	*0.120*		*mg/kg dry*	*0.1091*		*110*	*56.1-132*			*C*

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4300 Route 50, #202	Project Number: 2837
Saratoga Springs NY, 12866	Project Manager: Adrianne Constant

Classical Chemistry Parameters - Quality Control

Pace Analytical - Mobile Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F909039 - % Solids										
Duplicate (F909039-DUP1)		**Source: F193710-25**		Prepared: 09/12/2019 Analyzed: 09/13/2019 10:55						
% Solids	54.6	0.00	% by Weight		55.0			0.758	20	

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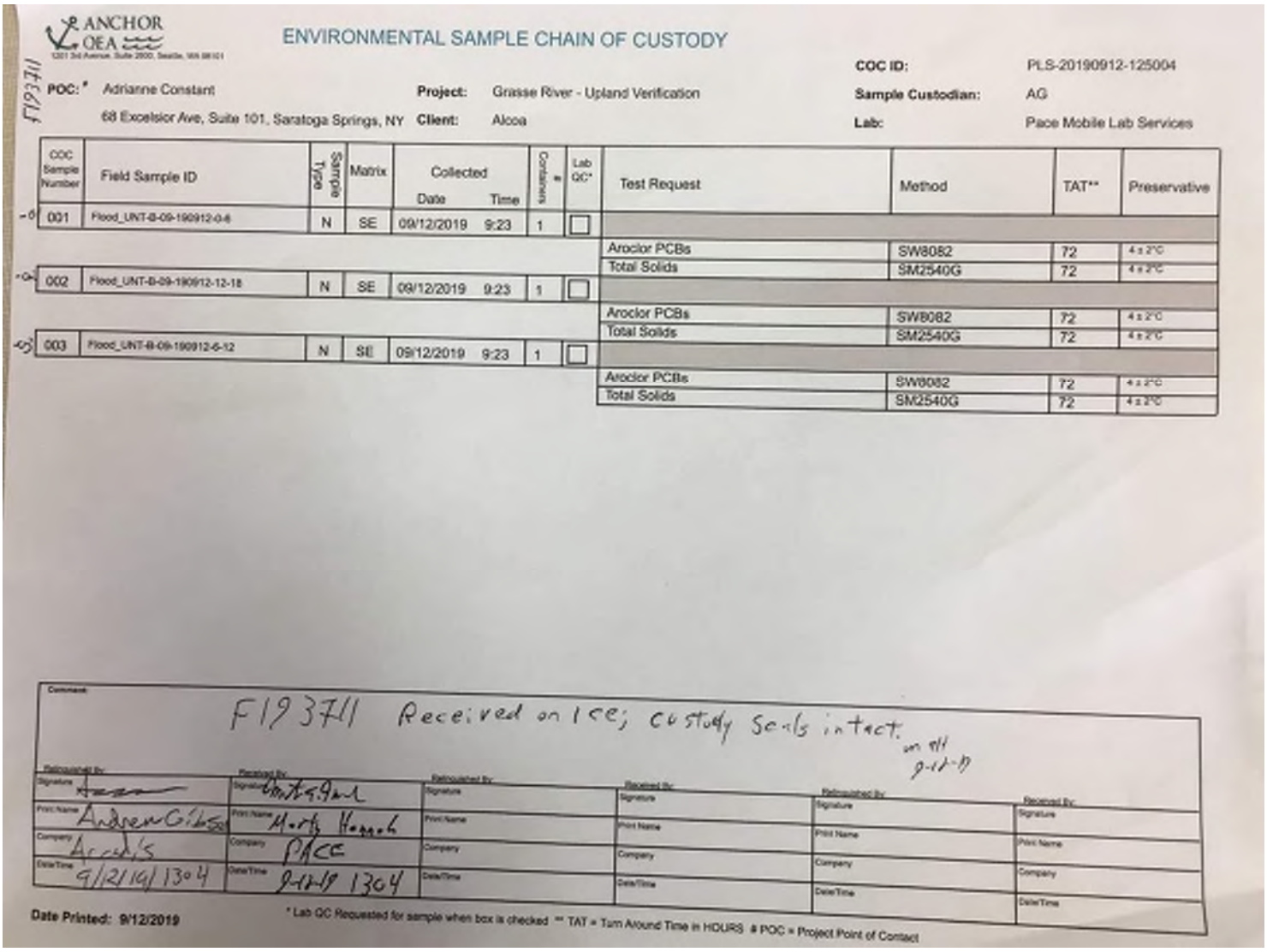
Notes and Definitions

U	Analyte included in the analysis, but not detected
S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
HC	Results may be biased high because of high continuing calibration verification (CCV).
C	See the case narrative.
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference



ANCHOR QEA
1201 3rd Avenue, Suite 2600, Seattle, WA 98101

ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

F193711

POC:* Adrianne Constant
68 Excelsior Ave, Suite 101, Saratoga Springs, NY

Project: Grasse River - Upland Verification
Client: Alcoa

COC ID: PLS-20190912-125004
Sample Custodian: AG
Lab: Pace Mobile Lab Services

COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected Date	Collected Time	Containers #	Lab QC*	Test Request	Method	TAT**	Preservative
001	Flood_UNT-B-09-190912-0-6	N	SE	09/12/2019	9:23	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
002	Flood_UNT-B-09-190912-12-18	N	SE	09/12/2019	9:23	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C
003	Flood_UNT-B-09-190912-6-12	N	SE	09/12/2019	9:23	1	☐				
								Aroclor PCBs	SW8082	72	4 ± 2°C
								Total Solids	SM2540G	72	4 ± 2°C

Comments: F193711 Received on ice; custody seals intact. on 911 9-12-19

Relinquished By	Received By	Relinquished By	Received By	Relinquished By	Received By
Signature	Signature	Signature	Signature	Signature	Signature
Print Name: Andrew Giles	Print Name: Mark Hamel	Print Name	Print Name	Print Name	Print Name
Company: Anchor	Company: PACE	Company	Company	Company	Company
Date/Time: 9/12/19 1304	Date/Time: 9-12-19 1304	Date/Time	Date/Time	Date/Time	Date/Time

Date Printed: 9/12/2019

* Lab QC Requested for sample when box is checked ** TAT = Turn Around Time in HOURS # POC = Project Point of Contact