PHASE 2 REMEDIAL ACTION WORK PLAN FOR REACH 7 - LANDLOCKED AREA

HUDSON RIVER PCBs SUPERFUND SITE

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ACRONYMS AND ABBREVIATIONS

ARARs	Applicable or relevant and appropriate requirements
CAMs	Corrective Action Memoranda
CD	Consent Decree
CDE	Critical Phase 2 Design Elements (Attachment A to SOW)
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
Cfs	cubic feet per second
CFR	Code of Federal Regulations
CHASP	Community Health and Safety Plan
CM	Construction Manager
CU	certification unit
Cy	cubic yard
D&FO	Dredging and Facility Operations
DBH	diameter at breast height
DGPS	differential global positioning system
DoC	Depth of Contamination
DQAP	Dredging Construction Quality Control/Quality Assurance Plan
EHS	environmental health and safety
EPA	United States Environmental Protection Agency
EPS	Engineering Performance Standards
FDR	Final Design Report
GE	General Electric Company
GPS	global positioning system
HASP	Health and Safety Plan
HPPSC	Habitat Planting and Plant Supply Contractor
ITA	Isthmus Transload Area
LBLA	Landlocked Barge Loading Area
LDOC	Landlocked Dredging Operations Contractor
MPA	mass per unit area
NYSCC	New York State Canal Corporation
NYSDEC	New York State Department of Environmental Conservation
O&M	operation and maintenance

ACRONYMS AND ABBREVIATIONS (CONTINUED)

OSHA	Occupational Safety and Health Administration
PAP	Property Access Plan
PCBs	polychlorinated biphenyls
PFOC	Processing Facility Operations Contractor
PPE	personal protective equipment
PSCP	Performance Standards Compliance Plan
QA	quality assurance
QC	quality control
QoLPS	Quality of Life Performance Standards
RA	Remedial Action
RA CHASP	Remedial Action Community Health and Safety Plan
RA HASP	Remedial Action Health and Safety Plan
RAM QAPP	Remedial Action Monitoring Quality Assurance Project Plan
RAWP	Remedial Action Work Plan
RFW	Riverine Fringing Wetland
RM	River Mile
ROD	Record of Decision
RTK	Real Time Kinematic
RYOC	Rail Yard Operations Contractor
SAV	Submerged (and floating) Aquatic Vegetation
SBLA	Saratoga Barge Loading Area
SOW	Statement of Work for Remedial Action and Operations, Maintenance and Monitoring
TDP	Transportation and Disposal Plan
TID	Thompson Island Dam
TIP	Thompson Island Pool
TOC	total organic carbon
TSCA	Toxic Substances Control Act
TSS	Total Suspended Solids
WQ Requirements	Substantive Water Quality Requirements

SECTION 1

INTRODUCTION

In 2005, the General Electric Company (GE) and the United States Environmental Protection Agency (EPA) executed a Consent Decree (CD) relating to the performance of the Remedial Action (RA) selected by EPA to address polychlorinated biphenyls (PCBs) in sediments of the Upper Hudson River, located in New York State, through dredging, as described in EPA's February 2002 Record of Decision (ROD) for the Hudson River PCBs Superfund Site (EPA, 2002). The CD was filed in federal district court on October 6, 2005 (USEPA/GE, 2005) and was approved and entered by the court as a final judgment on November 2, 2006, when it went into effect.

In accordance with the ROD and the CD, the RA was to be conducted in two phases. Phase 1 was defined as the first year of dredging and was conducted by GE in 2009 (with habitat replacement/reconstruction activities in Phase 1 dredge areas completed in 2011). Phase 2 consists of the remainder of the dredging project. The CD provided that, following the completion of Phase 1 dredging and a peer review process, EPA would issue a decision regarding the performance standards and scope for Phase 2, and GE would notify EPA as to whether it would perform Phase 2 under the CD. After an intensive peer review process, EPA issued its decision regarding the performance standards and scope for Phase 2 in December 2010; and GE notified EPA (also in December 2010) that it elected to perform Phase 2 under the CD.

The CD includes, as Appendix B, a Statement of Work (SOW) for Remedial Action and Operations, Maintenance and Monitoring, which sets forth a number of general requirements for the RA and includes several attachments specifying requirements for various aspects of the RA. EPA issued revised versions of the SOW and its attachments for Phase 2 in December 2010. For the work to be performed in each construction year of Phase 2, Section 3.1 of the revised SOW requires GE to submit a Remedial Action Work Plan (RAWP) for Phase 2 Dredging and Facility Operations for such year, along with any remaining design documents (or revisions or addenda to previously approved design documents) for the dredging to be performed in that year.

In the spring of 2011, 2012, and 2013, in accordance with the revised SOW, GE submitted the required reports and work plans for, respectively, the first year of Phase 2 dredging (known as Phase 2 Year 1), the second year of Phase 2 dredging (known as Phase 2 Year 2), and the third year of Phase 2 dredging (known as Phase 2 Year 3). GE conducted Phase 2 Year 1 dredging and associated activities in 2011, Phase 2 Year 2 dredging and associated activities in 2012, and Phase 2 Year 3 dredging and associated activities in 2013 (excluding, in each case, habitat construction in areas dredged in those years, which has been or will be performed in subsequent years). For 2014, GE has submitted a *Remedial Action Work Plan for Phase 2 Dredging and Facility Operations in 2014* (2014 RAWP; Parsons, 2014a), which generally covers planned

dredging and sediment processing operations in navigable portions of the river (the main stem) in 2014. However, the 2014 RAWP does not specifically address dredging and related operations in the non-navigable portion of the river, known as the Landlocked Area, located in Reach 7 of the river, because that area presents a number of operational challenges different from those in the navigable portion of the river.

This *Remedial Action Work Plan for Reach 7 - Landlocked Area* (Reach 7 RAWP) constitutes GE's RAWP for dredging and related sediment handling operations for the Landlocked Area in Reach 7 of the river (part of River Section 2), which contains Certification Units (CUs) 61 through 66. This Reach 7 RAWP is a revised version of the Reach 7 RAWP initially submitted to EPA in April 2014, with changes to reflect comments from and discussions with EPA. Dredging in the Landlocked Area is anticipated to commence and be completed in 2014 concurrent with dredging in portions of the main stem of the river. As indicated above, the Landlocked Area presents a number of operational challenges different from those in the main stem of the river, particularly due to the fact that the Landlocked Area is not directly accessible from the navigable channel of the Hudson River and Champlain Canal system. As a result, dredging, material transport, and transloading of sediment into barges situated in the Champlain Canal have been addressed in this separate Reach 7 RAWP. However, the plans in the appendices to the 2014 RAWP contain many provisions that apply to the Landlocked Area so they have been referenced and incorporated, as appropriate, in this Reach 7 RAWP. In addition, GE has submitted to EPA a *Phase 2 Final Design Report for Reach 7 (the Landlocked Area)* (Reach 7 FDR; Arcadis, 2014), which provides GE's design plans for the Landlocked Area.

No habitat construction activities are anticipated in the Landlocked Area during the 2014 dredging season except for backfill placement in support of future habitat construction. Habitat construction in the Landlocked Area CUs will be described in a future RAWP document.

1.1 PROJECT SETTING

The Upper Hudson River is defined as the section of river from Fenimore Bridge in Hudson Falls to the Federal Dam at Troy, New York. The ROD calls for, among other things, a remedial action to remove and dispose of sediments containing PCBs from the Upper Hudson River. Sediments to be removed are defined based on the PCB mass per unit area (MPA) and surface concentration criteria (see EPA, 2002).

The ROD defined three sections of the Upper Hudson River for the sediment remediation activities:

- River Section 1: Former location of Fort Edward Dam to Thompson Island Dam (TID) (from river mile [RM] 194.8 to RM 188.5; approximately 6.3 RM);
- River Section 2: TID to Northumberland Dam (from RM 188.5 to RM 183.4; approximately 5.1 RM); and
- River Section 3: Northumberland Dam to the Federal Dam at Troy (from RM 183.4 to RM 153.9; approximately 29.5 RM).

As noted above, the ROD called for this remedial action is to be conducted in two phases. Phase 1 dredging, completed in 2009, was conducted in a portion of River Section 1. Phase 1 also included construction of a land-based sediment processing facility in Fort Edward adjacent to the Champlain Canal (the Fort Edward Sediment Processing Facility). Phase 2 covers the remaining dredging in all three river sections.

Reach 7 (the Landlocked Area), which contains CUs 61 through 66, is not directly accessible from the navigable channel of the Hudson River and Champlain Canal system. As a result, a revised approach will be implemented for dredging, material transport, and transloading of sediment into barges situated in the Champlain Canal for transport to the Fort Edward Sediment Processing Facility. This approach includes: (a) construction and use of an Isthmus Transload Area (ITA) on a narrow strip of land in the northern part of Reach 7 to transload dredged materials from the Landlocked Area into barges in the "land-cut" section of the Champlain Canal for transport to the Fort Edward Sediment Processing Facility; and (b) construction and use of a Landlocked Barge Loading Area (LBLA) to provide river access for transferring backfill/cap material into the Landlocked Area and for mobilizing equipment and materials. Figure 1-1 shows the locations of CUs 61 through 66 in Reach 7, as well as the dams that bound Reach 7 and the locations of the ITA and LBLA.

1.2 LANDLOCKED AREA CONTRACTS

The project scope for the Landlocked Area activities addressed in this Reach 7 RAWP will be conducted under three separate primary contracts, Contract 30, 42A, and 43B, described below:

- Contract 30 – Processing Facility Operations, covers sediment processing facility operations and maintenance at the Fort Edward Sediment Processing Facility where sediment from the Landlocked Area will be off-loaded, dewatered, and loaded onto trains for transport to off-site disposal facilities. The contractor selected to carry out these activities under Contract 30 is referred to herein as the Processing Facility Operations Contractor (PFOC).
- Contract 42A – Dredging Operations, covers the construction, operation, demobilization and restoration of the ITA. The contractor selected to implement this contract is also conducting the 2014 dredging operations in the main stem of the river and will also transport the sediment transloaded from the Landlocked Area to the Fort Edward Sediment Processing Facility for offloading by the PFOC. The contractor selected to carry out these activities under Contract 42A is referred to herein as the Isthmus Transload Contractor.
- Contract 43B – Landlocked Dredging Operations, covers the following: shoreline vegetation pruning; dredging operations; the transport of loaded sediment barges to the ITA; supply and placement of appropriate backfill or cap materials; construction, operation, demobilization and restoration of the LBLA; initial seeding of replacement

riverine fringing wetlands (RFW); performance of appropriate shoreline stabilization measures; and repair and planting of shoreline areas above the designated shoreline elevation contour disturbed during dredging operations. The contractor selected to carry out these activities under Contract 43B is referred to herein as the Landlocked Dredging Operations Contractor (LDOC).

In addition to the LDOC described above, Parsons Engineering of New York, Inc. (Parsons) will provide construction management services to GE during the operations in Reach 7. Figure 1-2 provides a chart that shows the lines of communication among the different groups involved in the project. Parsons is referred to as the Construction Manager (CM) throughout this Reach 7 RAWP.

1.3 REACH 7 RAWP AND ASSOCIATED DOCUMENTS

This Reach 7 RAWP consists of the main text and three appendices containing other specific plans, as follows:

Reach 7 RAWP (main text) – provides an overview of the Reach 7 RAWP, including a description of the project setting, dredging operations, transload operations, construction and operations schedule, and compliance monitoring and health and safety activities to be performed within the Landlocked Area.

Appendix A: ***Phase 2 Construction Plan for Reach 7 Isthmus Transload Area –*** provides a description of the activities necessary to construct the ITA. This plan was previously submitted to EPA separately on February 10, 2014, revised and re-submitted on March 17, 2014 so that construction of the ITA could proceed, and formally approved by EPA on May 7, 2014. Construction of the ITA commenced in March 2014 and has been completed.

Appendix B: ***Phase 2 Construction Plan for Landlocked Barge Loading Area –*** provides a description of the activities necessary to construct the LBLA. This plan was initially submitted to EPA separately on April 8, 2014 and a revised plan addressing EPA's comments were subsequently submitted and approved by EPA on June 12, 2014 and is attached to this plan. Construction of the LBLA commenced in June 2014.

Appendix C: ***Phase 2 Demobilization and Restoration Plan for Landlocked Area –*** will provide a description of activities necessary to demobilize and restore the LBLA and the ITA following the Landlocked Area dredging operations. This appendix will be submitted under separate cover once the LBLA has been constructed and the full extent of the demobilization and restoration can be known.

As mentioned previously, the 2014 RAWP (Parsons 2014a) and particularly its appendices contain many provisions that apply to the Landlocked Area and thus have been referenced and incorporated herein, as appropriate. The appendices to the 2014 RAWP consist of the following:

- ***Phase 2 Dredging Construction Quality Control/Quality Assurance Plan for 201***4 (2014 DQAP) (Appendix A to 2014 RAWP);

- ***Phase 2 Facility Operations and Monitoring Plan for 2014*** (2014 Facility O&M Plan) (Appendix B to 2014 RAWP);
- ***Phase 2 Transportation and Disposal Plan for 2014*** (2014 TDP) (Appendix C to 2014 RAWP) (note that until EPA approves this 2014 TDP, GE will follow the Phase 2 Transportation and Disposal Plan for 2013 [2013 TDP], which was Appendix C to the 2013 RAWP);
- ***Phase 2 Performance Standards Compliance Plan for 2014*** (2014 PSCP) (Appendix D to 2014 RAWP);
- ***Phase 2 Property Access Plan for 2014*** (2014 PAP) (Appendix E to 2014 RAWP); and
- ***Phase 2 Community Health and Safety Plan for 2014*** (2014 CHASP) (Appendix F to 2014 RAWP; to be included with revised version of 2014 RAWP).

In addition, two other separate plans will apply to the dredging and sediment handling operations in the Landlocked Area. They are:

- ***Phase 2 Remedial Action Monitoring Quality Assurance Project Plan*** (Phase 2 RAM QAPP; Anchor QEA, 2012), which describes in detail the monitoring and sampling activities (including sample collection, analysis, and data handling activities) to be conducted by GE; and
- ***Phase 2 Remedial Action Health and Safety Plan for 2014*** (2014 RA HASP; Parsons 2014b), which describes potential hazards and impacts to project workers, and the steps that GE and its contractors will take to prevent and respond to them.

1.4 DELIVERABLE REQUIREMENT INDEX

This Reach 7 RAWP has been developed pursuant to Sections 3.1.1 and 3.1.4 of the 2010 revised SOW attached to the CD. Table 1-1 provides an index specifying where each pertinent requirement of the revised SOW is addressed.

Table 1-1 SOW/Reach 7 RAWP Cross-Reference Table

Requirement	Citation	Reach 7 RAWP Location (or Cross-Reference)
RA Work Plan for sediment processing/ transfer facility other than the facility used in Phase 1.	SOW Section 3.1.2 (page 3-17), cross-referencing Section 2.1.2 and 2.2.2.	This Reach 7 RAWP addresses the operation of the sediment transfer facility to be constructed at the ITA. Appendix A describes construction activities associated with the ITA.
Detailed description of major remediation and construction activities	SOW Section 3.1.1, cross-referencing Section 2.3.2.2	This Reach 7 RAWP describes Landlocked Area dredging and transload operations, as well as operation of the LBLA. Appendix B describes the construction activities for the LBLA. Sediment offloading and processing operations at the Fort Edward Sediment Processing Facility are detailed in the 2014 Facility O&M Plan (Appendix B to 2014 RAWP). Rail yard operations and waste characterization, handling, transport, and disposal procedures are detailed in the 2014 TDP (Appendix C to 2014 RAWP) following EPA approval of that plan.
Monitoring events and compliance monitoring	Same as above	Compliance monitoring is described in detail in the Phase 2 RAM QAPP. It is summarized in the 2014 PSCP (Appendix D to 2014 RAWP) and in Section 5 of this Reach 7 RAWP.
Construction QA procedures	Same as above	Provided in the 2014 DQAP (Appendix A to 2014 RAWP).
Equipment staging	Same as above	Equipment staging for the construction of the ITA and LBLA is described in Appendices A and B, respectively. Equipment staging for dredging operations is described in Section 2.
Construction schedule	Same as above	Section 4
Demobilization and Restoration Plan	SOW Section 3.1.4	The Reach 7 Demobilization and Restoration Plan will be provided as Appendix C

1.5 REACH 7 RAWP ORGANIZATION

This Reach 7 RAWP is organized as follows:

Section 1 – Introduction: provides an introduction and overview of this Reach 7 RAWP and associated documents, an index specifying where each pertinent requirement of the SOW is addressed, and an outline of the plan's organization.

Section 2 – Reach 7 Dredging Operations: describes the work to be performed by the LDOC pursuant to Contract 43B (Landlocked Dredging Operations), including: (a) an overview of the dredging operations process; (b) mobilization activities; (c) equipment staging; (d)

shoreline vegetation pruning; (e) sheen response and other water quality controls; (f) dredging operations; (g) dredged material transport; (h) anchoring; (i) shoreline stabilization; (j) repair and planting of shoreline areas above the shoreline elevation contour if they are disturbed during dredging operations; (k) placement of backfill and engineered caps; and (l) hydrographic surveying during dredging operations.

Section 3 – Reach 7 Isthmus Transload Operations: describes the work to be performed by the Isthmus Transload Contractor, including: (a) a description of the isthmus transload operations; and (b) a description of how water will be managed at the ITA.

Section 4 – Construction and Operations Schedule: presents the construction schedule for the Reach 7 activities and the dredge production schedule, identifying the target weekly volume of *in situ* sediment to be dredged. This section also includes the qualifications and assumptions related to the construction and dredge production schedules and the interfaces between contracts.

Section 5 – Compliance Monitoring: provides a brief overview of the monitoring to be performed by GE during Reach 7 dredging to assess achievement of the Phase 2 Engineering Performance Standards (EPS), Quality of Life Performance Standards (QoLPS), and substantive water quality requirements (WQ Requirements) issued by EPA. More details regarding this monitoring are provided elsewhere – mainly in the Phase 2 RAM QAPP.

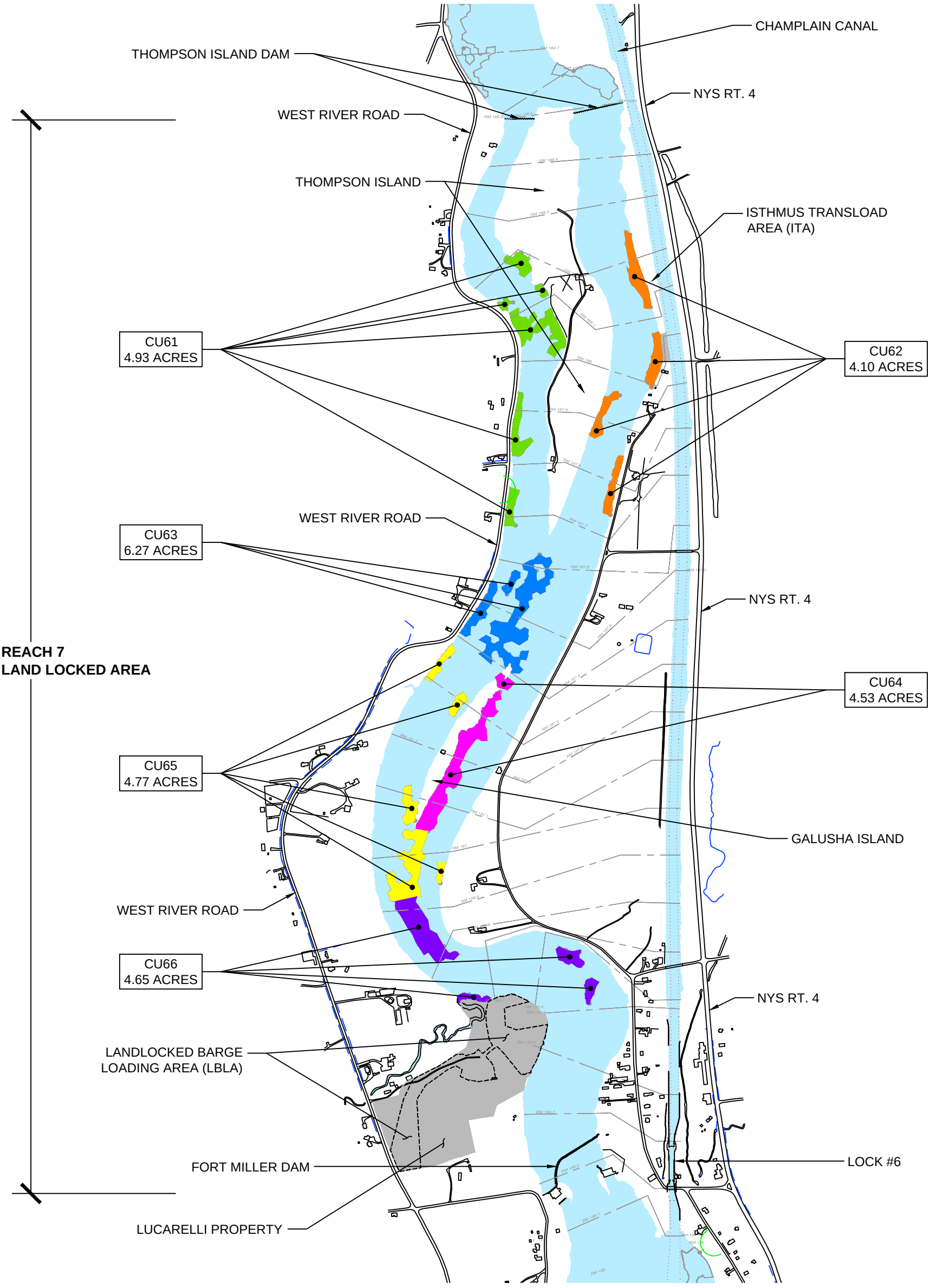
Section 6 – Health, Safety, and Environmental Protection Measures: discusses: (a) the health and safety policy, program, and plan to be implemented during Reach 7 dredging activities (including general worker health and safety measures); (b) personnel decontamination; (c) emergency contact numbers and (d) the monitoring to be conducted by the contractors to verify compliance with the contract specifications.

Section 7 – Report on 2014 Activities: describes the annual progress report to be submitted following the conclusion of the 2014 dredging activities, which will incorporate dredging activities within Reach 7.

Section 8 – References: provides bibliographic references to key documents referred to in the body of this Reach 7 RAWP.

1.6 REACH 7 RAWP REVISIONS

Construction and dredging activities described herein are based on the design drawings and specifications for Contract 43B, subject to EPA approval. During implementation of construction and dredging, revisions to this Reach 7 RAWP may become necessary due to design changes, adaptive management changes made pursuant to Section 7 of the 2010 revised SOW, unexpected field conditions, or other reasons. When GE becomes aware that revisions will be necessary, and those revisions affect the approved schedule or alter the means or scope of the work set forth in this Reach 7 RAWP, GE will notify EPA of the proposed change and seek EPA approval.



LEGEND

- SHORELINE
- NAVIGATION CHANNEL
- RIVER MILES

N

1,000 500 0 1,000

BAR SCALE

PARSONS
COMMERCIALTECHNOLOGY GROUP
GE COMPANY - PARSONS PROJECT OFFICE
BUILDING 40-2, 381 BROADWAY
FORT EDWARD, NEW YORK 12828 (518) 746-5311

DRAWING TITLE
REMEDIAL ACTION WORK PLAN
REACH 7 DREDGE AREAS
CERTIFICATION UNITS 61 - 66
HUDSON RIVER PCBs SUPERFUND SITE

DRAWN BY	CHECKED BY	DRAWING NO.	SCALE
MWB	CR	FIGURE 1-1	1" = 1,000'
DATE 05/22/2014	APPROVED BY MG		JOB NO.

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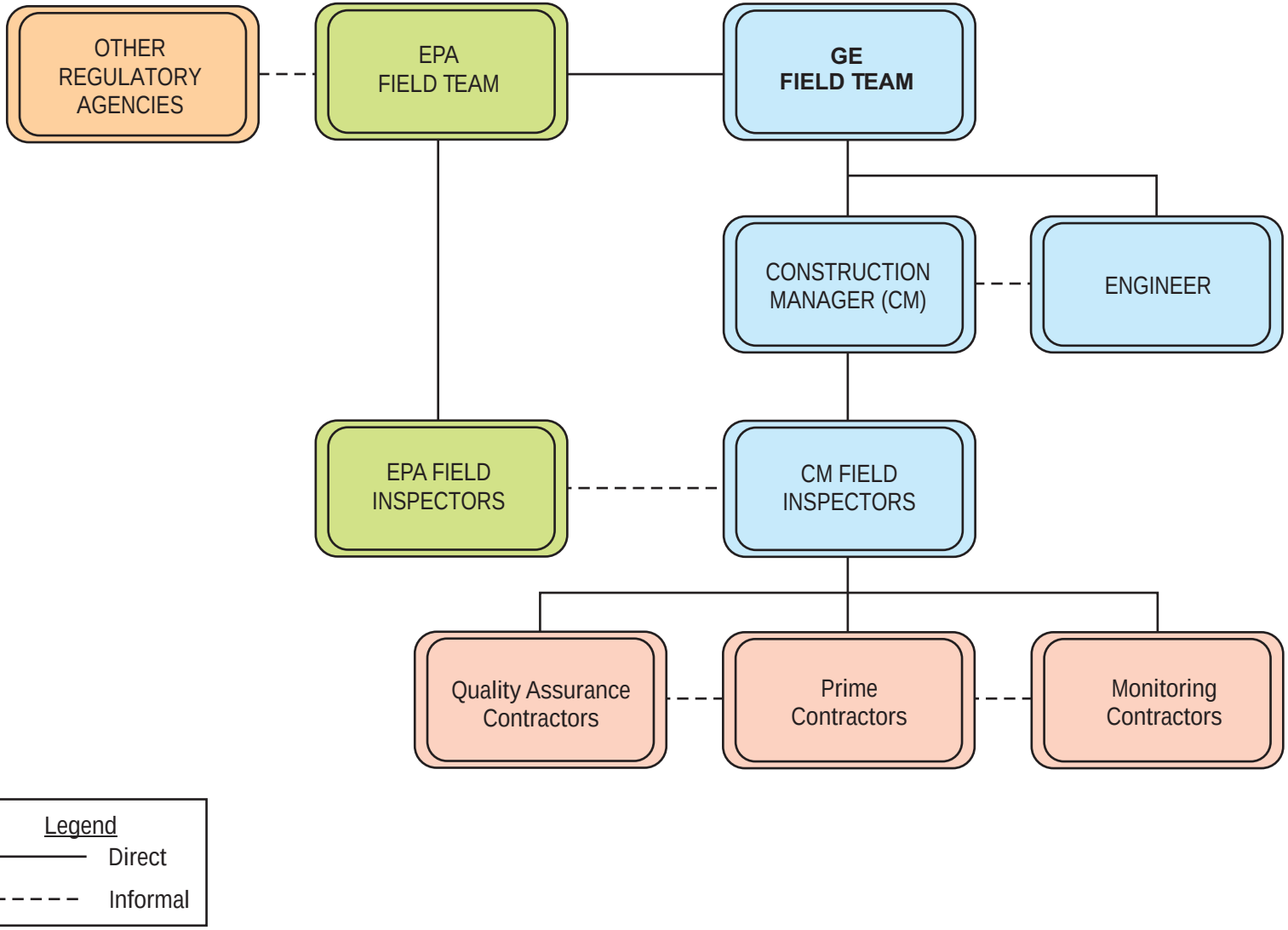
PLOT DATE: 5/27/2014 1:00 PM PLOTTED BY: BELLACK, MICHAEL

Figure 1-2 Project Lines of Communication



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SECTION 2

REACH 7 DREDGING OPERATIONS

This section provides a discussion of the RA construction activities associated with the Landlocked Area dredging operations. These activities center around the dredging of sediment and debris within the Landlocked Area, but also include associated activities such as mobilization activities, shoreline vegetation pruning, dredged material transport, placement of backfill and engineered caps, and shoreline stabilization.

The planned dredging operations activities are presented in the general chronological order in which they will initially occur. The dredge areas targeted for removal in the Landlocked Area comprise CUs 61 through 66. It is anticipated that dredging in the Landlocked Area will be conducted and completed in 2014.

Information regarding operations at the Fort Edward Sediment Processing Facility, including unloading of dredged materials, dewatering activities, and on-land transport to the disposal facilities are presented in the 2014 Facility O&M Plan and the 2014 TDP (or, until approval of the latter, the 2013 TDP).

2.1 DREDGING OPERATIONS PROCESS

This section provides a brief overview of the dredging operations process. Figure 2-1 provides an illustrative schematic flow chart for the dredging operations sequence and evaluation as further described in the text below. Figures 2-2A and 2-2B provide an overview of the CUs in the Landlocked Area. The initial dredging operations work requires the completion of certain preparation activities before the actual dredging of sediment can begin.

- The dredge positioning control system will be set up and checked to verify that it is working properly.
- Overhanging vegetation will be removed such that dredging equipment is not restricted along the river shoreline.

The actual sediment dredging sequence will occur as prescribed in the specifications, moving from upstream to downstream locations in designated CUs, with each CU representing an area of approximately 5 acres, as described in the Reach 7 FDR.

After the LDOC informs the CM that the dredge prism limits have been achieved within the allowable dredge tolerances in a given CU or portion thereof, a third-party hydrographic surveyor will perform a multi-beam survey of that CU or portion to determine if the dredge limits have been achieved within the tolerances described in Section 13804 – Landlocked Area Sediment Removal. (The portion of a CU subject to evaluation will vary from CU to CU, but will typically be approximately one-half of a CU and will not be smaller than one acre in size unless otherwise approved by EPA.) If that survey shows that the LDOC has not met those limits, the CM will direct the LDOC to conduct further dredging in certain areas of the CU. If

that survey shows that those dredge limits have been met, sediment confirmation sampling will occur. However, based on experience from previous dredging seasons, to increase efficiency, core samples may be collected simultaneously with the survey activities during the survey following the initial dredging pass.

Assessing the compliance of dredging in shoreline areas using multi-beam measurements may be supplemented with single beam hydrographic survey data or land survey measurements, as described in the 2014 DQAP.

Sediment confirmation sampling will be conducted in accordance with the 2014 PSCP. If the results of the sediment confirmation sampling indicate that the criteria specified in the 2014 PSCP for backfilling or capping have been met, a backfill or engineered cap plan will be provided to EPA for review and approval, and the LDOC will be directed to place backfill or cap materials in accordance with the EPA-approved design. If the results of the sediment confirmation sampling indicate that re-dredging is necessary or appropriate, an additional dredging surface will be generated and the CM will direct the LDOC to re-dredge the necessary portions of the CU or portion thereof. This process may be repeated for additional re-dredge attempts following the criteria described in the 2014 PSCP.

Dredging along shorelines at the edges of CUs that extend to the shoreline will be addressed in accordance with the Phase 2 CDE (Attachment A to the revised SOW). Based on surveys performed in 2011, the design shoreline elevation established for Reach 7 (CUs 61 through 66) is 114.9 feet (NAVD88) (Arcadis, 2014).

As provided in the Phase 2 CDE, the maximum cut for initial dredging at a shoreline is 2 feet and the dredge slope cut will be limited to a 3:1 slope away from that cut (until it intersects the dredge prism based on elevation of contamination) to maintain shoreline stability. These shoreline areas will be sampled and evaluated in accordance with the procedures specified for such areas in the 2014 PSCP.

The LDOC will use best management practices to minimize resuspension of dredged sediment and to minimize the occurrence of visual plumes related to dredging operations.

Dredged sediment and debris will be transported from the dredging areas to the ITA for transloading into main stem hopper barges located in the Champlain Canal and subsequent transport to the Fort Edward Sediment Processing Facility for offloading and dewatering/processing. After processing, the dewatered sediment and debris will be temporarily staged along with sediments from the main stem river, loaded into rail cars, and shipped via rail to the approved disposal facilities, as described in the 2014 Facility O&M Plan and the applicable TDP.

Once dredging is completed within each CU and the CU has been approved to receive backfill and/or cap materials, the CM will direct the LDOC to implement the EPA-approved backfill/cap plan. The type of backfill to be used is predetermined, as depicted in the Contract 43B drawings. The type of cap to be placed will be dependent upon the river velocity at that location, as depicted in the Contract 43B drawings.

Landlocked Area dredging operations will normally be performed 6 days per week, 24 hours per day. If necessary to meet production targets, the LDOC may work a 7th day after notifying the CM and receiving CM approval. In that event, GE will advise EPA of the intent to work the 7th day before work is performed on the 7th day.

2.2 MOBILIZATION AND PREPARATORY ACTIVITIES

This section briefly discusses the LDOC's mobilization activities to occur before the dredging operations can begin. It also summarizes the layout and protective measures for the LBLA. Further, it describes GE's plans to remove the intake lines from the Thompson Island Dam automated far-field water column monitoring station prior to dredging within the Landlocked Area.

2.2.1 General

Mobilization is the process of procuring materials and equipment, transporting equipment, establishing the support facilities necessary to conduct the work, and providing project-specific training for construction and QC crews. A summary of the activities performed during dredging operations mobilization is provided below:

- Procure any necessary equipment in a timely manner so that it is available to mobilize.
- Construct the LBLA as described in Appendix B, including the placement of high visibility fencing, and signs to restrict access to archaeologically sensitive areas and wetlands (as discussed in Section 2.2.2).
- Assemble and test equipment on site and place equipment in river.
- Confirm communication processes with CM, Isthmus Transload Contractor, PFOC, and other key parties.
- Establish on-site worker support systems for safety, sanitation, decontamination, etc.
- Set up signage, and other aids to navigation, as necessary.
- Establish project survey control network and conduct preparatory surveys.
- Transport equipment to site and establish systems for storage, fueling, repairs, and maintenance.
- Establish equipment positioning controls and field test.
- Bring materials to site for environmental protection, spill response and sediment sheen response.
- Create stockpiles of materials for initial backfill/cap placement.
- Conduct site training for contractor personnel.

Table 2-1 provides the list of major equipment to be utilized in the dredging process. The amounts and different types of equipment detailed in Table 2-1 have been selected to meet the target removal volumes for the Landlocked Area and provide sufficient flexibility to dredge in the range of river conditions reasonably expected in the Landlocked Area CUs.

Table 2-1 List of Major Landlocked Area Dredging Equipment

Construction Equipment	Quantity	Approximate Capacity	Construction Activity	Description
Dredge Platform	1	2.6 – 3.3 cy	Dredging	Barge-mounted excavator equipped with enclosed clamshell bucket.
Backfill / Cap Platform	1	1.5' belt width	Backfill / Cap Placement	Barge-mounted excavator fed tele-belt system.
Modular Hopper Barges	5	200 cy	Dredging	Hopper barges for transport of dredged sediment
Modular Material Barges	3	200 cy	Backfill / Cap Placement	Barges for transport of backfill / cap materials
Small tugboats	5	400 Hp	Dredging and Backfill / Cap	Marine transportation, tending of dredge and backfill/cap placement platforms and tending at barge loading and transloading areas
Fuel Barge	1	5,000 gal of fuel	Fueling	Barge and tugboat fueling
Crane Barge	1	50T Crane	Tree Trimming / Support Activities	Barge-mounted crane to perform general lifting duties.
Support Vessels	3-5	N/A	Crew Transport, Surveying, Sheen Response, etc.	Different support vessels will be used based on the activity

As part of the dredging operations mobilization, an inspection by an independent licensed marine surveyor of new-to-the-project marine equipment greater than 25 feet in length and all tugboats regardless of length will be performed to confirm seaworthiness and ability to perform their intended role and function prior to the start of work.

2.2.2 Layout and Protective Measures at Landlocked Barge Loading Area

Figure 2-1 in Appendix B shows the planned layout of the LBLA. As shown on that figure and discussed in the Reach 7 FDR, no construction or operations activities will occur within Archaeological Upland Zone C of the LBLA, and only limited activities are planned to occur within Archaeological Upland Zone B. The protective measures to be implemented by the LDOC in Archaeological Upland Zones B and C are specified in a Protection Plan for the Site of Fort Miller (URS 2014), approved by EPA on June 18, 2014, and in the Reach 7 FDR. Those measures are summarized below:

- The LDOC notified the Construction Manager at least 2 weeks before initiating work in or adjacent to Zones B and C.

- An archaeologist will be present at the start of LBLA mobilization during intrusive earthwork, and will be present at the start of demobilization, to monitor construction activities.
- Zone C will not be used for any project activities. Prior to construction operations at the LBLA, the LDOC will mark the perimeter of Zone C with survey stakes and flags and install orange safety fencing and signage at the perimeter of unused portions of Zone B, also encompassing Zone C, to restrict entry or access into Zone C and the unused portions of Zone B.
- The LDOC will install orange safety fencing and install signage along the perimeter of the portions of Zone B that will not be used for project activities to restrict entry or access. Only the western portion of Zone B will be used for project activities.
- No excavation, soil grading, vegetation removal, or other ground-intrusive activities will be conducted in Zone B, unless otherwise approved by EPA.
- No tree removal will be performed in Zone B unless approved in writing by the Construction Manager. Any tree removal in Zone B will be performed using handsaws, chainsaws, and slings. Tree branches and trunks will be cut to the extent necessary to implement the work. Tree trunks/root balls will not be removed.
- Sheet piling and/or foundations that extend below the existing ground surface will not be installed in Zone B, unless otherwise approved by EPA.
- The LDOC will install measures to protect existing soils from disturbance in Zone B. Specifically, the LDOC will install a cover over the portions of that zone to be used in the project. This cover will include the placement of a non-woven geotextile layer (to be placed by hand) over those portions to mark the top of the existing soils, followed by placement of a layer of gravel or wood chips 6 to 12 inches in thickness on top of that geotextile layer. Gravel will be used in vehicle areas to distribute wheel loads so as to further minimize disturbance to existing soils in Archaeological Upland Zone B. The overlying gravel or wood chips will be deposited working inward from the Archaeological Upland Zone A/B interface, using light machinery to the extent practicable, so as to further reduce impacts to Archaeological Upland Zone B.
- Vibratory compaction will not be performed on existing soils or materials placed in Zone B.
- Zone B will be restored after the dredging and backfilling/capping operations are completed.
- In the event that unanticipated archaeological artifacts or features or human remains are encountered during the work, the procedures set forth in the above-referenced Fort Miller Protection Plan will be followed.

In addition, LBLA construction and operations will not be performed in the field-delineated wetlands in low-lying wooded areas adjacent to the LBLA unless approved by the Construction

Manager and EPA. To the extent practicable, the LDOC will also minimize disturbance within the 100-foot adjacent areas surrounding the delineated wetland areas. High visibility fencing will be installed at the perimeter of the field-delineated wetland areas in the vicinity of the LBLA to restrict entry and access into the wetland areas.

2.2.3 Removal of Intake Lines for Thompson Island Dam Monitoring Station

In addition to the activities described above, to minimize impacts from dredging to the intake lines for the Thompson Island automated far-field monitoring station, those lines will be removed prior to dredging activities within the Landlocked Area. Following the completion of dredging in the Landlocked Area (or, if not completed, at the end of the 2014 dredging season), GE will reestablish weekly water column monitoring for the off-season following 2014 dredging.

2.3 EQUIPMENT STAGING AND SUPPORT PROPERTIES

The LDOC's equipment will be staged at the LBLA. Work platforms and other floating equipment that has been placed in the river by the LDOC will be staged at temporary wharfs, moorings or docks adjacent to the LBLA. To the extent practicable, mooring locations will not impact existing submerged (and floating) aquatic vegetation (SAV) beds. The LBLA will be the primary support property for the LDOC during the Landlocked Area dredging operations.

2.4 SHORELINE VEGETATION PRUNING

Shoreline vegetation that overhangs the dredge area will be pruned to allow the safe and effective operation of dredge and shoreline stabilization equipment and minimize incidental damage to trees. In some cases, trees or stumps with diameters at breast height (DBH) of 6 inches or more in the vicinity of or below the shoreline elevation contour (as defined above and depicted in the drawings) will be left in place unless the LDOC proposes their removal and the CM approves. This pre-dredge pruning will begin with an evaluation and marking program to determine the extent of tree removal and pruning required. This evaluation will be based on data produced from a marine-based survey by the Certified Arborist and the LDOC dredging supervisor in order to determine which trees will need to be trimmed or removed to allow the safe and effective operation of dredge and shoreline stabilization equipment and to minimize incidental damage to trees. Any designated removal will be reviewed with the CM, who will coordinate with shore-side property owners, as necessary, in accordance with the property access procedures described in the 2014 PAP. Only the vegetation/trees necessary to implement the dredging project will be identified for removal. Prior to the trimming or removal of any vegetation/trees, GE will submit an inventory of the trees greater than 6-inch diameter at breast height that are proposed for removal and a plan showing the locations of those trees to EPA for review and approval.

Tree removal and vegetation pruning will be conducted under the oversight of a Certified Arborist. Vegetation removal and pruning will be accomplished using chain saws, pruning shears, and other similar cutting equipment provided by the contractor. Work from the waterside will be conducted using floats or barges that can support the necessary equipment and still

operate in the shallow water along the shoreline. Some specialized long-reach man-lifts may be used to cut overhead branches and lower them with a use of a crane to the barge deck positioned below.

The LDOC will transport the tree trimming debris to the LBLA where it will be chipped and resized as necessary. This operation will comply with the Phase 2 QoLPS. To minimize the number of logs handled, trees with a DBH of up to 12 inches will be chipped. Logs that have a diameter of greater than 12 inches will be cut into 8-ft lengths. Wood chips may be used to create pathways and for other suitable uses at the LBLA site. Excess chips and logs will be stockpiled at the LBLA and transported to a local municipality for re-use.

Upon completion of the shoreline vegetation pruning activities, as-built drawings will be prepared and provided to EPA that depict the limits of vegetation removal and tree pruning. This will be done by depicting shaded areas on the plans representing limits over which removal/ pruning was conducted with dimensions based on project controls. Coordinate-based trim locations or removals for individual trees will not be identified.

2.5 SEDIMENT SHEEN RESPONSE AND OTHER WATER QUALITY CONTROLS

During dredging operations, the LDOC will take measures to minimize the movement of sediment-related sheens, and other water quality controls may also be implemented, as described below.

2.5.1 Sediment Sheen Response

When dredging operations commence in an area identified as a Sediment Oil Sheen Response BMP area on the Contract Drawings, and in other areas when directed by the CM, the LDOC will deploy a control boom and oil absorbent materials (e.g., MyCelx Versimat) downstream of that dredging activity. Once deployed, the LDOC will verify that the booms and absorbent materials are properly deployed to maximize their potential to control the sediment oil sheens. In addition, if sediment oil sheens are observed to have collected behind control booms or other stationary locations within the work areas, the LDOC will actively collect the sheens and other floating debris in contact with the sheens. Sheen collection will be performed in the same manner as was done in years of previous dredging. If no sheens have been observed after 48 hours of conducting dredging activities in that location, the LDOC may request authorization from the CM to remove the booms and absorbent materials. In considering such a request, the CM will also evaluate the surrounding nodes and project experience in similar areas. The booms and absorbent materials will be removed only after receiving approval from the CM. If, after removing booms and absorbent materials, sediment sheens are later observed in that area the LDOC will immediately re-deploy the booms and absorbent materials and respond in accordance with Specification 13871.

2.5.2 Other Water Quality Controls

Other water quality controls may be implemented, if necessary, to control atypical situations during in-water operations (e.g., an accidental discharge). Such controls may include devices

such as oil absorbing booms to control accidental oil leaks from marine equipment or floating booms to contain floating debris such as wood waste. The contractor will plan for the potential need for additional water quality controls and will provide sufficient equipment to be able to respond quickly to water quality issues that may potentially occur based upon observation of an event or as directed by the CM based upon results of the monitoring operations.

2.6 DREDGING OPERATIONS

Dredging will be done within a designated CU, working from upstream to downstream locations as described in Section 2.1 above and the Contract 43B technical specifications, except as may be approved by EPA based on local river conditions. Dredging is the removal of the specified prism of contaminated sediment in each CU as shown on the Contract 43B drawings. One design dredging prism and up to two additional dredge prisms may be provided to the LDOC for each CU or portions of a CU. Additional dredge prisms will be issued if post-dredging sampling indicates that sediment remains requiring re-dredging as described in the 2014 PSCP. Plans for conducting each of these dredging operations are further detailed in this section.

Prior to, or during the course of dredging, the LDOC may identify specific portions of dredge areas, not previously identified in the design, where dredging would present unsafe work conditions (e.g., due to obstructions) or where the sediment or substrate conditions would make dredging very inefficient and/or cause undue delay to the schedule (e.g., locations with a very thin sediment layer and/or substrate consisting of rocks and cobbles). Consistent with the approach described in Step 4 in Section 2.4.3 of the Phase 2 CDE, GE may propose to exclude dredging in those specific areas, if any are encountered. In such a case, GE will inform EPA of its proposal to exclude the location from dredging and present its rationale for that exclusion. Any such proposed exclusion of dredge areas will be subject to EPA approval.

Such potentially unsafe areas may include those near fixed structures in or adjacent to dredge areas that have the potential to be weakened if their foundations or the armor stone protecting their foundations were to be dredged. In the interest of safety and minimizing risk of damage to these structures, the LDOC will propose a revised dredge limit to establish an appropriate setback from the structure. The revised dredge limit will be subject to EPA review and approval. To minimize removal of armor stone protecting the foundations of these structures, a field survey will be undertaken at each structure to locate the armor stone. Generally, the LDOC will probe the 10-foot offset perimeter before dredging the locations. If armor stone is located at the setback perimeter, the LDOC will continue probing to find the interface of the mud line and the rip-rap, then re-establish the dredge perimeter 10 feet into the river from that interface point, and dig on a 2:1 slope to the removal limit. The field survey methods may vary on a case-by-case basis depending on the field conditions but the goal of minimizing risk of damage to the foundations of the structure or removing armor stone protecting the foundations will remain the same. River structure field surveys and associated photographs will be provided to EPA.

If, through the course of the dredging work, the LDOC removes armor stone while digging around a structure or if the final dredge elevations are such that additional armor stone is determined by the CM to be appropriate, the LDOC may place additional armor stone at that location. If this occurs, EPA will be notified and provided information regarding how the situation was addressed.

2.6.1 Dredging

Dredging will be accomplished using mechanical dredging equipment with enclosed 2.6 cy or 3.3 cy clamshell buckets. The dredge bucket will be fully enclosed such that, when closed, it will minimize loss of sediment from the bucket when raised from the river bottom until opened in the sediment hopper. All dredges will be equipped with a bucket positioning system to allow the dredge operator to accurately control the dredge operations horizontally and vertically. Dredged material will be placed in barges for transport by tugs to the ITA.

Debris encountered during dredging will be removed by the dredge equipment at the same time as the sediment is removed. If the dredge is unable to remove the debris using the dredge bucket, up to two additional attempts will be made with an excavator or crane equipped with one of the following attachments:

- Open bucket with opposable thumb;
- Grapple or similarly appropriate attachment to facilitate work;
- Conventional excavator bucket;
- Hydraulically operated bucket; or
- Orange peel grapple.

Debris will be placed into hopper barges and transported to the ITA to be transloaded into main stem hopper barges in the Champlain Canal. Larger debris, to the extent practicable, will be loaded into one side of the hopper to facilitate off-loading.

Workers will be instructed regarding the potential for encountering previously unknown potentially significant archeological resources, as described in Specification 01353, during dredging. As described in that specification, any potentially significant archeological resources that are encountered will not be further disturbed until the CM is notified and the determination is made whether a professional evaluation is required. Care will also be taken to avoid disturbance to wetlands beyond the dredging limits.

The dredge platforms will utilize spuds to secure the platforms in the river. A spud is essentially a steel column, similar to a pile, which is secured to the barge and is moved up and down by utilizing a winch. The spud, through gravity, will secure the dredge platform in place. When the dredge platform is to be moved, either of the following forms of movement may be employed: (1) raising the spuds off the river bottom, moving with the assistance of a tug, and then lowering both spuds; or (2) moving by "crabbing" – a technique whereby the first spud is lifted and the barge is rotated about the second spud, then the first spud is lowered, then the second spud is lifted and the barge is rotated about the first spud, then the second spud is lowered

(and repeated as necessary). Sediment barges will not be equipped with self-mooring equipment (i.e., spuds or ground tackle), but will be secured with mooring lines to dredge platforms, backfill/capping platforms, docks, or will be moored at mooring locations. Sediment barges will be moved with the assistance of tugboats.

It is anticipated that dredging will begin in the northern end of the Landlocked Area (CU 62) and generally proceed downstream. The first area to be dredged in CU 62 will be the area immediately in front of the ITA. Additional depth is needed at this location to allow loaded landlocked barges to be properly positioned for transloading of sediment from the landlocked barges into main stem hopper barges in the land-cut section of the Champlain Canal. It is anticipated that bedrock may be present immediately in front of the ITA. The LDOC will begin by dredging the sediment at this location using an environmental clamshell bucket. This sediment will be provided to the Isthmus Transload Contractor for transloading into main-stem hopper barges. Once the overlying sediment has been removed the amount of underlying bed-rock to be removed to provide the necessary water depth to moor loaded hopper barges at the ITA can be established. The LDOC will then use an excavator mounted pneumatic chisel to fracture the bed-rock to be removed and then remove that fractured rock using an open excavator bucket. The excavated rock will be used to stabilize the underwater slope at the ITA and at other underwater slope locations within the landlocked reach as approved by EPA. When removing the fractured rock, buckets observed to contain sediment not rock will be emptied into an adjacent hopper scow for transloading by the Isthmus Transload Contractor.

The dredging operations in the Landlocked Area will be conducted concurrently with dredging operations in CUs within the main stem of the river, consistent with the Phase 2 EPS, which allows simultaneous dredging in areas separated by a dam or areas separated by more than 1,000 feet to maintain dredging productivity and efficiency.

To accomplish dredging in shallow areas, the LDOC has outfitted the dredge with a longer boom and stick so that the dredge can reach into these areas. All sediment barges are shallow draft so no additional sediment barges are proposed for shallow areas. Areas where additional dredging of shallow areas beyond the CU boundaries have been identified. These areas are shown in Figure 2-4A and 2-4B and are listed as follows:

1. In front of the ITA (in CU 62);
2. South of Thomson Island (in CU 63) to facilitate repeated barge access to the ITA from the south;
3. North and west of Galusha Island (in CU 64); and
4. Potentially in front of the LBLA barge loading dock (subject to further data collection).

Each CU will be completed and surveyed by the owner's third-party independent hydrographic surveyor prior to or concurrent with confirmation sediment sampling. If hydrographic surveys indicate that required dredge tolerances have not been met, dredging will resume until the hydrographic surveys show that the required elevations have been achieved

within the allowable tolerances. If it can be established that the LDOC's survey data are consistent with the third-party hydrographic surveyor's surveys, then GE may use the LDOC's survey data, with EPA approval, to confirm that the first pass dredge prism limits have been achieved. Residuals sediment sampling will then be conducted and sampling results will be analyzed to determine whether backfill or engineered caps may be placed or re-dredging is required under the criteria in the 2014 PSCP. To ensure that the correct action is undertaken, residual sediment sampling of the area immediately in front of the ITA will occur at the end of the dredging season once all sediment transloading has been completed.

An exception to performing dredging to the required elevation limits is when bucket refusal (e.g., bedrock) or clay (Glacial Lake Albany Clay) areas are encountered. In either of these cases, the LDOC will notify the CM so that the CM can confirm the presence of clay or bucket refusal and provide approval for the revised elevation limits of dredging. Additionally, the CM will notify EPA if the LDOC encounters clay or bucket refusal before reaching the required elevation limit. Post-dredging survey and sampling will still be done in clay and bucket refusal areas of each CU to determine if backfill or a cap needs to be placed in those areas. If the LDOC does not encounter clay in the clay areas identified in the Contract 43B drawings but has reached the dredge prism elevation limit that was based on an assumed clay layer, the LDOC will inform the CM and will continue digging until reaching the Depth of Contamination (DoC) elevation that had been calculated using the core PCB data.

2.6.2 Positioning Control

The LDOC will use the Rotary Sensor Method approach for determining and controlling the position of the dredge bucket. This positioning approach utilizes Hypack's DredgePack software for integration, calculation, and graphical display of sensor and positioning data and uses a real time kinematic (RTK) Global Positioning System (GPS).

The Rotary Sensor approach utilizes a dual antenna system mounted directly to the excavator. The antenna provides RTK horizontal and vertical position, as well as heading. A series of rotary sensors (inclinometers) collects rotation (angle) information from each of the separate components of the excavator (cab body, boom, stick, and bucket). The angles are used in calculations performed by DredgePack software in conjunction with lengths of each of the excavator appendages (boom, stick and bucket) to calculate the position of the bucket. Another rotary sensor (rotation hall-effect sensor) mounted on the bucket determines the relative rotation of the bucket with respect to the stick. Pitch and roll of the bucket is corrected by two inclinometers mounted at a right angle to each other on the bucket. A limit switch (hall-effect sensor) is installed on the bucket to indicate when the bucket has been closed or the percentage opened. Sensor information is transmitted to the guidance computer mounted in the excavator cab. A GPS system utilizing moving base station RTK technology (CSI Vector or similar) will provide the position and heading of the dredge platform. DredgePack receives sensor information and displays the location of the barge and the three-dimensional location of the bucket. This information is displayed in the operator cab, in plan and profile views.

This setup will provide the XYZ coordinates for each bucket location, providing a grid size that is proportional to the bucket dimensions. Additionally, a software driver used within the system records the necessary sensor information, including coordinates at a predetermined frequency, and stores the information in a file.

2.7 DREDGED MATERIAL BARGE TRANSPORT

The barges to be used to transport sediment from the Landlocked Area to the ITA will be modular hopper barges. These barges will be certified as fit for duty, clearly marked for identification purposes, and also marked to record draft depth in the water (draft markings). These draft markings may also be used to determine the wet weight of sediment and water in each barge load. Each barge will only be loaded to the capacity that will ensure safe transport from the dredge location to the ITA and prevent potential loss of sediment by overflowing of the barge hopper. Barge dimensions will be approximately 40 feet in width and 110 feet in length and draw approximately 4 feet when fully loaded.

Before dredging in a given area in the Landlocked Area, an empty sediment barge will be positioned adjacent to the dredge for loading. The time it takes to fill the barge will be dependent upon the dredge's production rate in a given area and other conditions. Tugs will be utilized to transport each empty and loaded hopper barge between the dredge area and the ITA. Prior to transporting the hopper barge to the ITA, the LDOC will inspect the barge to make sure that the exterior of the barge is free from sediment, in order to minimize the potential for losing sediment into the water during transport. To the extent possible, sediment found on the exterior of a sediment barge will be placed in the barge hopper, and if necessary, the barge will then be hosed down or cleaned with bucket water at the dredge site to avoid contamination of non-dredge areas.

At the ITA, the sediments will be transloaded to main stem hopper barges staged in the land-cut section of the Champlain Canal, as described in Section 3.1. The main stem barges will transport the dredged material to the Fort Edward Sediment Processing Facility under Contract 42A in the same way as described in Section 2.7 of the 2014 RAWP for barge transport to that facility from dredge areas in the main stem of the river.

2.8 ANCHORING

This section describes the anchoring methods for vessels utilized for Landlocked Area dredging operations under various project circumstances and conditions. Anchoring is addressed by Contract 43B Specification 13820 and the relevant drawings in the applicable FDR (e.g., Drawings D-4601 through D-4606 of the Reach 7 FDR). Anchoring requirements will vary during normal dredging operations, during non-work hours (e.g., Sundays), and during storm or high river flow conditions. Anchoring will not be permitted in: (a) previously delineated SAV or RFW areas outside of CU boundaries, (b) backfilled areas designated as SAV planting, contingency, or natural recolonization areas or designated for RFW construction, (c) areas where caps have been installed, (d) wetland areas designated by the New York State Department of Environmental Conservation (NYSDEC), and (e) locations of utility crossings, unless approved

by EPA. Anchored vessels and moorings will be appropriately lit at all times. Safety of downstream facilities will be considered when finalizing anchoring locations.

2.8.1 Anchoring During Normal Dredging Operations

Work support platforms (e.g., platforms for dredging and backfill/cap placement) will generally be held in position by spuds when dredging, backfilling or other on-water work is being performed. The spuds can then be raised or lowered utilizing a winch. To anchor the platform to the river bottom, the spuds will be lowered and, through gravity, will secure the dredge platform in place. When the platform is to be moved, the movement techniques described in Section 2.6.1 may be used. Sediment and other material barges will not be equipped with self-mooring equipment (i.e., spuds or ground tackle), but will be secured with mooring lines to spudded work platforms, docks, the ITA, or other fixed moorings.

When support vessels and other small craft are not in transit, they will be secured to spudded work platforms or secured to slips at the LBLA. All support vessels will be equipped with appropriately sized ground tackle for use in emergencies.

2.8.2 Anchoring During Non-Working Periods

When not in active work mode (e.g., Sundays), spudded work platforms will be spudded down at or near their work location.

Sediment and other material barges not equipped with spuds will be secured with mooring lines to spudded work platforms, the ITA, docks, or other fixed moorings.

Support vessels and other small craft will be secured to spudded work platforms or secured to slips at the support properties.

Air monitoring in accordance with the Phase 2 RAM QAPP will continue during periods when uncovered barges containing sediment are staged at mooring posts or other locations.

2.8.3 Anchoring During Storm or High River Flow Conditions

During storm or high river flow conditions, the LDOC will determine if spudded work platforms, sediment and other material barges, and support vessels have to be moved to lower velocity portions of the river (e.g., closer to shore) or can remain in the anchoring locations described above.

Tug boats operated by the LDOC will be available during storm or high river flow events to respond to situations as they arise. The decision to operate tugboats during high flows and/or storms will be at the discretion of tugboat captains, who have responsibility for safe operation of tugs.

2.8.4 Additional Mooring Locations

Additional mooring locations will be necessary to anchor all of the proposed floating equipment; the proposed locations are shown on Figure 2-5A and 2-5B.

Each mooring position will consist of a single mooring buoy attached to an anchor. Mooring locations have been selected to provide sufficient water depth for moored equipment and to be a safe distance from infrastructure and project navigation paths. Mooring buoys will be equipped with lighting in compliance with U.S. Coast Guard and NYSCC regulations. The moorings will exclude any areas with SAV that are outside of areas to be dredged, unless approved by EPA.

As dredging work progresses into an existing mooring location, the mooring anchors will be moved to a location downstream of the work or to a previously used mooring location if work in that location has been completed, no caps have been placed in the anchor locations, and no habitat backfill has been placed in the footprint of that mooring location. If additional mooring locations not already approved by EPA are proposed by the LDOC, GE will provide the proposed locations to EPA for review and approval.

2.9 SHORELINE STABILIZATION

Shoreline stabilization includes the installation of short-term stabilization measures at shoreline locations where shoreline failure is observed or locations where there is a concern of such failure after dredging has occurred. Short-term stabilization measures may remain in place through dredging. Short-term stabilization measures may be left in place as part of long-term stabilization measures if they comply with the approved requirements for long-term stabilization measures in the contract drawings. Details of any long-term stabilization measures that differ from those identified in the contract drawings will be provided to EPA for approval prior to installation. Long-term stabilization measures will be installed as shown on the Contract 43B drawings prior to, or as part of, backfilling. Repairs, including planting of vegetation, will be made to disturbed areas of the shoreline above the shoreline elevation contour line (as defined above and depicted in the drawings).

Shoreline stabilization will be accomplished using the methods identified in the Contract 43B Specification 13898 and Drawings. To the extent that access to shoreline properties is required, such access will be sought in accordance with the procedures set forth in the 2014 PAP. Shoreline stabilization will be installed utilizing an excavator equipped with a conventional excavator bucket or hydraulic clamshell bucket.

The sequence of work and production rates will be determined by the requirements of the dredging and backfilling/capping operations.

2.10 PLACEMENT OF BACKFILL AND ENGINEERED CAPS

Placement of backfill or engineered caps will be performed by the LDOC. Upon acceptance of completion of dredging within a CU, or portion of a CU, backfilling and capping requirements will be specified by the CM to the LDOC. The CM will determine the requirements for backfilling or capping based on the criteria specified in the 2014 PSCP and the Contract 43B specifications that are part of the final design for Reach 7, which consider such location-specific variables as remaining PCB concentrations, river velocity, and the designated type of habitat construction. (Since CUs 61 through 66 are located entirely outside of the navigation channel,

backfill and cap placement restrictions associated with the navigation channel are not applicable to Reach 7.) Different forms of backfill and engineered cap designs have been specified for these purposes under various conditions, as specified in the Reach 7 FDR, Contract 43B Technical Specification 02206, and the Contract 43B drawings and as briefly described below.

"Near-shore backfill" is backfill to be placed between the shoreline and the near shore boundary elevation. As provided in the Reach 7 FDR and agreed to by EPA the near-shore boundary elevation for Reach 7 will be an elevation of 114.5 ft (NAVD88), based on survey results of the crest of Fort Miller Dam. Near-shore backfill will be placed to an elevation consistent with the existing bathymetry as presented in the Reach 7 FDR and Contract 43B Drawings, and includes the supporting 3:1 (horizontal to vertical) side slope down to the adjoining backfill or cap surface.

"One-foot backfill" is to be placed on the river bottom following the completion of dredging. The 1-foot backfill layer can be either Type 1 material or Type 2 material, as specified in the Reach 7 FDR and the Contract 43B drawings.

"Habitat backfill" is supplementary backfill material that may be placed in areas of the river that are listed in the design as SAV or RFW locations. SAV locations are shown in the Reach 7 FDR and were selected to meet the requirement in Section 2.7.1 of the CDE for placement of additional backfill in areas where the pre-dredging water depth was less than 8 feet and the post-dredging and backfill placement water depth is greater than 8 feet. Additional backfill will also be placed in the RFW construction areas to restore pre-dredge bathymetry. Potential placement locations for the additional backfill are shown on the Contract 43B drawings, including the final placement.

Once backfill and/or cap chemical isolation layer materials have been placed in a CU, cores will be collected in the backfill and/or the chemical isolation layer material. For isolation layer materials, if the results from the first five chemical isolation layer samples collected show that the post-placement total organic carbon (TOC) content of the isolation layer material meets or exceeds the requirement of 2% TOC, further post-placement sampling of the chemical isolation material may be discontinued subject to EPA approval (unless there is a change in the source material or placement method, in which case sampling of that new material for TOC will be re-initiated per this description). Before discontinuing the post-placement sampling, the LDOC will establish the pre-placement TOC content necessary to achieve the post-placement 2% TOC requirement. Pre-placement testing of the backfill with TOC will occur after post-placement sampling has been discontinued to ensure that the necessary pre-placement amount of TOC is present.

2.10.1 Material Sources

The LDOC has identified a number of sources of backfill and cap materials located in the Upper Hudson River Valley that may be used to provide such materials during landlocked dredging. These potential sources, including their locations, are listed in Table 2-2. It is currently anticipated that these sources will provide the necessary quantities and types of

backfill/capping materials for landlocked dredging. However, if other sources of backfill or cap material are identified, GE will advise EPA of those sources.

Table 2-2 Potential Backfill and Cap Material Sources

Fill Type	Source	Location
Backfill Type 1, and 2 Material (Type "1", Type "2")	• Lucarelli • Cranesville Aggregate	• George Thompson Rd, Stillwater NY 12170 • 1206 State Route 9, Gansevoort, NY
Backfill Type 5 Material (Type "5") and Topsoil	• Lucarelli	• George Thompson Rd, Stillwater NY 12170
Coarse Gravel (Type "N"), Cobble Armor (Type "O"), Armor Stone (Type "P"), and Type "Q"	• Peckham Materials,	• 582 NY 29, Greenwich NY 12834 • 438 Vaughn Rd, Hudson Falls, NY 12839
Anthracite	• Mulholland Enterprises	• 2084 Route 9N, Greenfield Center NY
Topsoil	• Troy Topsoil Co Inc. • Lucarelli	• 748 Hudson River Rd, Mechanicville NY 12118. • George Thompson Rd, Stillwater NY 12170

2.10.2 Backfill/Cap Material Loading Area

Backfill and capping materials will be transported via truck from their sources to the material stockpile area within the LBLA (shown in Figure 2-1 in Appendix B). This area is considered to be "entirely on-site" for purposes of Paragraph 8.a of the RA CD, as well as Section 121(e) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and 40 Code of Federal Regulations (CFR) 300.400(e). Routing for the transport of the backfill/cap materials from the sources identified in Table 2-2 to the LBLA is shown on Figure 2-3A and 2-3B. If any other sources are subsequently identified, GE will provide EPA with the routing from those sources to the LBLA.

The LBLA consists of a number of components, including a material stockpile area, access roads, and support areas, as described below.

The stockpile area will be used for the temporary stockpiling of backfill and cap materials and the mixing of such materials as necessary to meet the relevant gradation or other specifications for the dredge area where they will be placed. As noted in Section 2.2.2, no activities will occur within upland archaeological Zone C of the LBLA, and only minimal activities are planned to occur within upland archaeological Zone B of the LBLA.

The operations to be conducted at the LBLA, including stockpiling, mixing, and loading of the backfill and cap material, will comply with the substantive requirements of federal and state

laws and regulations that are identified as applicable or relevant and appropriate requirements (ARARs). In addition, these activities will be subject to the Phase 2 QoLPS for noise and lighting as well as project dust and opacity requirements. The noise and light monitoring to be conducted at this area will be as described in the Phase 2 RAM QAPP, and response actions to be taken in the event of an exceedance of the numerical criteria in those performance standards or in the event of a complaint will be those described in the 2014 PSCP. (Since the backfill and cap materials will not contain PCBs, ambient air monitoring to evaluate attainment of the air quality QoLPS for PCBs will not be necessary.)

To load the backfill and cap material barges, a front-end loader will feed a conveyor system from the material stockpile area. Tug boat(s) will fleet the barge as it is being loaded to provide an equal distribution of material on the barge.

2.10.3 Placement Methods

The LDOC will perform backfilling and engineered cap placement at the locations and to the thicknesses as provided by the CM during construction. For backfill and cap material placement, a barge-mounted conveyor system will be used. The conveyor system will consist of an excavator-type material handler that feeds a dual-bin feeder hopper that feeds a main conveyor belt that feeds a rotating and telescoping conveyor belt (Telebelt). The rate (volume/time) of material going through the conveyor system and the rotation and speed of the Telebelt discharge will be calculated to achieve a consistent backfill and cap thickness. A combination of materials can be mixed on the Telebelt using the gates on the dual bin feeder hopper. The excavator type material handler will be fitted with an open clamshell bucket and bucket positioning equipment so that it can also be used to place backfill and cap materials in the event that the Telebelt has technical difficulties. The Telebelt conveyor will discharge backfill material horizontally at an adjustable height (based on field conditions) slightly above the water surface.

Backfill and cap materials will be placed in accordance with the tolerances in the EPA-approved construction contract documents. The LDOC may choose to modify or change the method and equipment to place backfill or cap materials. Such changes will be proposed to the CM and EPA for approval.

Survey stakes at approximately 50-foot intervals will be installed prior to RFW construction at the land-side perimeter of each RFW area to be constructed during landlocked dredging.

2.10.4 Positioning Control

The LDOC is required to establish an accurate method of horizontal and vertical control before it proceeds with any backfill/capping operations, subject to the approval of the CM. For this purpose, the LDOC will employ RTK GPS to locate and control the horizontal position for material placement to within ± 3 inches. Control of the Telebelt/excavator for backfill and capping operations will be achieved with DredgePack (or equivalent) software utilizing a RTK GPS system. This provides RTK horizontal and vertical positioning.

For the excavator, a series of rotary sensors collects orientation (angle) information. These angles will be utilized in calculations performed by DredgePack (or equivalent) in conjunction with the lengths of each of the excavator components to calculate the position of the bucket. Sensor information will be transmitted to the guidance computer mounted in the excavator cab. For the telebelt, the RTK GPS system displays to the Telebelt operator the location and speed at which the discharge of the Telebelt is moving, since it varies depending on how far the boom is extended. The operator is able to keep the distance between swings constant by monitoring the DredgePack screen that displays squares the size of their discharge. The operator can then direct the Telebelt discharge to achieve the desired placement location and thickness.

A GPS system utilizing moving base station RTK technology (CSI Vector or similar) will provide the position and heading of the backfill/cap placement platform. The dredge guidance software receives sensor information and displays the location of the platform and the three-dimensional location of the bucket. This information is displayed in the operator's cab.

Sensors used in the positioning system will be calibrated according to manufacturer's instructions. Checks will be performed on the positioning system prior to the backfilling operation to confirm that specifications are met. Periodic checks with a separate GPS unit will be conducted to verify that the sensors are performing in accordance with the specification for horizontal positioning.

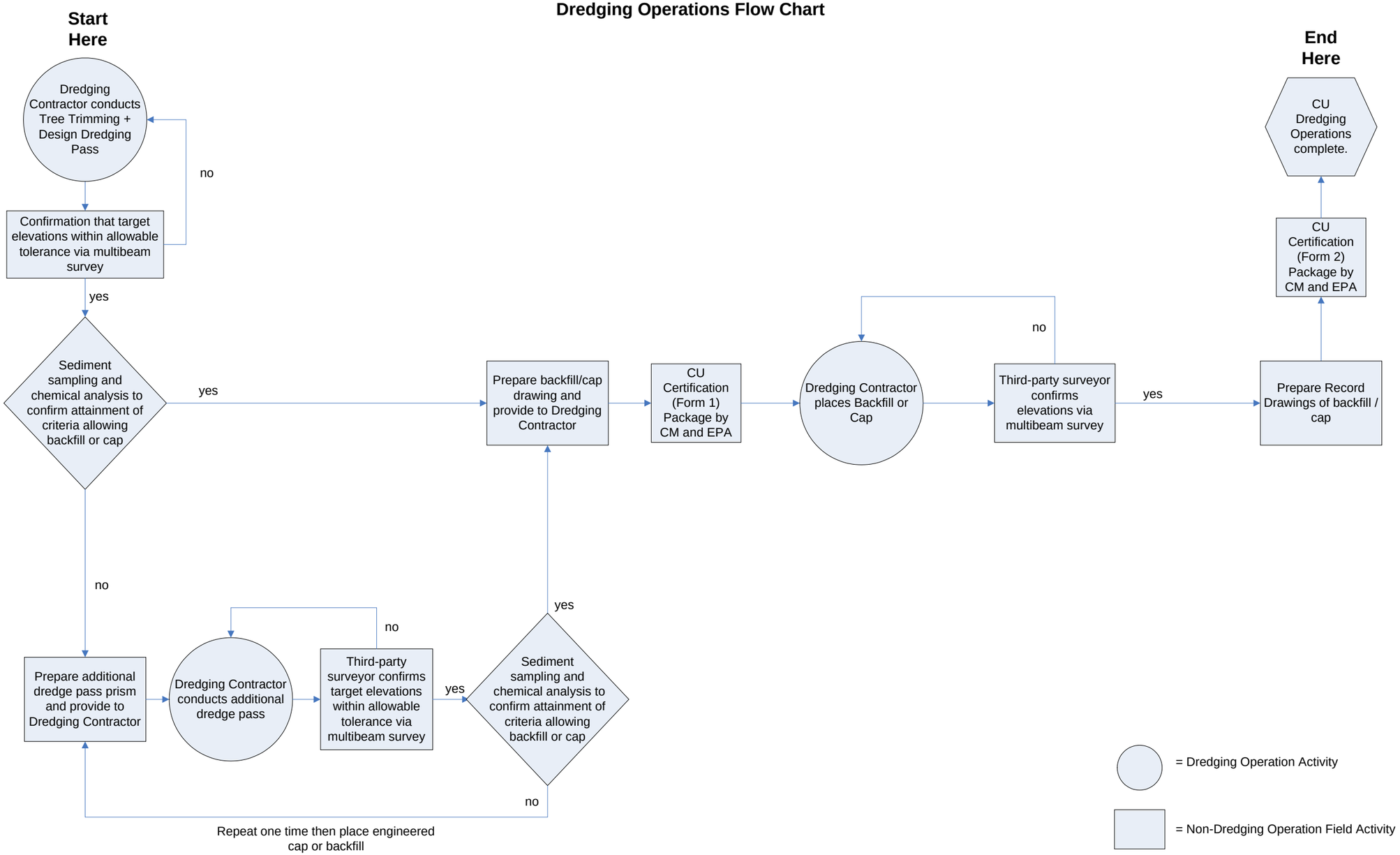
2.11 HYDROGRAPHIC SURVEYING DURING DREDGING OPERATIONS

GE will provide a third-party independent surveyor to conduct multi-beam hydrographic surveying for use in construction QA and progress reporting. This surveyor will conduct a hydrographic verification survey of each CU or portion thereof once notified by the LDOC that particular work in a CU, i.e., a dredging pass or placement of backfill/cap material, has been completed. Third-party surveyor methods and procedures are discussed in the 2014 DQAP.

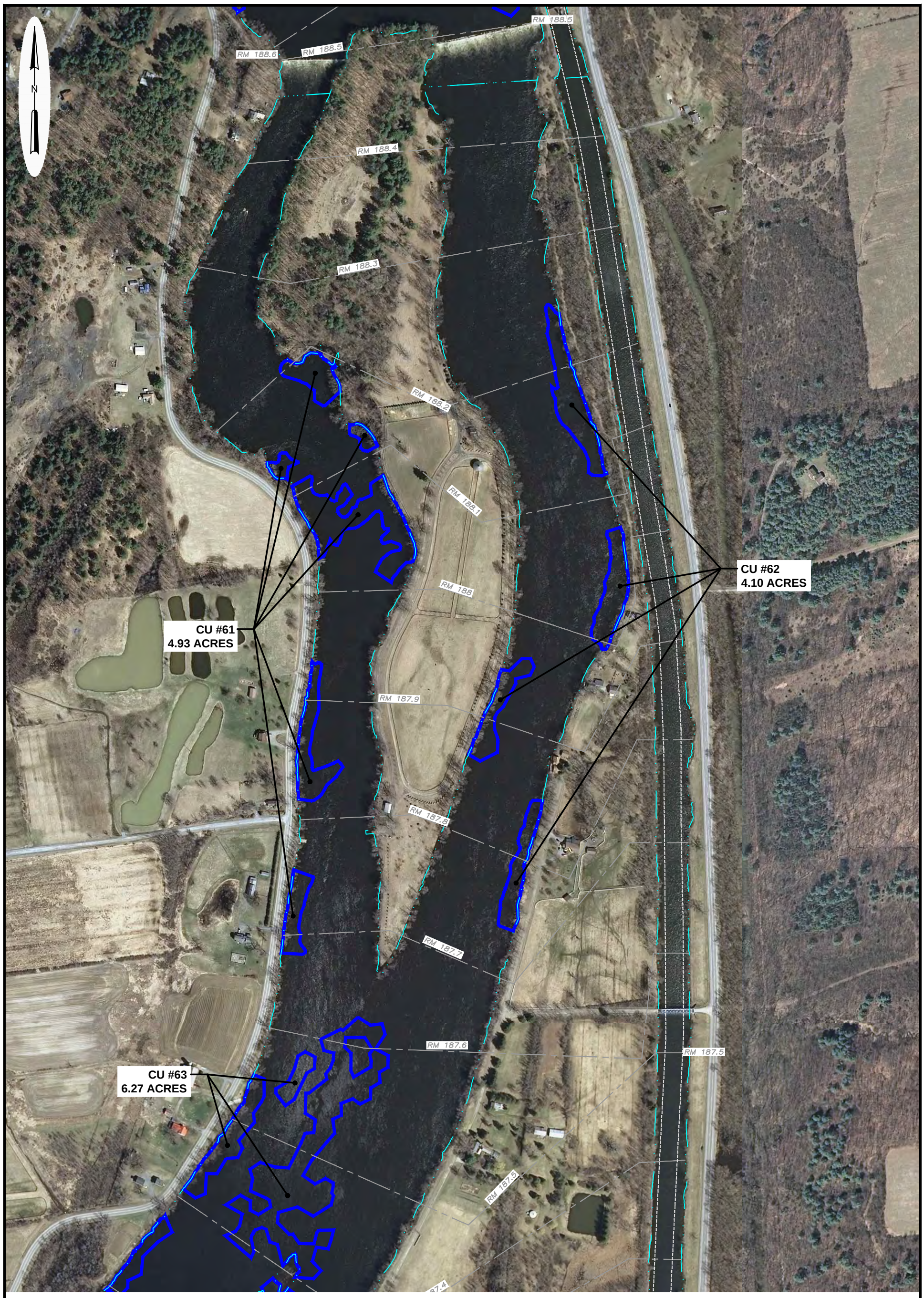
To increase the efficiency of the CU acceptance process, the CM may direct the third-party surveyor to commence CU acceptance surveys in portions of a CU that have been deemed complete by the LDOC while the LDOC finishes dredging or placement of backfill/cap material in other portions of the same CU.

The LDOC may conduct its own multi-beam or single-beam hydrographic survey to verify that an area has been successfully dredged prior to the request for the third-party surveyor. As noted above, if it can be established that the LDOC's survey data are consistent with the third-party hydrographic surveyor's surveys, then GE may use the LDOC's survey data, with EPA approval, to confirm that the first pass dredge prism limits have been achieved.

Figure 2-1
Dredging Operations Flow Chart



Note: This flowchart diagram is intended to be an aid for reader to understand basic process steps and provided for "information only." Actual process will vary based on conditions and subject to requirements of the Residuals Performance Standard. Refer to Section 2 of the 2014 RAWP for more information and Section 4 of the PSCP (Appendix D to 2014 RAWP) for specific requirements.



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DRAWING TITLE
REACH 7 RAWP
CERTIFICATION UNITS 61 - 63
HUDSON RIVER PCBs SUPERFUND SITE

DRAWN BY	CHECKED BY	DRAWING NO.	SCALE
MWB	MG	FIGURE 2-2A	AS SHOWN
DATE	APPROVED BY		JOB NO.
01/09/2013	MG		442209.02300

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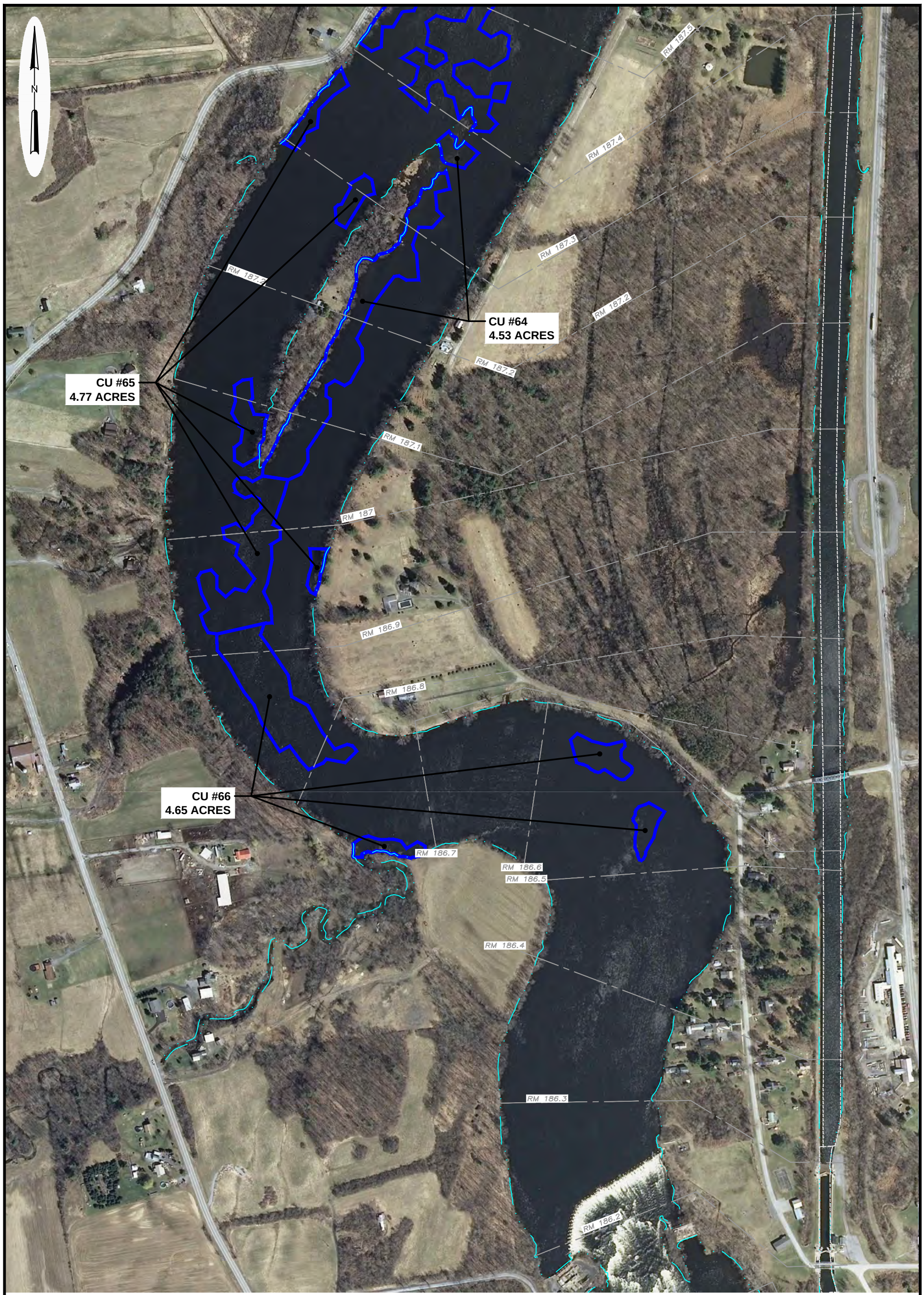

LEGEND

- CU # — TO BE DREDGED
- SHORELINE
- NAV CHANNEL
- RM 192.1 — RIVER MILE MARKER

400 200 0 400

BAR SCALE

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DRAWING TITLE
REACH 7 RAWP
CERTIFICATION UNITS 64 - 66
HUDSON RIVER PCBs SUPERFUND SITE

DRAWN BY	CHECKED BY	DRAWING NO.	SCALE
MWB	MG	FIGURE 2-2B	AS SHOWN
DATE	APPROVED BY		JOB NO.
01/09/2013	MG		442209.02300

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PLOT DATE: 4/15/2014 10:14 AM PLOTTED BY: BELLACK, MICHAEL

GE HUDSON RIVER BACKFILL AND CAP MATERIAL SOURCES

CRANESVILLE AGGREGATE, INC.

MULHOLLAND ENTERPRISES

LANDLOCKED BARGE LOADING AREA

PECKHAM QUARRY GREENWICH

LUCARELLI PIT

TROY TOPSOIL

SOURCE: BASE MAP SUPPLIED BY GREAT LAKES DOCKS AND DREDGING

KEY:

- CRANESVILLE AGGREGATE, INC.
- LUCARELLI PIT
- PECKHAM QUARRY GREENWICH
- PECKHAM HUDSON FALLS
- TROY TOPSOIL
- MULHOLLAND ENTERPRISES
- BARGE LOADING AREAS
- GRAVEL PIT

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DRAWING TITLE
REACH 7
LANDLOCKED DREDGING OPERATIONS BACKFILL AND CAP MATERIAL TRUCK ROUTES
HUDSON RIVER PCBs SUPERFUND SITE

DRAWING NO. FIGURE 2-3A

SCALE NTS

JOB NO. 442209.02300

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PLOT DATE: 6/30/2014 3:27 PM PLOTTED BY: BELLACK, MICHAEL

GE HUDSON RIVER BACKFILL AND CAP MATERIAL SOURCES

PECKHAM
HUDSON FALLS

CRANESVILLE
AGGREGATE, INC.

LANDLOCKED
BARGE
LOADING AREA

SOURCE: BASE MAP SUPPLIED BY GREAT LAKES DOCKS AND DREDGING

KEY:

- CRANESVILLE AGGREGATE, INC.
- LUCARELLI PIT
- PECKHAM QUARRY GREENWICH
- PECKHAM HUDSON FALLS
- TROY TOPSOIL
- MULHOLLAND ENTERPRISES
- BARGE LOADING AREAS
- GRAVEL PIT

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DRAWING TITLE
REACH 7
LANDLOCKED DREDGING OPERATIONS BACKFILL AND CAP MATERIAL TRUCK ROUTES
HUDSON RIVER PCBs SUPERFUND SITE

DRAWING NO. FIGURE 2-3B
SCALE NTS
JOB NO. 442209.02300

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N

RM 188.4

RM 188.3

RM 188.2

RM 188.1

RM 188

RM 187.9

RM 187.8

RM 187.7

RM 187.6

RM 187.5

RM 187.5

RM 187.4

ACCESS DREDGING

100FT WIDE SWATH

CU #61
4.93 ACRES

CU #62
4.10 ACRES

CU #63
6.27 ACRES

LEGEND

CU # — CU BORDER

SHORELINE (ELEVATION 114.9')

NAV CHANNEL

RM 192.1 — RIVER MILE MARKER

ACCESS DREDGING AREAS BEYOND CU BOUNDARIES

400 200 0 400

BAR SCALE

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DRAWING TITLE
REACH 7
ACCESS DREDGING AREAS
BEYOND CU BOUNDARIES
CERTIFICATION UNITS 61-63
HUDSON RIVER PCBs SUPERFUND SITE

DRAWN BY	CHECKED BY	DRAWING NO.	SCALE
MWB	MG	FIGURE 2-4A	AS SHOWN
DATE	APPROVED BY		JOB NO.
04/14/14	MG		442209.02300

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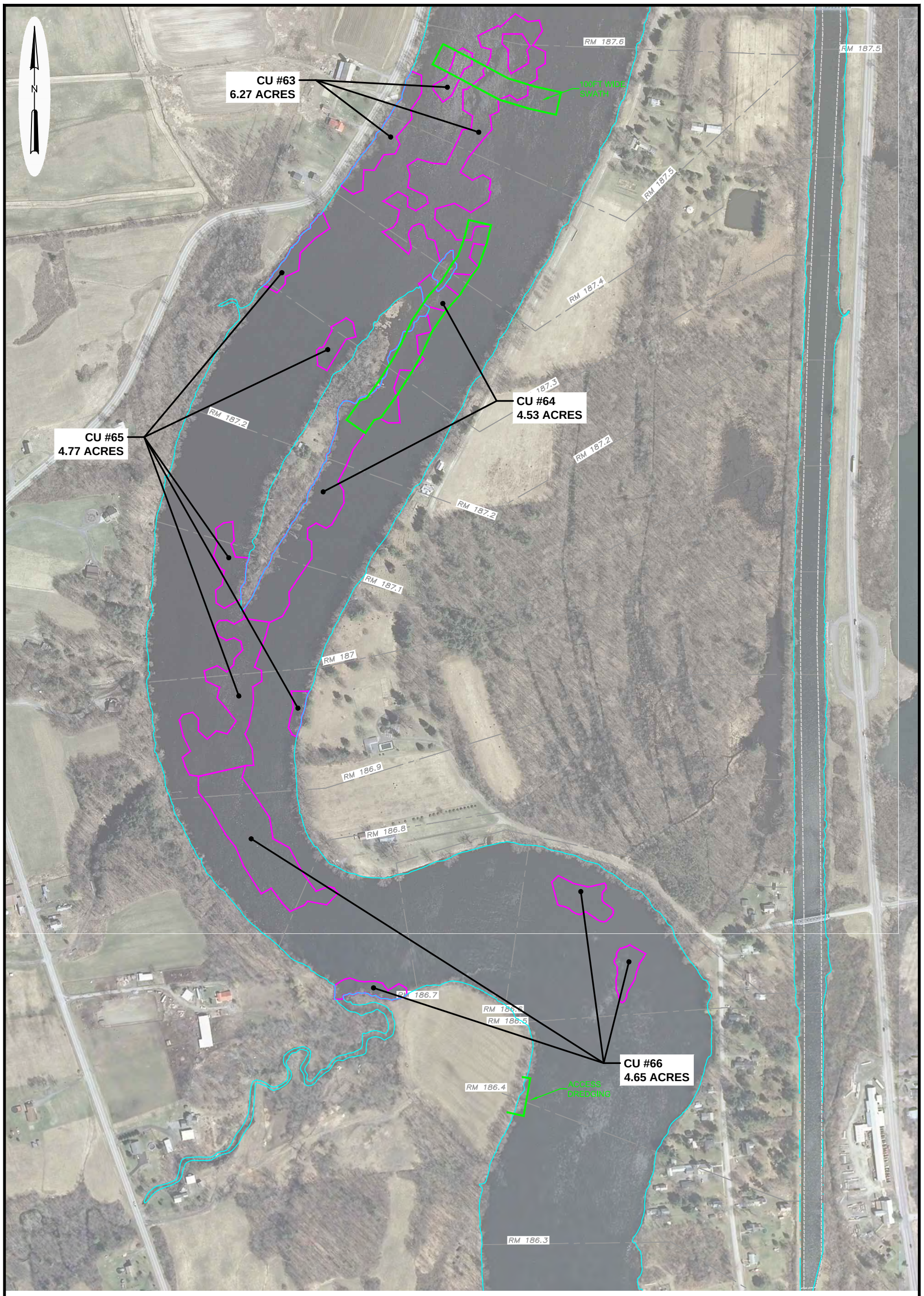

LEGEND

- CU # — CU BORDER
- SHORELINE (ELEVATION 114.9')
- NAV CHANNEL
- RM 192.1 — RIVER MILE MARKER
- ACCESS DREDGING AREAS BEYOND CU BOUNDARIES

400 200 0 400

BAR SCALE

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DRAWING TITLE
REACH 7
ACCESS DREDGING AREAS
BEYOND CU BOUNDARIES
CERTIFICATION UNITS 63-66
HUDSON RIVER PCBs SUPERFUND SITE

DRAWN BY	CHECKED BY	DRAWING NO.	SCALE
MWB	MG	FIGURE 2-4B	AS SHOWN
DATE	APPROVED BY		JOB NO.
04/14/14	MG		442209.02300

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N

RM 188.4

RM 188.3

A

RM 188.2

RM 188.1

RM 188

CU #61
4.93 ACRES

CU #62
4.10 ACRES

RM 187.9

RM 187.8

B

RM 187.6

RM 187.5

RM 187.5

CU #63
6.27 ACRES

RM 187.4

# OF BARGES	LOCATION
1	A
1	B

LEGEND

CU # — CU BORDER

SHORELINE (ELEVATION 114.9')

NAV CHANNEL

RM 192.1 — RIVER MILE MARKER

BARGE & BARGE MOORING POST

400 200 0 400

BAR SCALE

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DRAWING TITLE
REACH 7 PLANNED DREDGE AREAS & BARGE MOORING LOCATIONS CERTIFICATION UNITS 61-63
HUDSON RIVER PCBs SUPERFUND SITE

DRAWN BY	CHECKED BY	DRAWING NO.	SCALE
MWB	MG	FIGURE 2-5A	AS SHOWN
DATE: 04/14/14	APPROVED BY: MG		JOB NO.: 442209.02300

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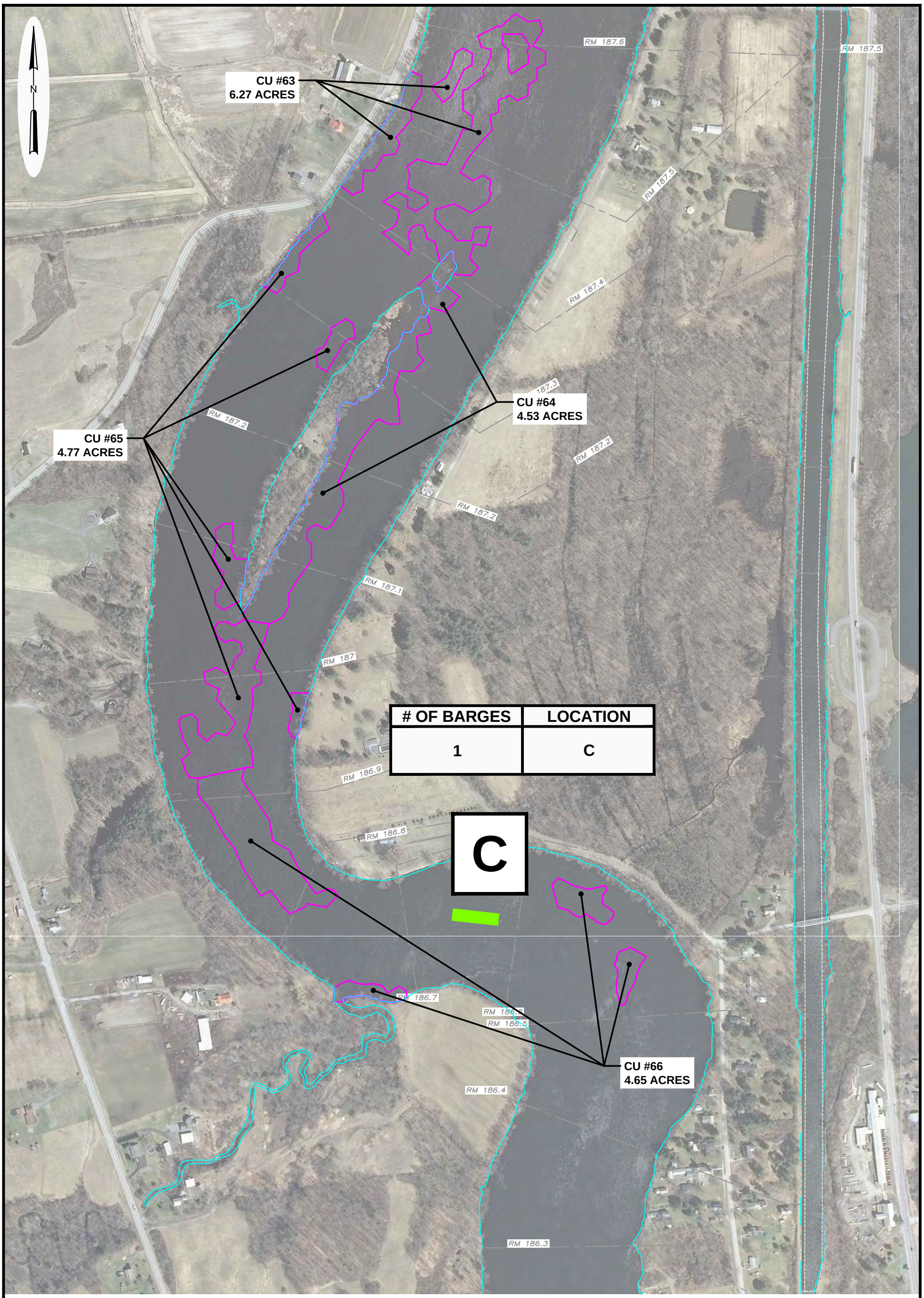

LEGEND

- CU # — CU BORDER
- SHORELINE (ELEVATION 114.9')
- NAV CHANNEL
- RM 192.1 — RIVER MILE MARKER
- BARGE & BARGE MOORING POST

400 200 0 400

BAR SCALE

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REACH 7 PLANNED DREDGE AREAS & BARGE MOORING LOCATIONS CERTIFICATION UNITS 63-66
HUDSON RIVER PCBs SUPERFUND SITE

DRAWN BY	CHECKED BY	DRAWING NO.	SCALE
MWB	MG	FIGURE 2-5B	AS SHOWN
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SECTION 3

REACH 7 ISTHMUS TRANSLOAD OPERATIONS

This section addresses the operation of the ITA during the 2014 Landlocked Area dredging operations. The ITA layout is shown in Figure 3-1. This section provides a description of the ITA transload operations and a description of how water will be managed at the ITA. The ITA will be operated by the Isthmus Transload Contractor.

3.1 ISTHMUS TRANSLOAD OPERATIONS

The LDOC will transport modular hopper barges to the ITA loaded with dredged sediment and debris from the different CUs in the Landlocked Area. Once the barge is at the ITA, the LDOC will position the barge to be under the Landlocked Area side spill shield and will provide lines to shore bollards so that the barge may be secured by the Isthmus Transload Contractor. Once the barge is secure, the LDOC will provide the Isthmus Transload Contractor with the necessary barge report, a joint inspection of the barge will be conducted, and transloading operations will commence.

The Isthmus Transload Contractor will first lower a decant pump into the river-side hopper barge to be transloaded. The pump will be handled by the ITA site crane and the discharge hose will be positioned within the confines of the canal-side hopper barge. Initial decant will commence and the pump will be repositioned as required in order to decant as much of the water as practicable. Concurrently with the decant operation, sediment will be transloaded from the river-side hopper barge using the river-side transloader and placed into the center of the sediment transload bin on the ITA for the canal-side transloader to pick up and place in the canal-side hopper barge. In order for the river-side transloader to access the entire river-side hopper barge, the barge will be fleeted and rotated 180 degrees by the LDOC once the side of the barge closest to the transloader has been unloaded. To unload the corners of the barge the Isthmus Transload Contractor may need the barge to be fleeted such that the barge is not directly under the spill plate, in this condition the transloader bucket will pass from the barge hopper to the ITA via the side of the spill plate. In order to evenly load the canal-side hopper barge, the canal-side barge will be fleeted north or south as necessary. The fleeting of canalside barges will be conducted utilizing one of the Isthmus Transload Contractor tugboats servicing the main stem of the river.

Once full, the canal-side hopper barge will be transported to the Fort Edward Sediment Processing Facility by the Isthmus Transload Contractor, who, as noted above, is also the main stem dredging operations contractor. That contractor will then deliver an empty or partially loaded hopper barge to the ITA and position the barge under the canal-side spill plate. In the event that a tender/towboat will not be available in a timely enough manner to fleet the canal side barge, the ITA site crane can set a gangway from the ITA to the canal-side barge in order to allow ITA personnel to handle the lines and fleet the barge utilizing the canal-side transloader with assistance from a smaller vessel.

The ITA has been developed to allow the transloaders to be set up on either the river or canal side of the isthmus so that in the event of a major mechanical issue to one of the transloaders, transload operations can continue utilizing one transloader which would offload the river-side hopper barge sediment to the transload bin and then move to the canal side to load out the sediment. When transloading of the river-side barge is complete, that barge will be jointly inspected and released directly to the LDOC.

Table 3-1 provides the list of major equipment to be utilized in the ITA transload process.

Table 3-1 List of Major Transload Equipment

Construction Equipment	Quantity	Construction Activity	Description
Transloader	2	Transloading of Dredged Sediment	Long-reach excavator equipped with a 2 cy enclosed bucket
Service Crane	1	Decant Pump Handling and Maintenance	To be used to handle to handle the submersible hydraulic pump and other lifting requirements
Decant Pump	1	Barge Water Decanting	6-inch diameter Submersible Hydraulic pump.
Electric Pump	2	ITA Site Water Management	4-inch sump pump and 4-inch inline pump at the frac tank outlets.

3.2 WATER MANAGEMENT AT THE ISTHMUS TRANSLOAD AREA

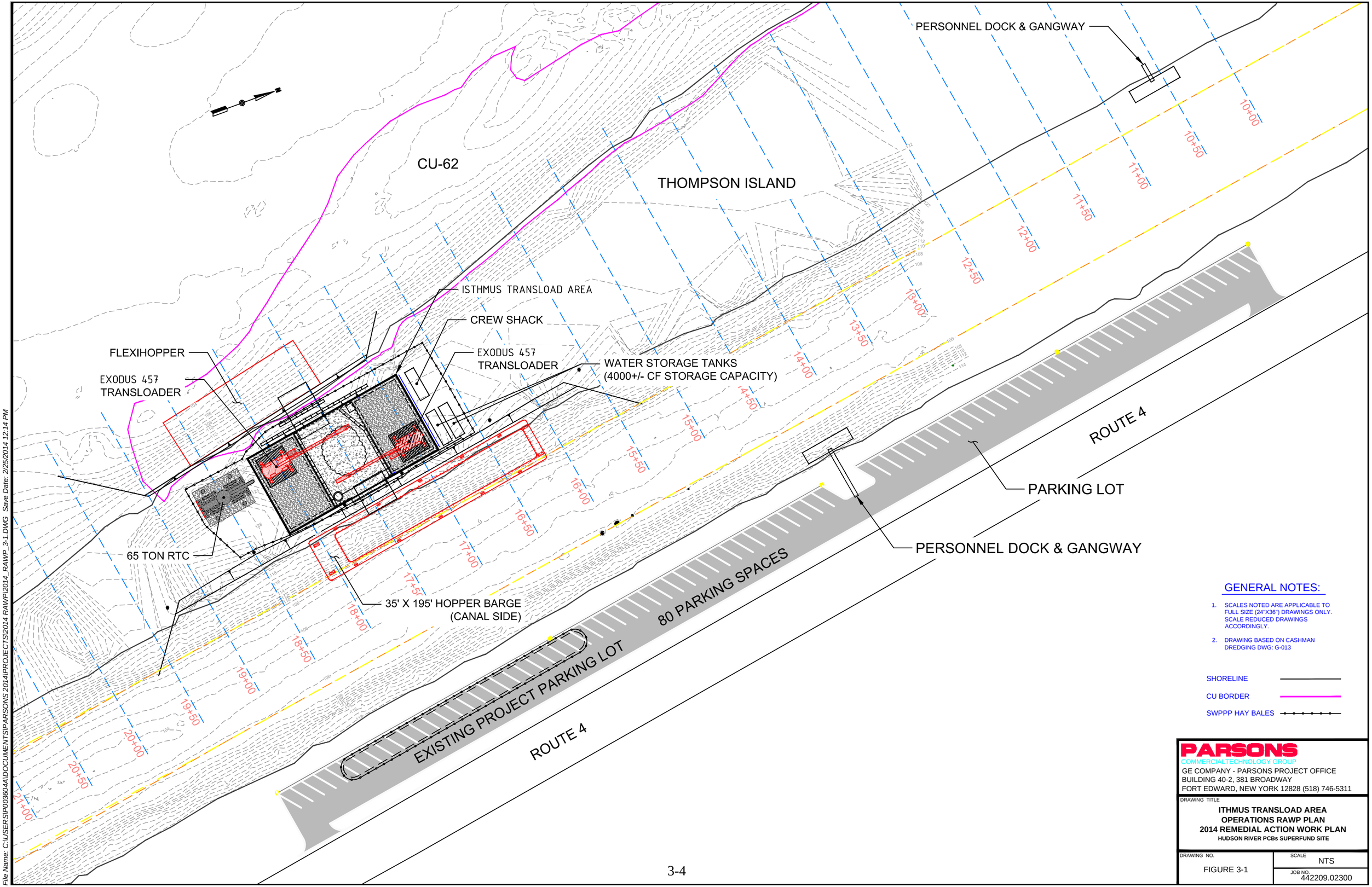
Water contained in the river-side hopper barges will be pumped to the main stem hopper barge located in the Champlain Canal using a hydraulic decant pump. The decant pump will be a hydraulic submersible pump with a 6-inch diameter inlet. The pump will be kept in a scale pan immediately adjacent to the river-side hopper barge mooring location when not in use. The scale pan will be outfitted with a spill shield to contain any drippage or runoff from the pump as it is returned to the pan from the barge. The pump will be outfitted with a check valve at the discharge so that water cannot back flow into the pan. The scale pan will be kept reasonably free of water either through draining with the 6-inch pump or through use of a crane to raise the pan and empty it back into the hopper barge. A 6-inch suction hose will be run from the decant pump check valve through the ITA containment area over the canal-side spill pan and into the canal-side hopper barge. The 6-inch suction hose will be contained within a 10-inch diameter layflat hose where it runs outside of the lined site containment area.

The ITA has been designed such that stormwater runoff that comes in contact with PCB sediment will drain into a sump in the concrete pad and can be pumped either directly into a hopper barge in the Champlain Canal or into two frac tanks located at the ITA if a hopper barge

is not present. In addition, the ITA containment area has been designed with the capacity to retain the runoff from a 100-year storm event within its curbing. The top of the curbing elevation has been designed to be three inches higher than the 100-year flood elevation level.

The sump is outfitted with a 4-inch electrical submersible pump discharging through a four-inch hose. The pump is equipped with an automatic float-type switch and can also be manually controlled at the control box. The 4-inch hose will split into two valve-controlled branches, one going directly into the 6-inch decant hose and the other directly to the frac tanks. The frac tank inlet and outlet hoses, valves, and the connection end of the frac tanks will be contained within the lined containment area. The frac tank outlets will be equipped with an inline 4-inch electric pump which will allow the tanks to be emptied through a 4-inch hose into the 6-inch decant hose and ultimately into the canal-side hopper barge. In normal operations, the sump will discharge to the 6-inch hose and into the canal-side barge. During barge change out, the sump pump will be turned off. The frac tanks are only intended to be utilized in the event that the containment pad is holding sediment, a canal-side barge is not available, and the additional capacity of the frac tanks is required to control the runoff from a major storm event. The frac tanks provide the capacity to contain the contact area runoff volume associated with a 100-year storm event.

The 6-inch decant pump can be utilized as a backup for the 4-inch electric sump pump if required.



GENERAL NOTES:

1. SCALES NOTED ARE APPLICABLE TO FULL SIZE (24"X36") DRAWINGS ONLY. SCALE REDUCED DRAWINGS ACCORDINGLY.
2. DRAWING BASED ON CASHMAN DREDGING DWG: G-013

SHORELINE

CU BORDER

SWPPP HAY BALES

PARSONS
COMMERCIAL TECHNOLOGY GROUP
GE COMPANY - PARSONS PROJECT OFFICE
BUILDING 40-2, 381 BROADWAY
FORT EDWARD, NEW YORK 12828 (518) 746-5311

DRAWING TITLE

ITHMUS TRANSLOAD AREA
OPERATIONS RAWP PLAN
2014 REMEDIAL ACTION WORK PLAN
HUDSON RIVER PCBs SUPERFUND SITE

DRAWING NO.	SCALE
FIGURE 3-1	NTS
	JOB NO. 442209.02300

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SECTION 4

CONSTRUCTION AND OPERATIONS SCHEDULE

4.1 OVERVIEW

The schedule for construction and operations in the Landlocked Area is presented as Figure 4-1. This schedule identifies the major construction and operational activities, sequence of dredging operations, dewatering operations, and transport operations required to complete dredging operations in Reach 7.

The construction schedule describes the anticipated reasonable durations for the activities described in Section 1 of this Reach 7 RAWP. The schedule accounts for seasonal limitations on construction in the Upper Hudson River work area (e.g., ice formation, water temperatures and flow conditions that could affect safe working conditions). After construction of the ITA is completed, dredging operations in the Landlocked Area will be conducted concurrently with dredging operations in the other downstream areas of the river, and dredged sediment from the Landlocked Area will be transloaded into barges in the Champlain Canal for transport to the Fort Edward Sediment Processing Facility. Thus, dredging operations in the Landlocked Area will be limited by the schedule of the Champlain Canal navigation season.

The dredge production schedule is presented in Table 4-1 (discussed in Section 4.3 below). This production schedule identifies the *in situ* volumes of dredged material targeted for removal during each 4-week period of the Reach 7 dredging season.

4.2 INTERFACE POINTS WITH OTHER CONSTRUCTION ACTIVITIES

As described in Section 1, activities relating to dredging in the Landlocked Area will be conducted under three major contracts: Contracts 30, 42A, and 43B. The interface points between these contractors are described below.

- The LDOC will load sediment barges with sediment and debris, and then transport the barges to the ITA. The LDOC will provide the Isthmus Transload Contractor with advance notice prior to delivering a barge of sediment or debris to the ITA.
- The LDOC will hold the loaded barge to be unloaded in position at the ITA using their tug until the barge has been secured to the ITA. The LDOC will transfer the barge report to the Isthmus Transload Contractor.
- The Isthmus Transload Contractor will then transload the barge into a main stem barge located in the Champlain Canal and release the barge in the Landlocked Area to the LDOC. The Isthmus Transload Contractor will provide advance notice to the LDOC that the barge has been unloaded and is available for loading.
- The Isthmus Transload Contractor will then transport the main stem barge located in the Champlain Canal to the Fort Edward Sediment Processing Facility. As described in the

2014 RAWP, the Isthmus Transload Contractor will provide the PFOC with advance notice prior to delivering a barge of sediment or debris to the Fort Edward Sediment Processing Facility.

- The LDOC and the Isthmus Transload Contractor will provide to each other a single point of contact that is accessible 24 hours a day during operations to allow co-ordination of activities. Similarly, the Isthmus Transload Contractor and the PFOC will provide to each other a single point of contact that is accessible 24 hours a day during operations to allow co-ordination of activities.

Additional interface points between the PFOC (Contract 30) and the Isthmus Transload Contractor, who is also the dredging contractor for the main stem of the river (Contract 42A), are discussed in the 2014 RAWP.

4.3 DREDGING PRODUCTION SCHEDULE

The dredging production schedule identifying the *in situ* volumes of material targeted for removal for each 4-week period of the Landlocked Area dredging season is presented in Table 4-1. This table is based on the initial dredge prisms issued to the LDOC for planning purposes and on the estimated access dredging volume proposed by the LDOC. The volumes in the table do not include volumes associated with any additional dredging passes needed to achieve the requirements of the Residuals Performance Standard; those volumes are unknown at this time but will be included in the volumes to be reported in the weekly, monthly, and annual productivity reports for the Landlocked Area dredging operations. Note that the volumes in the table represent an estimate of the dredged material targeted for removal for each 4-week period; the actual amount removed may be more or less depending on field conditions.

Table 4-1 *In situ* Volume of Sediment Targeted for Removal (cy)

4-Week Period	*In situ* Volume of Material Targeted for Removal (cy)
1: Weeks 1 - 4	25,700
2: Weeks 5 - 8	27,900
3: Weeks 9 - 12	25,400
4: Weeks 13 - 16	25,000
5: Weeks 17 - 20	17,200
Total	121,200

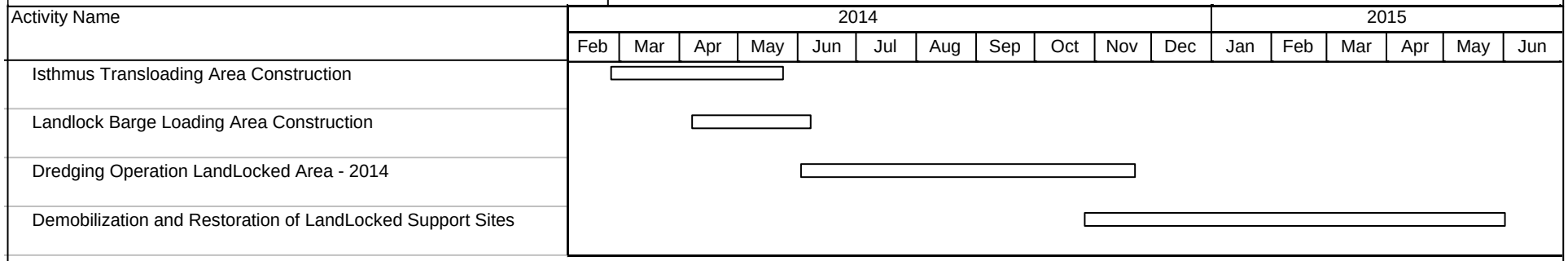
4.4 ASSUMPTIONS AND QUALIFICATIONS

The construction schedule and dredging production schedule shown in Figure 4-1 and Table 4-1 are based on the following assumptions and qualifications:

- Third-party entities, including, but not limited to, utility service providers, rail carriers, and disposal facilities, comply with existing contracts.
- EPA approves the final Reach 7 RAWP, including its appendices, as well as the 2014 RAWP and its appendices, in sufficient time to allow commencement of the Landlocked Area dredging operations on the planned schedule.
- Proposed work hours are unchanged.
- Proposed equipment type and quantity are unchanged.
- Dredged sediments can be efficiently transloaded from barges in the Landlocked Area to barges in the land-cut section of the Champlain Canal.
- NYSCC opens the Champlain Canal system for commercial navigation by early May and the Champlain Canal system remains open and available for use of commercial vessels until November 15, and the NYSCC operate locks on a 24-hour per day basis at the NYSCC locks needed to transport dredged material from the land-cut section of the Canal to the Fort Edward Sediment Processing Facility.
- Weather conditions meet average seasonal limitations for construction in the Upper Hudson River work area (e.g., frost conditions, high water events, ambient temperature limitations).
- Necessary property access can be obtained to conduct the required activities in the Landlocked Area.
- Actual site conditions are consistent with site condition data that have been previously obtained and relied upon for the basis of design and construction.
- Sufficient natural run-of-bank backfill and capping material is available at the approved source(s) to satisfy backfill and cap requirements.
- The distribution of backfill and cap material placed within a given CU is consistent with the overall distribution of backfill and cap material described in the Reach 7 FDR.
- The amount and location of in-river debris encountered during dredging operations are limited to the debris identified from data that have been previously obtained and relied upon for the basis of design and construction.
- River flows are greater than 10,000 cfs for no more than the seasonal average.
- EPA approves elevation acceptance drawings, required action maps and backfill/engineered cap plans within a reasonable time from the receipt of the complete applicable forms (Form 1 or Form 2) from GE.
- Multi-beam bathymetric surveys and confirmatory sediment sampling in a completed CU take no longer than 6 days.

- No potentially significant archaeological resources or human remains are discovered during the course of the Landlocked Area dredging operations.
- Project team representatives are available on a sufficient basis for timely review, coordination, and approval.
- The necessary satellite and wireless communication signals are available with the required strength, consistency and reliability to provide the positioning and communication systems necessary to perform the required activities in the Landlocked Area.
- Spare parts on hand are based on manufacturers' recommendations and are sufficient to maintain operations.
- No delays are incurred due to visual plumes during the placement of the backfill materials with the required fines content.
- Rail carriers and disposal facilities are able to handle the transport and disposal of the volume of processed sediments from the Landlocked Area as anticipated.
- The schedule does not account for events that are beyond the control of GE.
- Material and equipment fabrication and delivery times are estimated.

Reach 7 RAWP	FIGURE 4.1 CONSTRUCTION AND DREDGING OPERATIONS SCHEDULE



This schedule must be interpreted in light of accompanying qualifications and assumptions (Section 4.4)

Planned Activities

◆ Milestone

SECTION 5

COMPLIANCE MONITORING

This section provides a very brief overview of the monitoring activities that GE will conduct during the Landlocked Area operations to assess achievement of the Phase 2 EPS (USEPA, 2010a), Phase 2 QoLPS (USEPA, 2004, 2010b), and Phase 2 WQ Requirements (USEPA, 2005, 2006, as modified by the Phase 2 EPS and revised SOW attachments). A detailed description of these performance standards and requirements, the specific requirements for this monitoring, and the monitoring programs that GE will conduct to meet the requirements of the EPS, QoLPS, and WQ Requirements is provided in the Phase 2 RAM QAPP. Those provisions of the Phase 2 RAM QAPP will be followed during dredging and related operations in the Landlocked Area.

5.1 EPS COMPLIANCE MONITORING

The EPS consist of three performance standards:

1. Resuspension Performance Standard;
2. Residuals Performance Standard; and
3. Productivity Performance Standard.

The monitoring that GE will conduct under these standards during the Landlocked Area operations is summarized below.

Resuspension Performance Standard

GE will conduct routine resuspension monitoring during dredging and associated operations that have the potential for resuspending a significant amount of sediment. Monitoring will be conducted at near-field buoy transects, located upstream and downstream of the dredging activities; and the samples will be analyzed for PCBs, total suspended solids (TSS), as well as a number of general water quality parameters such as pH, dissolved oxygen, temperature, and conductivity. Monitoring will also be conducted at far-field stations – specifically, the Lock 5 and Waterford stations (as provided in the 2014 PSCP), which are located more than one mile downstream of the Landlocked Area – with analyses for PCBs, TSS, and other general water quality parameters. The resulting data will be compared against various criteria set forth in the Resuspension Performance Standard to assess the need for response actions, as described in the 2014 PSCP.

Residuals Performance Standard

GE will conduct sampling of the sediments in dredged areas and certain backfilled/capped areas. Cores of sediment will be collected once target design or re-dredge elevations have been achieved. The samples will be analyzed and the results will dictate the appropriate response actions to be undertaken, as described in the 2014 PSCP.

Productivity Performance Standard

GE will conduct monitoring of productivity during the Landlocked Area dredging operations. The monitoring will consist of tracking the dredging productivity – including volumes of *in situ* sediments removed, total tonnage processed, and total tonnage transported to the Fort Edward Sediment Processing Facility for disposal – on a cumulative basis. This information will be compared to the scheduled production shown in Table 4-1 to determine whether the estimated volume of sediment to be dredged in the Landlocked Area may be increased or decreased.

5.2 QOLPS COMPLIANCE MONITORING

The QoLPS include five performance standards:

1. Air Quality Performance Standard;
2. Odor Performance Standard;
3. Noise Performance Standard;
4. Lighting Performance Standard; and
5. Navigation Performance Standard.

The need for and type of monitoring to be conducted under these standards are summarized below.

Air Quality Monitoring

GE will conduct routine air quality monitoring for PCBs in ambient air. GE will sample the air continuously (24 hours each day that operations are taking place near a given station) at monitoring stations at the ITA and within the dredging corridor in the Landlocked Area, with PCB analysis of 24-hour average samples. The results will be compared with criteria in the Air Quality Performance Standard, although only exceedances of the air quality standards (not exceedances of an air quality concern level) will be reported, as discussed in the 2014 PSCP. In addition, GE will conduct monitoring for opacity in response to observations or a complaint indicating a potential opacity issue.

Odor Monitoring

GE will perform odor sampling if on-site workers detect an uncomfortable project-related odor or if an odor complaint is received from the public in the vicinity of the remediation zone. If the odor is identified as potentially hydrogen sulfide (H_2S), monitoring for H_2S will be performed upwind and downwind of the suspected source.

Noise Monitoring

The LDOC will conduct noise monitoring at the initial start-up of any operation or equipment that is different from that used previously in this project. This monitoring will not be considered monitoring for compliance with the Noise Performance Standard; however, if that monitoring indicates a sound level above the criteria in the Noise Standard, additional

monitoring will be conducted closer to receptors to evaluate attainment of those criteria. In addition, GE will conduct noise monitoring at the ITA, LBLA, or elsewhere within the Landlocked Area dredging corridor whenever a complaint from the public is received. These noise measurements will be compared with the criteria in EPA's Noise Performance Standard to determine the need for additional monitoring or further noise mitigation measures.

Lighting Monitoring

The LDOC will conduct light monitoring at the initial start-up of any operation or equipment that is different from that used previously in this project. This monitoring will not be considered monitoring for compliance with the Lighting Performance Standard; however, if that monitoring indicates a light level above a lighting standard, additional monitoring will be conducted closer to receptors to evaluate attainment of those standards. In addition, GE will conduct light monitoring at the ITA, LBLA, or elsewhere within the Landlocked Area dredging corridor whenever a complaint from the public is received. These light measurements will be compared with the criteria in EPA's Lighting Performance Standard to determine the need for additional monitoring or further lighting mitigation measures.

Navigation Monitoring

Since the Champlain Canal bypasses Reach 7, the Landlocked Area dredging project will not hinder overall non-project-related vessel movement or create project-related navigation interferences in the Champlain Canal. However, it is possible that residents living along the Landlocked Area may use that area for boating and recreational purposes. Accordingly, navigation monitoring will be conducted within the Landlocked Area for compliance with the requirements of the Navigation Performance Standard that apply to areas outside the navigation channel. In addition, since the ITA will be located adjacent to the land-cut section of the Champlain Canal, navigation monitoring will be in the land-cut section to assess potential impacts from the ITA operations on navigation within the canal.

5.3 WQ REQUIREMENTS COMPLIANCE MONITORING

The substantive WQ Requirements were issued by EPA after consultation with NYSDEC. They consist of: (1) requirements relating to in-river releases of constituents not subject to the EPS; (2) requirements relating to discharges of treated water from the Fort Edward Sediment Processing Facility, as well as treated storm water from areas within that facility where PCB-containing sediments are managed, to the Hudson River; and (3) requirements relating to discharges of non-contact storm water from that facility to Bond Creek.

For the in-river releases of constituents not subject to the EPS, GE will conduct routine sampling for certain general water quality parameters at the near-field station for the Landlocked Area dredging operations. In addition, monitoring for metals will be conducted if there are indications of impacts from the dredging operations, such as fish kills.

The other WQ Requirements relate to discharges from the Fort Edward Sediment Processing Facility and thus are not applicable to Landlocked Area operations.

SECTION 6

HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION MEASURES

6.1 D&FO HEALTH AND SAFETY POLICY, PROGRAM AND PLAN

6.1.1 GE Environmental Health and Safety Policy

GE provides a safe and healthy working environment in all the communities in which it does business. GE's environmental health and safety (EHS) programs combine clear leadership by management; the participation of all employees, contractors, and functions; and the use of appropriate technology to confirm the health and safety of its employees and the public.

GE requires that each of its facilities and sites identify and control potential hazards in order to protect the public, its employees, and the environment. Reviews are conducted regularly; deficiencies, if any, are identified; issues are tracked to closure; improvements are made to prevent potential hazards; and mitigation measures are implemented as a result of these reviews. The end result enhances injury prevention, increases operations knowledge, improves communications, and helps ensure compliance with required EHS standards.

The Landlocked Area operations will abide by the requirements of GE's world-class EHS program.

6.1.2 CM Health and Safety Program

The CM also holds the highest standards for project health and safety. The safety goal for this project is zero incidents, zero injuries – a Zero Incident philosophy. This approach originated with a study by the Construction Industry Institute, which identified specific control measures shown to dramatically reduce the probability of incidents. These control measures, known as Zero Incident Techniques, provide the framework for safety on this project, and the project team's proactive approach to managing the interrelated areas of safety, health, environment, and risk management. The definition of an incident is any unplanned or unexpected event that results a personal injury, property damage, or an environmental release.

6.1.3 Health and Safety Plans

6.1.3.1 Remedial Action Health and Safety Plan for 2014

The 2014 RA HASP (Parsons, 2014b) defines minimum safety and health requirements, guidelines, and practices applicable to the overall project, including work in the Landlocked Area. The 2014 RA HASP constitutes an update to prior RA HASPs. For complete details on the project health and safety program, please refer to the 2014 RA HASP.

The 2014 RA HASP reflects the corporate policy of both GE and the CM. The 2014 RA HASP uses the Zero Incident management approach and defines the safety goal for this project as zero incidents and zero injuries.

The 2014 RA HASP provides a general description of field activities. Specific field activities are described in more detail in the Contractors' HASPs. The objectives of the 2014 RA HASP are to:

- Establish minimum health and safety requirements;
- Identify the physical, chemical, and biological hazards potentially present during field work;
- Prescribe the protective measures necessary to control those hazards;
- Define emergency procedures; and
- Prescribe training and medical qualification criteria for site personnel.

The 2014 RA HASP will be reviewed by all contractors and subcontract managers, supervisors, foremen, and safety personnel involved at the Landlocked Area. All craft personnel performing field activities in that area will receive a site-specific project orientation summarizing the content of the 2014 RA HASP.

The 2014 RA HASP was written to comply with the requirements of the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120).

6.1.3.2 Contractors' Health and Safety Plans

Each contractor involved at the Landlocked Area is required to prepare a Contractor HASP for review and approval by the CM. Each contractor's HASP will discuss tasks and provide detailed procedures and activity hazard analyses specific to its scope of work. Each such HASP will conform to the 2014 RA HASP and will be reviewed by the CM.

6.1.4 Designated Site Work Zones

To promote the protection of worker health and safety and prevent the off-site migration of PCB-containing materials, the dredges and sediment barges, as well as the ITA, will contain specified work zones, consisting of an Exclusion Zone, a Contamination Reduction Zone (CRZ), and a Support Zone. These zones are described below.

Dredges and Sediment Barges

- The Exclusion Zone is a segregated area of all dredge platforms and sediment barges that dredge or carry PCB-contaminated material. The Exclusion Zone is the portion of the vessel that may come into contact with PCB-contaminated material. Within the Exclusion Zone, all personnel will wear appropriate personal protective equipment (PPE), and personnel and equipment will be decontaminated before moving out of the Exclusion Zone.
- The Contamination Reduction Zone (CRZ) is the transition area from the Exclusion Zone to non-contaminated areas. CRZs will be located on all dredge platforms. The CRZ will be physically sectioned off from the Exclusion Zone and from non-contaminated areas, and is the area where decontamination of personnel will take place.

- The Support Zone is the clean area of all dredge platforms. Crew boats and supply boats dropping off or picking up personnel and supplies will dock at that portion of the dredge platform.

Isthmus Transload Area

- The ITA Exclusion Zone is delineated as the area confined by the concrete slab and spill plates. Two-foot-high concrete blocks with a 6-foot-high impervious splash screen will be set along the north and south perimeter of the concrete slab. The spill pans will have 3-foot-high steel plate side walls with an additional 5-foot-high splash screen on the far side of the respective bucket swing. The spill plates are graded to drain back to the concrete slab area. Within the Exclusion Zone, all personnel will wear appropriate PPE, and personnel and equipment will be decontaminated before moving out of the Exclusion Zone. Personnel access to the exclusion zone will be limited to tasks associated with maintenance of the sump pump, clearing of sediment buildup in areas where the excavator buckets cannot access, and decontamination of buckets requiring change out for maintenance
- The ITA Contamination Reduction Zone (CRZ) will be established at the northwest corner of the concrete slab/exclusion zone. Decontamination activities will be performed in this area for all personnel and all equipment leaving the Contamination Zone. A portable decontamination unit will be positioned within this location and will be used by personnel to decontaminate themselves in accordance with the Project HASP.
- The Support Zone is the clean area of the ITA and consists of all areas of the ITA except the Exclusion Zone and the CRZ.

6.1.5 Personnel Decontamination

The LDOC will follow the process described in the 2014 RA HASP for decontamination of personnel.

Contractor personnel that enter Exclusion Zones or have come into contact with possible PCB-containing sediment will follow the personnel decontamination procedures detailed in the 2014 RA HASP. Decontamination will occur within the designated CRZs on board the LDOC's dredges that handle PCB-contaminated materials.

Disposable PPE will be bagged and loaded on barges by the LDOC, transloaded by the Isthmus Transload Contractor to canal-side barges and transported to the Fort Edward Sediment Processing Facility where the PFOC will place the disposable PPE in railcars for off-site disposal in accordance with the applicable TDP. Decontamination water (not containing surfactants or solvents) will be pumped into hopper barges at the ITA and transported to the Fort Edward Sediment Processing Facility to be treated in the water treatment facility.

6.2 EMERGENCY CONTACT NUMBERS

Emergency contact information and procedures are presented in Section 10 of the 2014 RA HASP and Section 7 of the 2014 CHASP.

6.3 MONITORING

GE will separately contract for monitoring of the parameters addressed by the Phase 2 EPS, QoLPS, and WQ Requirements, including the water column, airborne PCBs, and (when necessary) opacity, odors, noise, and light, to assess achievement of the criteria set forth in those standards and WQ Requirements. This monitoring was summarized in Section 5 above. Methods for such monitoring are described in detail in the Phase 2 RAM QAPP, and the actions to be taken in the event of an exceedance of such criteria, or in response to complaints about these parameters, are described in the 2014 PSCP.

In addition, in accordance with the project technical specifications, the LDOC, Isthmus Transload Contractor, and PFOC will conduct monitoring within their work areas for noise and light. This work area monitoring will be conducted solely for operations management purposes – to verify compliance with contract specifications and to provide a guide to the contractors of the potential for noise or light levels to exceed the applicable QoLPS criteria at nearby receptors. In addition, the LDOC will conduct monitoring of certain water quality parameters to verify compliance with contract specifications. Based on the work area monitoring results, the contractors are to implement control strategies as appropriate. This work area monitoring should not be considered as monitoring to assess or verify achievement of the EPS, QoLPS, or WQ Requirements.

SECTION 7

REPORT ON 2014 LANDLOCKED AREA ACTIVITIES

In accordance with Section 5.5 of the revised SOW, within 30 days of the end of work activities for the 2014 season – i.e., 30 days after completion of dredging, backfilling, capping, shoreline reconstruction/stabilization, and shipment of all processed sediment for that season – GE will submit to EPA an annual report on those activities. That report is described in Section 7 of the 2014 RAWP and will include the information specified for that report in Section 5.4 of the 2014 PSCP, along with record drawings and a certification that the 2014 DQAP was followed. The annual report submitted for the 2014 season will include a description of the dredging and associated activities within the Landlocked Area and will provide the required information, recording drawings, and certification for the activities in that area.

In addition, a description of the work conducted in the Landlocked Area in 2014 will be included in the final Remedial Action Report to be submitted at the conclusion of Phase 2 in accordance with Paragraph 57.b of the CD.

SECTION 8

REFERENCES

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ATTACHMENT 1

DREDGING OPERATIONS TEST AND INSPECTION TABLES

Table A1-1 Landlocked Dredging Operations Inspections and Tests

DREDGING

Inspection Schedule				
Inspection Parameter	**Specification Reference**	**Inspection Method**	**Minimum Inspection Frequency**	**Acceptance Criteria**
Water quality	Section 13805	Visual observations for turbidity plume, floatables or sheen	Daily during each shift by visual observations	Per contract specifications
(Note: The above is contractor operational monitoring, not compliance monitoring under Resuspension Performance Standard.)				
Bucket closure	Section 13804	Operator observation and limit switch monitor	Ongoing throughout dredging via operator and inspector observations	To the extent possible, complete closing of the dredge bucket before it is lifted from the river bottom, unless prohibited by debris.
Dredge positioning	Section 13804	Operator observation of in-cab monitor	Ongoing throughout dredging via real time kinematic differential global positioning system (RTK GPS)	No dredging outside project limits
Heavy equipment inspection	01350 1.03 I 1.14 C	Visual	Daily	No leakage of liquids observed
Crane inspection	Section 01350 1.03 D.4 N 1.14 C	Visual	Annual by qualified third party and daily (each shift) for QC	Annual Certificate of Compliance Per manufacturer requirements for safety and per specifications for quality (deficiencies)

Table A1-1 Landlocked Dredging Operations Inspections and Tests

DREDGING

Inspection Schedule				
Inspection Parameter	**Specification Reference**	**Inspection Method**	**Minimum Inspection Frequency**	**Acceptance Criteria**
Marine vessel inspection	Section 13897 1.03 A.2	Visual	Prior to Mobilization	Pre-mob: Certificate of Compliance Per Coast Guard and project specifications
RTK & GPS: Field Verification Calibration Check	Section 13804 2.01 B.5	Visual	Verify:30 days before equipment usage Calibrate: Daily	Per contract specifications and manufacturer's procedures
Night Work Lights	Section 13804 2.01 G	Visual	Each shift	Per manufacturer and project specifications
Anchor Systems Check	Section 13820 3.02 A	Visual	Daily: Prior to deployment	Per manufacturer requirements
Noise Management Reports	Section 02931 3.01 C	Decibel meter	Daily or per approved Noise Control Plan	Per contract specifications
(Note: The above is contractor operational monitoring, not compliance monitoring under Noise Performance Standard.)				
Light Management Reports	Section 02936 3.01 C	Light meter	Nightly or per approved Light Control Plan	Per contract specifications
(Note: The above is contractor operational monitoring, not compliance monitoring under Lighting Performance Standard.)				

Table A1-2 Landlocked Dredging Operations Inspections and Tests

DREDGING

Test Schedule				
Test Parameter	**Specification Reference**	**Test Method**	**Minimum Testing Frequency**	**Acceptance Criteria**
Dredging depths (elevations)	Section 13804	Post-dredge survey by third-party survey contractor	At completion of each CU	Required dredge depths (plus allowable over dredge depth)
Dredging extents (northings and eastings)	Section 13804	Post-dredge survey by third-party survey contractor	At completion of each CU	Required dredging extents

Table A1-3 Landlocked Dredging Operations Inspections and Tests

[Note: This table provides samples of required tests and inspections - confirmatory sampling is detailed in Phase 2 RAM QAPP]

BACKFILLING, CAPPING, AND PLACING ARMORING MATERIALS

Inspection Schedule				
Inspection Parameter	**Specification Reference**	**Inspection Method**	**Minimum Inspection Frequency**	**Acceptance Criteria**
Water quality	Section 13805	Visual observations for turbidity plume, floatables or sheen	Daily during each shift by visual observations	Per contract specifications
(Note: The above is contractor operational monitoring, not compliance monitoring under Resuspension Performance Standard. Remedial action monitoring crews will note in field records any significant visual contrast due to increased turbidity and cause if known.)				
Bucket positioning	Section 13721 & Section 13804	Operator observation of in cab monitor and limit records from Third-party survey contractor	Ongoing throughout via differential global positioning system (DGPS) system	No material placement outside project limits

Table A1-4 Landlocked Dredging Operations Inspections and Tests

[Note: This table provides samples of required tests and inspections - confirmatory sampling is detailed in Phase 2 RAM QAPP]

BACKFILLING, CAPPING, AND PLACING ARMORING MATERIALS

Inspection Schedule				
Inspection Parameter	**Specification Reference**	**Inspection Method**	**Minimum Inspection Frequency**	**Acceptance Criteria**
Backfill and cap layer depths	Section 02206 & Section 13721	Multi-beam bathymetric surveys	Post-backfill/cap surveys completed after placement in each CU	Meet layer and thickness requirements (plus allowable over placement)
Topsoil and Granular Material Types “1”, “2”, “N”, “O”, “P” & “Q”	Section 02206 2.02	Site Visual Inspection	Every Two Days (during time of delivery)	Prior to delivery and placement, the material will not exhibit any physical or other characteristics that indicate that the material has been modified by the addition of man-produced chemicals or contains other materials that do not meet requirements of the contract specifications.

Table A1-5 Landlocked Dredging Operations Inspections and Tests

BACKFILLING, CAPPING, AND PLACING ARMORING MATERIALS

Test Schedule				
Test Parameter	**Specification Reference**	**Test Method**	**Minimum Testing Frequency**	**Acceptance Criteria**
Tests for backfill/cap materials gradation by weight (per Specification 02205 Part 2.02)				
Granular Materials Type "1" & "2"	Section 02206 2.02	ASTM C136	Once every 5,000 tons initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Gradation criteria from Specification 02206 2.01 A, B
Granular Materials Type "1" & "2"	Section 02206 2.02	DRO/TPH Analysis DRO 8015	Once every 5,000 tons initial (more or less frequent at direction of CM based on visual inspection of material)	Acceptance criteria is non-detect
Granular Materials Type "2" with TOC"	Section 02206 2.02	ASTM D2974	Once every 5,000 tons initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Gradation criteria from Specification 02206 2.01 C

Table A1-5 Landlocked Dredging Operations Inspections and Tests

BACKFILLING, CAPPING, AND PLACING ARMORING MATERIALS

Test Schedule				
Test Parameter	**Specification Reference**	**Test Method**	**Minimum Testing Frequency**	**Acceptance Criteria**
Granular Materials Type "1" & "2"	Section 02206 2.02	DRO/TPH Analysis DRO 8015	One test pit with 5 point composite at a depth of 5 feet or greater per 10,000 sq feet of area to be mined.	Acceptance criteria is non-detect
Topsoil (Physical test only)	Section 02206 2.02	ASTM D422	Once per 1,000 cy initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Gradation criteria from Specification 02206 2.01 I
Granular Materials Type "5" (Blend of Type 2 and topsoil)	Section 02206 2.02 B	ASTM D2974	Once per 1,000 cy initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Minimum pre-placement TOC of 2.0 percent, with a maximum of 5.0 percent TOC

Table A1-5 Landlocked Dredging Operations Inspections and Tests

BACKFILLING, CAPPING, AND PLACING ARMORING MATERIALS

Test Schedule				
Test Parameter	**Specification Reference**	**Test Method**	**Minimum Testing Frequency**	**Acceptance Criteria**
Granular Materials Type "N"	Section 02206 2.02 B	ASTM C136	Once every 5,000 tons initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Gradation criteria from Specification 02206 2.01 E 703 NYSDOT, 2008
Granular Materials Type "O", "P"	Section 02206 2.02 B	ASTM C136	Once every 5,000 tons initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Gradation criteria from Specification 02206 2.01 F, G 620 NYSDOT, 2008
Granular Materials Type "Q"	Section 02206 2.02 B	ASTM D2974 620 NYSDOT, 2008	Once every 5,000 tons initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Gradation criteria from Specification 02206 2.01 H

Table A1-5 Landlocked Dredging Operations Inspections and Tests

BACKFILLING, CAPPING, AND PLACING ARMORING MATERIALS

Test Schedule				
Test Parameter	**Specification Reference**	**Test Method**	**Minimum Testing Frequency**	**Acceptance Criteria**
Backfill/cap materials tests for chemical constituents (per Specification 02206), including laboratory analysis for PCBs, pesticides, VOC, SVOC, herbicides, TAL metals, cyanide, TOC				
Granular Materials Type "1" & "2"	Section 02206 2.02 C & D	EPA SW-846 Region 2 Methods: 8260B for TCL VOCs; 8270C for TCL SVOCs; 8082 for Pesticides / PCBs; 8150 for Herbicides; 6000 / 7000 for TAL Metals; and 9012 for Cyanide. Lloyd Kahn Method for TOC.	Once every 20,000 tons initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Acceptance criteria are that no organic compounds shall be detected and inorganics shall be within background range for Eastern United States as identified in Table 375-6.8(a) of the 6 New York Codes and Regulations (NYCRR), Part 375 (2006) with the exception of magnesium and calcium.
Granular Materials Type "2 with TOC" (In-Situ Sampling for TOC)	02206 2.02 D & 13721 3.03.G.	Lloyd Kahn Method, following the sampling and analysis procedure detailed in Attachment 6 of the 2014 DQAP.	Three homogenized cores at every eighth residual node (1 sample / acre)	Minimum in-situ post-placement TOC content is 2%.

Table A1-5 Landlocked Dredging Operations Inspections and Tests

BACKFILLING, CAPPING, AND PLACING ARMORING MATERIALS

Test Schedule				
Test Parameter	**Specification Reference**	**Test Method**	**Minimum Testing Frequency**	**Acceptance Criteria**
Topsoil (Multiple chemical analyses)	Section 02206 2.02.F.1	ASTM D4972	Once per 1,000 cy initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Acidity Range (pH): 5.5 to 7.5
Topsoil (cont'd)	02206 2.02.F.2	EPA SW-846 Region 2 Methods: 8260B for TCL VOCs; 8270C for TCL SVOCs; 8082 for Pesticides / PCBs; 8150 for Herbicides; 6000 / 7000 for TAL Metals; and 9012 for Cyanide. ASTM Method D2974 for TOC	Once per 1,000 cy initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Acceptance criteria as identified in Table 375-6.8(a) of the 6 NYCRR, Part 375 (2006) with the exception of magnesium and calcium.

Table A1-5 Landlocked Dredging Operations Inspections and Tests

BACKFILLING, CAPPING, AND PLACING ARMORING MATERIALS

Test Schedule				
Test Parameter	**Specification Reference**	**Test Method**	**Minimum Testing Frequency**	**Acceptance Criteria**
Granular Materials Type "N", "O", "P"	Section 02206 2.02 C & D	EPA SW-846 Region 2 Methods: 8260B for TCL VOCs; 8270C for TCL SVOCs; 8082 for Pesticides / PCBs; 8150 for Herbicides; 6000 / 7000 for TAL Metals; and 9012 for Cyanide. Lloyd Kahn Method for TOC.	Once every 20,000 tons initial (more or less frequent at direction of CM based on visible variations in material characteristics)	Acceptance criteria are that no organic compounds shall be detected and inorganics shall be within background range for Eastern United States as identified in Table 375-6.8(a) of the 6 NYCRR, Part 375 (2006) with the exception of magnesium and calcium. [Part 375]

Notes:

1. Technical Specification: , Section 13804 (Dredging); , Section 13721 (Landlocked Area Backfilling/Capping) and 13898 (Shoreline Stabilization).
2. QC Testing will be performed by Contractors. Quality analytical source QA Testing by CM via CM's third party testing contractor.
3. Borrow soil must be from approved on-site borrow source with test results provided in Specification 02206. Any change in material must be consistent with approved material characteristics as determined by CM. New moisture content curves will need to be plotted for change in material.

APPENDIX A

PHASE 2 CONSTRUCTION PLAN FOR ISTHMUS TRANSLOAD AREA

APPENDIX B

PHASE 2 CONSTRUCTION PLAN FOR LANDLOCKED BARGE LOADING AREA

APPENDIX C

PHASE 2 DEMOBILIZATION AND RESTORATION PLAN FOR LANDLOCKED AREA (TO BE SEPARATELY SUBMITTED)