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Memorandum

To	Piper Peterson – EPA	Page	1
CC	Roy Kuroiwa, Stacy Heilgeist, Kym Anderson – Port of Seattle; Mary Mitchener – City of Seattle; Ben Starr - Integral		
Subject	Terminal-117 – Upland and Sediment NTCRA, Additional Bank Removal at South Park Marina		
From	Winston Chen, Anne Fitzpatrick – AECOM		
Date	March 6, 2014		

On behalf of the Port of Seattle, additional sediment removal is being proposed in the South Park Marina bank area (see Figure 1) associated with the Marina Removal Area in the project construction plans. We are requesting EPA's review and approval of this additional work.

Background. The limits of the original South Park Marina Removal Area is approximately 20 feet by 22 feet in size located near the northwest corner of the T117 project site, as shown on Figure 1 and the Construction Drawing C005 (Attachment 1). IMCO completed the sediment removal from this area using a vacuum truck in July 2013 per the construction plans and specifications (Specifications Section 02300, 3.02G [Attachment 2)] and Construction Drawing Sheet C005). The removal area has been covered with geotextile fabric and is awaiting riprap placement, per the Specifications. During our recent review of the historical analytical data (Attachment 3), we found that PCB concentration at station 99-G (15.3 mg/kg OC) was greater than the RvAL[1], but lower than Cleanup Screening Level (CSL, 65 mg/kg OC). However, station 99-G was not included in the specified Marina Removal Area boundary as was originally intended. The other nearby station 98-G (6.18 kg/kg OC < SQS) was used to define the extent of the additional removal area. As shown on Figure 1, the 99-G sample is located about 13 feet from the limits of original Marina Removal Area. Since there are no records to indicate why 99-G was not included in the original SPM Removal Area, it is assumed the absence of 99-G was an oversight.

Recent Observations. To confirm location of sample 99-G and current conditions, the Port surveyor located station 99-G on 2/13/14 based on the coordinates obtained from the T-117 engineering evaluation/cost analysis (EE/CA) maps. The location of the station is indicated by the yellow flag shown on the attached Photograph 1 included in Attachment 4 (Note: the survey was conducted during low tide at night). After the station 99-G was located, AECOM field representative performed a field observation of the bank conditions. As shown on Photographs 2, 3 and 4, the bank is covered with primarily large rocks with a small amount of gravel typically near the top of bank.

[1] The T117 sediment RvAL for PCBs is the same as the Washington State Sediment Quality Standard (SQS) of 12 mg/kg oc.

Additional Removal and Backfilling. The Port intends to perform additional removal to include station 99-G, by extending the original area to half of the distance between 98-G and 99-G (about 20 ft from the former boundary). The proposed additional SPM removal area is indicated on the attached site map (Figure 1).

This proposed additional removal will attempt to follow the same means and methods as specified in the construction plans and specifications. Exposed loose sediment accumulated within the interstitial openings of the riprap will be removed using a vacuum truck, as specified in the Specifications Section 02300, 3.02G and Construction Drawing Sheet C005 Note 5, or hand methods to achieve the same performance standard (such as hand shovel). Oil absorbent booms will be available adjacent to the work area for deployment as necessary when the field work is performed. In accordance with Construction Quality Assurance Plan (CQAP) – Attachment A: Quality Assurance Project Plan (QAPP), Section B1.2 Riverbank Confirmation Sampling Design (see Attachment 5), no sampling was required after the sediment was removed from the riprap voids in the Marina Removal Area. Accordingly, no sampling will be conducted after the sediment is removed in this expanded removal area.

This work will be performed at low tide while the area is not inundated by water. Coordinates of four corners of the additional removal area are provided in the attached site map (Figure 1). The contractor will stake out the corners prior to the removal work. The Port will observe the removal activities to ensure the removal is completed as specified. In accordance with the project plans and specifications, no confirmation samples will be collected after this additional removal is completed. The sediment removed from the area will be collected and analyzed for off-site disposal by the Port. One soil sample will be analyzed based on the same analytes as listed in the approved waste profile (i.e., Subtitle D) previously developed for the sediment removed from the Marina Removal Area. After the completion of the removal, the area will be overlaid with riprap protection with the materials specified in Specifications Section 02300, 2.03.

The Port plans to perform this work in March concurrent with placement of riprap on the North Bank but the final schedule will depend on low tides and the construction schedule provided by IMCO. Since this work is outside the project contract area, the Port will retain NRC Environmental to perform the work. The contractor will comply with all the requirements of the project specifications related to water quality, slope stability, and temporary erosion and sediment controls (TESC). The Marina has been notified of this pending work and is willing to accommodate our access to the removal area; the removal work is expected to take one working day.

If you have any questions concerning this request, please feel free to contact Winston Chen at (206) 403-4293 or Anne Fitzpatrick at (206) 403-4229 at AECOM. Thanks.

List of Figure and Attachments:

Figure 1 – Additional Marina Removal Area

Attachment 1 – T117 Cleanup Construction Drawing Sheet C005
Attachment 2 – T117 Cleanup Construction Specifications Section 02300
Attachment 3 – Map 1. T-117 Sediment Sample Locations (PCB mg/kg OC)
Attachment 4 – Photographs of South Park Marina Conditions
Attachment 5 – CQAP Attachment A: QAPP, Section B1.2 Riverbank Confirmation Sampling Design

V3 Last revised by WC on 3/6/14, reviewed by AGF on 3/6/2014; saved in AECOM/projectW/PoS/T117/corr/toEPA/2014/SPMremoval

South Park Marina

Lower Duwamish Waterway

Dredge Unit 3

North Bank

102-G
210 (µg/kg dw)

101-G
570 (µg/kg dw)

T117-SE-47-G
4000 (µg/kg dw)

T117-SE-76-G
1400 (µg/kg dw)

T117-SE-10-G
1200 (µg/kg dw)

T117-SE-89-G
660 (µg/kg dw)

100-G
59 (µg/kg dw)

T117-SE-73-G
260 (µg/kg dw)

T117-SE-08-G
1000 (µg/kg dw)

T117-SE-84-G
380 (µg/kg dw)

98-G
118 (µg/kg dw)

99-G
280 (µg/kg dw)

1
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4

-2
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8
10

09
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E

Legend

SQS/CSL categories for PCBs at locations where PCBs were analyzed

- > CSL, detect
- > SQS and ≤ CSL, detect
- ≤ SQS, detect and non-detect
- Expanded Marina Point
- Top of Bank
- Dredge Units
- Bathymetric Contour (ft MLLW)
- Expanded Marina Removal Area (Proposed)
- Marina Removal Area (Per Construction Drawing)
- Overwater Structure
- T-117 Boundary
- Grid Cells
- Approximate LDW Shoreline

Additional Marina Removal Area Coordinates

Point #	Easting	Northing
1	1275084	195816
2	1275098	195830
3	1275099	195803
4	1275112	195816

Map ID	Total PCBs (µg/kg dw)	Total PCBs (mg/kg OC)
98-G	118	6.18
99-G	280	15.3

0 10 20 40 Feet

Notes:
1. SQS value of 240 µg/kg dw based on conversion of 12 mg/kg oc to a dry weight value using 2% TOC.
2. SQS=12 mg/kg OC, CSL=65 mg/kg OC.

AECOM

T-117 CLEANUP
SEDIMENT AND UPLAND AREAS

ADDITIONAL MARINA REMOVAL AREA

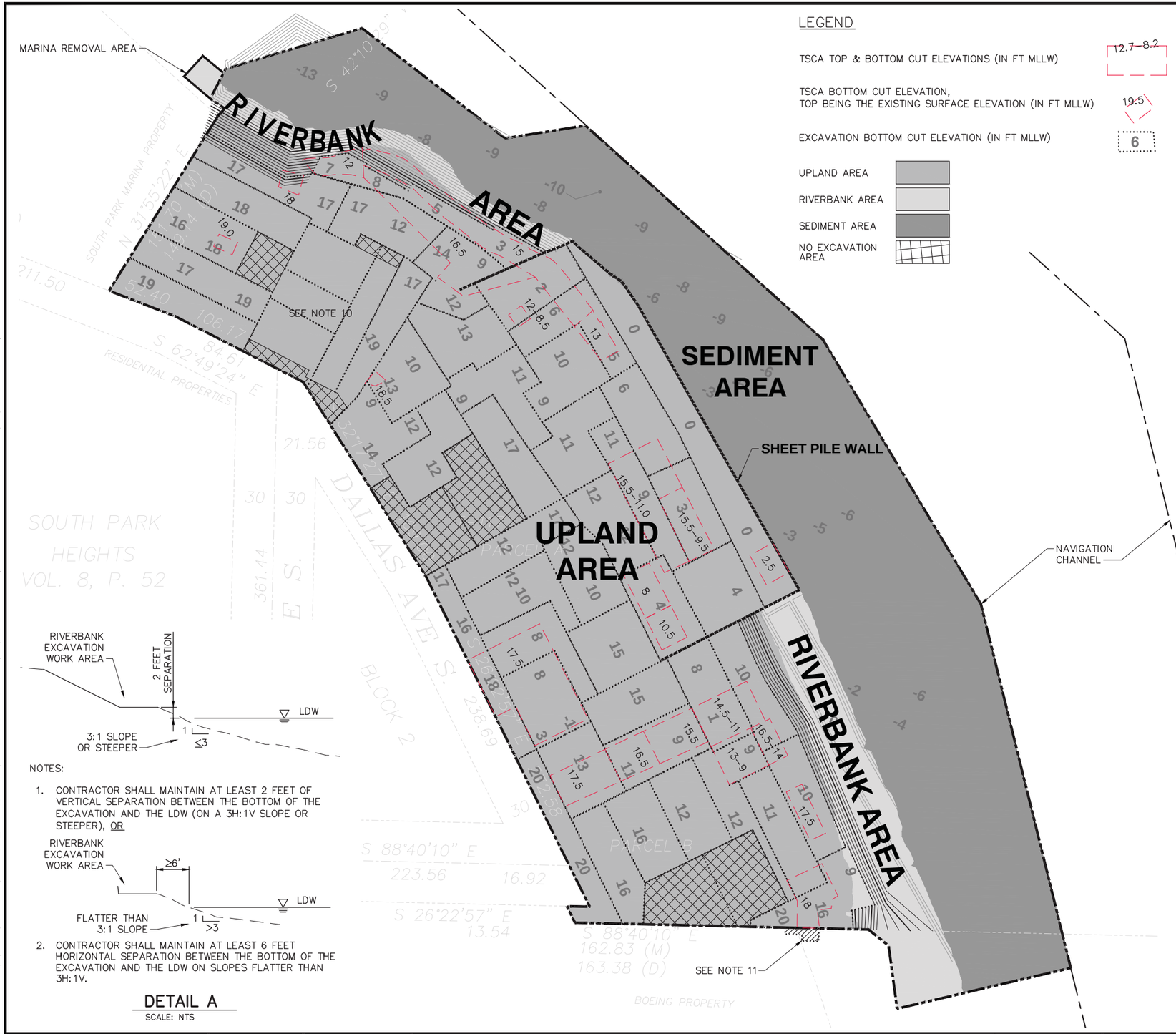
Date: 3/6/2014 | DRWN:mvi/sea | Revision: 0 | Project No: 6028925 | **FIGURE 1**

Path: P:\ENV\PROJECTS\W\Port of Seattle\T-117 Cleanup Oversight\900-CAD-GIS\AECOM\MXD\SouthparkMarinaRemovalv2.mxd

Attachment 1

T-117 Cleanup

Construction Drawing Sheet C005



LEGEND

TSCA TOP & BOTTOM CUT ELEVATIONS (IN FT MLLW) — 12.7–8.2

TSCA BOTTOM CUT ELEVATION, TOP BEING THE EXISTING SURFACE ELEVATION (IN FT MLLW) — 19.5

EXCAVATION BOTTOM CUT ELEVATION (IN FT MLLW) — 6

UPLAND AREA

RIVERBANK AREA

SEDIMENT AREA

NO EXCAVATION AREA

GENERAL CONSTRUCTION SEQUENCE NOTES:

1. TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) MEASURES – TESC MEASURES SHALL BE IN PLACE PRIOR TO ANY GROUND BREAKING ACTIVITIES WITHIN THAT PARTICULAR REMOVAL AREA. TESC WILL ALSO BE REQUIRED AROUND ANY POTENTIAL ONSITE HAUL ROUTE THAT WILL BE ACTIVE DURING A PARTICULAR REMOVAL AND ANY SOIL/SEDIMENT STOCKPILING AND LOADING AREA THAT WILL BE ACTIVE AND ANY OTHER AREAS THAT ARE REQUIRED TO COMPLY WITH ALL APPLICABLE REGULATIONS. TSCA SOIL ON THE RIVERBANK NEAR THE CENTER OF THE SITE SHALL ONLY BE REMOVED AFTER THE SHEET PILE WALL HAS BEEN CONSTRUCTED.
2. CONTRACTOR SHALL COMPLETE THE EXCAVATION IN UPLAND, RIVERBANK, AND SEDIMENT AREAS TO THE EXTENT AND DEPTH AND LIMITS SHOWN ON DRAWINGS AND WITHIN THE TIME PERIODS PROVIDED IN THE CONTRACT DOCUMENTS.
3. UPLAND AREA TSCA REMOVAL – SOIL FROM THE TSCA REMOVAL AREAS WILL REQUIRE SPECIAL HANDLING AND TRANSPORTATION AND SHALL NOT BE INTERMINGLED WITH ANY OTHER WASTE STREAMS. SEE THE PROJECT SPECIFICATIONS FOR HANDLING REQUIREMENTS. THE CONTRACTOR SHALL DEVELOP THE REMOVAL SEQUENCE IN THE RAWP.
4. RIVERBANK AREA REMOVAL – THIS AREA INCLUDES SOIL ON THE RIVERBANK STARTING AT +11.3 FT MLLW, EXTENDING DOWN THE SLOPE AND INTO THE TIDAL AREA TO +2 FEET MLLW AND WATERWARD OF SHEET PILE. THE SOIL/SEDIMENT FROM THIS ZONE SHALL BE REMOVED USING LAND–BASED EQUIPMENT DURING PERIODS OF LOW TIDES. A 2–FT VERTICAL (ELEVATION IN FT MLLW) OR A 6–FT HORIZONTAL SEPARATION WILL BE REQUIRED BETWEEN THE TIDE LEVEL AND THE EXCAVATION ACTIVITY (SEE DETAIL A). THE WORK AREA SHALL BE STABILIZED WITH TEMPORARY EROSION PROTECTION BEFORE THE TIDE LEVEL RISES AND INUNDATES THE EXPOSED WORK AREA. TEMPORARY EROSION PROTECTION IS REQUIRED TO CONTROL EROSION OF THE REMAINING BANK MATERIAL AND TO ACHIEVE WATER QUALITY REQUIREMENTS. THE RAWP SHALL DEMONSTRATE HOW THE WORK WILL BE EXECUTED INCLUDING ALLOWING THE ENGINEER TO COLLECT CONFIRMATION SAMPLES AND PLACEMENT OF EROSION PROTECTION PRIOR TO TIDAL INUNDATION. THE CONTRACTOR SHALL MAXIMIZE THE AMOUNT OF SOIL/SEDIMENT THAT CAN BE REMOVED USING THIS APPROACH.
5. RIVERBANK REMOVAL – MARINA REMOVAL AREA – BANK SEDIMENT BUILDUP BETWEEN THE ARMOR WITHIN THE INTERSTITIAL OPENINGS OF THE RIPRAP WILL BE VACUUMED FROM BETWEEN THE ARMOR WITHOUT DESTABILIZING THE BANK. WORK WILL BE COMPLETED BETWEEN JUNE 15 AND SEPTEMBER 2013, OUTSIDE OF THE IN–WATER WORK WINDOW. ALL WORK WILL BE COMPLETED AT LOW TIDE WHEN THE AREA IS NOT INUNDATED BY RIVER WATER TO PREVENT RELEASE OF SEDIMENTS TO THE WATER COLUMN DURING WORK. THE INTAKE END OF THE VACUUM, OR EQUIVALENT, SHALL BE ABOVE THE TIDE LEVEL AT ALL TIMES DURING WORK. FOLLOWING COMPLETION OF THE MARINA BANK REMOVAL, THIS AREA WILL BE BACKFILLED WITH A SAND AND GRAVEL MIXTURE IN THE INTERSTICES.
6. THE PROPOSED WORK HOURS SHALL BE FROM 7:00am TO 7:00pm, MONDAY THROUGH FRIDAY. WORK IN THE SEDIMENT AREA MAY ALSO OCCUR ON SATURDAYS AND/OR SUNDAYS DUE TO THE NEED TO WORK DURING THE IN–WATER WORK WINDOW. SIXTEEN–HOUR OR 24–HOUR WORK DAYS MAY BE USED TO COMPLETE TIDE DEPENDENT ACTIVITIES. THIS WORK SHALL COMPLY WITH THE CITY OF SEATTLE NOISE ORDINANCE AND OTHER CITY, COUNTY, AND STATE ORDINANCES AS WELL AS THE WATER QUALITY MONITORING PLAN. THE CONTRACTOR SHALL NOTE THAT THE GREATEST NUMBER OF DAYTIME LOW TIDES OCCUR DURING THE MONTHS OF JUNE, JULY, AUGUST AND SEPTEMBER.
7. RIVERBANK AREA REMOVAL – SOIL/SEDIMENT GENERATED BY THE RIVERBANK AREA WORK ACTIVITY MAY BE STAGED UPLAND FOR LOADING ONTO WASTE DISPOSAL TRUCKS. THE CONTRACTOR SHALL CONSIDER THIS APPROACH DURING DEVELOPMENT OF THE RAWP AND PROVIDE A DETAILED SCHEDULE FOR THIS REMOVAL EFFORT IN THE RAWP THAT COINCIDES WITH LOW TIDES. THE RIVERBANK REMOVAL INCLUDES THE ENTIRE MARINA REMOVAL AREA.
8. UPLAND AREA REMOVAL – THE REMOVAL AREA INCLUDES ALL OF THE UPLAND AREA LANDWARD OF THE RIVERBANK REMOVAL AREAS AND ALL CONTAMINATED SOIL LANDWARD OF THE SHEET PILE WALL. THIS AREA SHALL BE REMOVED AND BACKFILLING COMPLETED PRIOR TO OCTOBER 31, 2013. HYDRO SEEDING SHALL BE COMPLETED BY OCTOBER 1. THE UPLAND REMOVAL WORK MAY OVERLAP, COINCIDE OR BE SEQUENTIAL WITH THE RIVERBANK REMOVAL.
9. SEDIMENT AREA REMOVAL – ALL IN–WATER REMOVAL SHALL OCCUR BETWEEN DECEMBER 1, 2013 AND FEBRUARY 15, 2014.
10. SOME REMOVAL WILL BE REQUIRED BELOW THE NORTH BUILDING. PRIOR TO STARTING EXCAVATION ACTIVITIES IN THIS AREA THE CONTRACTOR SHALL ALLOW ENGINEER ACCESS TO PERFORM SAMPLING WITHIN THE BUILDING FOOTPRINT.
11. SOIL REMOVAL WITHIN THIS AREA IS 1.5 FEET BELOW THE CURRENT GROUND SURFACE.

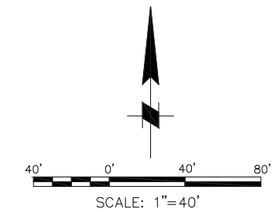
NOTES:

1. CONTRACTOR SHALL MAINTAIN AT LEAST 2 FEET OF VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE EXCAVATION AND THE LDW (ON A 3H:1V SLOPE OR STEEPER), OR

2. CONTRACTOR SHALL MAINTAIN AT LEAST 6 FEET HORIZONTAL SEPARATION BETWEEN THE BOTTOM OF THE EXCAVATION AND THE LDW ON SLOPES FLATTER THAN 3H:1V.

DETAIL A

SCALE: NTS



SCALE: 1"=40'

File: P:\7405–01 PortSeattle T117 Cleanup\CADD\Submittals\117–1301_Final–Submittal\117130100C005; Plotted: 10/22/2012 1:17 PM by CORCORRAN, DARWIN; Saved: 10/22/2012 7:20 AM by DCORCORRAN

CRETE CONSULTING, INC.

moffatt & nichol

PROJECT ENGR./ARCH:	MGB
DESIGNER:	
DRAWN BY:	CJIC
SCALE:	AS NOTED
DATE:	10/19/2012
CHECKED BY:	JCS
CHECKED/APPROVED BY:	MGB

MICHAEL G. BAER — STATE OF WASHINGTON — 30698 — REGISTERED PROFESSIONAL ENGINEER — 10/19/12

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT MANAGER:	
PROJECT ENGINEER:	
DESIGN ENGINEER:	
DRAFTER:	
SCALE:	
DATE:	
CHECKED/APPROVED BY:	

Port of Seattle
MARINE FACILITIES

PROJECT: TERMINAL 117 CLEANUP
SEDIMENT & UPLAND AREAS

SHEET TITLE: CONSTRUCTION SEQUENCE PLAN

WORK ORDER NO.	102365
CONSULTANT'S NO.	
PORT OF SEATTLE NO.	117-1301 C005

Attachment 2

T-117 Cleanup

Construction Specifications Section 02300

PART 1 GENERAL

1.01 SUMMARY

A. This section includes furnishing transportation, labor, materials, equipment, and incidentals necessary to perform excavation, handling, and disposal of Subtitle" C" and Subtitle" D" contaminated upland and riverbank soil and subsurface debris as shown on the Drawings and described in these specifications. This work includes soil removed from the riverbank adjacent to the South Park Marina (Marina) property. Removal of contaminated soil on the riverbank will require work during low tide periods so that river water does not inundate the work area.

B. This section also includes furnishing transportation, labor, materials, equipment, and incidentals necessary to perform re-grading and backfilling of the site and placement of riprap as described in these specifications and shown on the Drawings.

C. Excavation of the upland and riverbank will include removal of soil, sediment, and associated timbers and debris to the limits shown on the Drawings. Subsurface debris encountered in the excavated soil will not be segregated, but may require modification (typically size limitations as dictated by the disposal facility) to make the debris suitable for disposal with the soil. Excavated material will be temporarily stockpiled on site (as necessary) in accordance with the specifications in Section 02114 Stockpiling and Loading of Contaminated Soil and will be disposed off-site in accordance with the specifications in Section 02111 Waste Material Disposal.

1.02 REFERENCES

A. Washington State Department of Transportation (WSDOT) - Standard Specifications for Road, Bridge, and Municipal Construction-2012

B. Washington State Department of Transportation (WSDOT) – Materials Manual M 46-01.13, last revised 2012.

1.03 SUBMITTALS

A. The Contractor shall submit an Earthwork Plan as part of Section 01400 Removal Action Work Plan that documents the proposed approaches, equipment, means, and methods of accomplishing the excavation, handling, and disposal of soil and associated subsurface debris. The Plan shall include the sequencing approach to the sediment, riverbank, and upland removal parts of the work.

1. The Earthwork Plan shall specify the approaches to the excavation of the riverbank and the upland soil and associated debris. The Plan shall address the safe handling of contaminated materials and maintaining close tolerances on the excavation limits shown on the Drawings. The plan shall include details on the riverbank removal that define the approach and timing of the work including proposed equipment, estimated production rate(s), and proposed erosion control with sufficient detail to allow agency

and Engineer evaluation of the proposed plan. The plan shall also include contingent approaches that will be enacted to maintain the project schedule if required.

2. The Drawings identify confirmation sampling grid cells that must be sampled by the Port to determine if cleanup goals have been met. The Earthwork Plan shall be developed to sequence the work to coincide with this sampling protocol and clearly indicate how areas of excavation will be completed without re-contaminating areas that have already been removed to grade .

3. The Earthwork Plan shall describe the Contractor's equipment, means, and methods for excavation of the riverbank and upland soil and shall include the sequencing of the work.

B. The Contractor shall submit daily excavation reports to the Engineer as part of the Contractor's Daily Construction Report. Forms to be used shall be submitted to the Engineer for approval prior to use, see Section 01400 Removal Action Work Plan. Daily excavation reports are required until all upland and riverbank excavated materials have been disposed of at the approved off-site disposal facility.

C. Submit test results prior to importing any backfill material on the site, one test for every source of backfill material, and each time the material source is deemed to change. Each sample shall be representative of the current production and stockpile being supplied to the site. The test data will be submitted to EPA by the Engineer and EPA approval is required prior to import of any backfill material.

D. Contractor shall submit three samples of a geotextile fabric to be placed as an indicator layer between the excavated site grade or onsite backfill grade (in those areas where onsite backfill is placed) and the imported backfill according to the fill requirements of 3.03 of this specification.

1.04 DEFINITIONS

A. Subtitle "C" Waste includes all soil with total PCB concentrations exceeding the Toxic Substance Control Act Criteria (40 CFR 761) of 50 mg/kg (TSCA level soil). The TSCA level soil shall be separated during the excavation process, maintained in completely separate stockpiles and disposed of as outlined in Section 02111 Waste Material Disposal. Excavation limits for TSCA level soils are shown on the Drawings.

B. Subtitle "D" Waste is defined from a regulatory standpoint in Section 02111. Subtitle "D" waste includes all non-TSCA level soil, sediment, and debris removed from the site except for demolished surface materials that can be recycled or reused.

1.05 JOB CONDITIONS

A. Information for subsurface explorations performed at the site is contained in The Appendices. Contractor shall make their own evaluation of the data to determine how to construct the project.

B. Existing Utilities: The Contractor shall locate existing underground and aboveground utilities in the area of the Work. Those utilities which are to remain shall be adequately protected from damage. The Contractor shall make arrangements with all utility providers that will be affected by earthwork activities and shall design site activities (shoring, dewatering) to account for the utilities. Contractor coordination with Seattle City Light will be required to relocate a guy wire that exists on the site near the entrance gate. The Contractor will be required to coordinate with Seattle City Light for relocation of the guy wire (up to 2 times) so the excavation is completed as designed and the guy wire is ultimately installed back at its original location (within the existing easement) when the restoration is complete. Seattle City Light costs for relocating the guy wire will be paid on a force account basis, all other costs associated with this work are the responsibility of the Contractor and considered incidental to the project.

C. Debris will be common in excavated upland and riverbank soil. Debris encountered may include (but not be limited to) timbers, concrete debris, roofing tar and materials, concrete foundations, concrete/grout filled underground storage tanks, utilidor material, scrap metal, and plastic debris. These items shall be disposed of as contaminated Subtitle “C” or “D” waste depending on if the debris is encountered in an area designated as Subtitle “C” or “D” waste. Encountering such obstructions shall not be the basis for extra payment. These item costs are considered incidental to the contract and are considered to be included in the Contract Bid item for the appropriate soil removal area.

D. Onsite monitoring wells shall be decommissioned in accordance with Section 02522 Monitoring Well Decommissioning and Protection prior to any earthwork activities.

E. Excavated soil and associated debris may be temporarily stockpiled (as deemed necessary by the Contractor) on site in accordance with Section 02114 Stockpiling and Loading of Contaminated Soil.

1.06 ENVIRONMENTAL PROTECTION

A. The Contractor shall provide and maintain during the life of the Contract, environmental protective measures in accordance with Section 01631 Pollution Prevention Planning and Execution, Section 02223 Decontamination, Section 02270 TESC Planning and Execution, and other applicable Contract provisions. The measures shall include, but not be limited to, erosion control, vehicle decontamination, and spill response.

B. It is possible that disturbance of historical Native American materials may occur as a result of upland excavation operations. The excavation crew shall attend a 1-hour onsite orientation held by the site Archaeologist (retained by the Port) where

personnel will be made aware of the potential to discover cultural resources within the upland and riverbank removal areas. The Contractor will be made aware of their responsibilities during monitoring by the site Archaeologist and their obligations in the case of an inadvertent discovery. If any archaeological resources are discovered during removal, the Contractor shall cease excavation and notify the Engineer. Contractor shall allow access to work areas as requested by the Engineer to allow inspection for cultural resources.

C. The Contactor shall inspect upland excavation equipment each day before work begins for leaking hydraulic fluid. Any equipment found to be leaking during the daily inspections, or at any time during the work activity shall be removed from service immediately until the leak is repaired.

D. The Contractor shall sequence the excavation so that areas that have been removed to grade are not re-contaminated by other site activities, and that access to active removal areas is maintained until confirmation sampling has been completed and an area has been determined to be in compliance with cleanup goals by the Engineer. The Contractor shall clearly identify areas that have been accepted as meeting the cleanup goals so construction activities do not re-contaminate the clean areas.

PART 2 PRODUCTS

2.01 TEST RESULTS

A. Submit test results prior to importing any backfill material to the site, in accordance with:

1. Sieve analyses and comparison to the WSDOT Standard for the imported material
2. Moisture Density Curve for Gravel Borrow in accordance with ASTM D1557 (Modified Proctor)
3. Compliance of Riprap with the specifications outlined in Section 2.05 B
4. Imported backfill material shall be naturally occurring or natural material blended to achieve gradation requirements listed herein. The backfill shall not contain recycled material of any type and shall not be from an industrial site.

2.02 GRAVEL BORROW

A. Aggregate for Gravel Borrow shall consist of granular material, either naturally occurring or blended, and shall meet the following requirements for gradation:

SIEVE SIZE (INCHES)	PERCENT PASSING
4	99 – 100

2	70 – 100
No. 4	50 – 80
No. 40	30 max.
No. 200	7.0 max.*
Sand Equivalent	50 min.

Notes: All percentages are by weight. * for backfill in wet conditions the fines content (material passing No. 200) shall be limited to 5.0%.

B. Chemical Acceptance Criteria: Contractor shall provide documentation of the chemical composition to demonstrate that the proposed backfill is free from environmental contamination. Backfill analytes, reporting limits, methods, and criteria are:

Analyte	Unit	Analytical Method	Reporting Limit	Criteria
PCB Aroclors	µg/kg dw	EPA 8082	4	ND
Semi-volatile organic compounds (SVOCs)	µg/kg dw	EPA 8270	20[a]	ND
Dioxin/Furan TEQ	ng/kg dw	EPA 1613	1	4
Arsenic	mg/kg dw	EPA 6010	5	7.3
Cadmium			0.2	2.5
Chromium			0.5	130
Copper			0.2	195
Lead			2	225
Silver			0.3	2
Zinc			1	205
Mercury	mg/kg dw	EPA 7471	.02	0.2
Diesel range hydrocarbons	mg/kg dw	NWTPH-Dx	5	ND
Lube oil range hydrocarbons			10	

Notes: ND = not detected at reporting limit; TEQ = toxicity equivalent.

[a] : most SVOCs, such as PAHs, have reporting limits of 20 ug/kg dw. Some SVOCs have higher reporting limits: 2,4-dimethylphenol – 35, 4-methylphenol – 35, benzoic acid – 400, bis(2-ethylhexyl)phthalate - 30, hexachlorobutadiene – 90, diethylphthalate – 50, pentachlorophenol – 200.

2.03 RIPRAP

A. Riprap shall be hard, sound, and durable material, free from seams, cracks, and other defects that tend to destroy its resistance to weather and it shall consist of

broken or processed rock. Riprap shall have a well graded structure that conforms to the following:

APPROXIMATE SIZE (INCHES)	PERCENT PASSING
18	100
16	80 – 95
12	50 – 80
8	15 – 50
4	15 max.

Note: Approximate size can be determined by taking the average dimension of the 3 axes of the rock: length, width, and thickness, by adding up the 3 individual dimensions and dividing by 3 to obtain the average.

B. Riprap must be visually accepted by the Engineer before it is placed. The Engineer may require that a load be dumped on a flat surface for sorting and measuring the individual rocks contained in the load.

C. Riprap shall also meet the following requirements:

TEST	REQUIRED RESULT
Specific Gravity (AASHTO T-85)	2.55 min.
Degradation Factor (WSDOT T-113)	15 min.
Freeze/Thaw (ASTM C666)	< 10%
Absorption (AASHTO T-85)	3% max.
Expansive Breakdown (15 day CRD C145)	< 8.5%
Los Angeles Wear, 500 Rev. (AASHTO T-96)	50% max.

2.04 QUARRY SPALLS

A. Quarry Spalls shall meet the requirements of WSDOT Section 9-13.6.

2.05 GEOTEXTILE FABRIC

A. Geotextile fabric shall be TenCate Mirafi 1120N, Layfield Environmental Systems LP12, or approved equivalent.

2.06 SAND

A. See Section 02325 Dredging for the complete requirements for imported sand.

PART 3 EXECUTION

3.01 GENERAL

A. Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared in accordance with Section 02220 Site Demolition.

B. The Contractor shall participate in training along with all workers performing excavation activities regarding the identification of cultural resources that may be uncovered during excavation. When the Contractor's excavation operations encounter possible artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the Engineer shall be notified.

C. If it is necessary to interrupt existing surface drainage, sewers, under-drainage, conduits, utilities, or similar underground structures not shown for removal, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. The Contractor shall at their own expense, satisfactorily repair or pay the cost of all damage to such facilities or structures which may result from any of the Contractor's operations during the period of the contract.

3.02 EXCAVATION

A. The Contractor shall conduct the Work in accordance with the EPA-approved final RAWP. The Work shall include excavation of the earth, sand, gravel, clays, or mixtures of the above and associated man-made debris common within the soil in the upland and riverbank, required to be removed as shown on the Drawings.

B. Remove all soil and associated debris within the removal prisms as identified on the Drawings or in areas identified by the Engineer.

C. Previous removal actions on the site occurred on the upland in 1999 and 2006 and on the riverbank in 2008 and 2011, as shown on the Drawings. The Contractor shall remove backfill placed in 2006 in the upland and riprap/ cobbles placed on the riverbank in 2008 and 2011 above the visual fabric layer taking care not to mix it with underlying soil. The Contractor shall stockpile and sample the 2006 backfill (minimum of two representative samples) to determine if it can be reused as clean backfill for the site. It must meet the chemical criteria in 2.02 B to be deemed acceptable for reuse as backfill. Contractor shall visually inspect the riprap placed in 2008 and 2011. Any debris, adhering soil, or visual evidence of contamination must be segregated from the riprap/cobbles, and disposed of, before the riprap/cobbles can be reused as backfill.

D. TSCA level soil shall be separated during the excavation process, maintained in completely separate stockpiles and disposed of as outlined in Section 02111 Waste Material Disposal.

E. The extent of soil excavation beneath the north building has not been adequately defined due to the presence of the building. This area also includes a heating oil tank which shall be abandoned and removed by the Contractor. This area will be defined by the Engineer after building deconstruction, and the information will be supplied to the Contractor for excavation. The Contractor must provide the Engineer access to the building footprint for sampling activities.

F. Excavated soil and associated debris may be temporarily stockpiled onsite in accordance with Section 02114 Stockpiling and Loading of Contaminated Soil and as outlined in the Soil Stockpile Plan included in the RAWP.

G. The Marina Removal Area for cleanup of the riprap-covered shoreline in the Marina is shown on the Drawings. Exposed sediment within the interstitial openings of the riprap shall be removed using a vacuum truck, or equivalent. The Contractor shall use small diameter hoses and receivers to minimize intake of larger diameter cobbles and allow access to the smaller interstitial openings in the existing riprap.

1. All Marina bank excavation shall be completed using land-based equipment.

2. Jetted water shall not be used to fluidize the sediment.

3. Marina bank excavation shall be completed between June 15, 2013 and September 30, 2013, outside of the in-water work window. All work shall be completed at low tide when the area is not inundated by river water to prevent release of sediment to the water column during work. The intake end of the vacuum, or equivalent, shall be above the tide level at all times during work.

4. The Engineer will observe the area as the removal is completed and may require the Contractor to modify the removal equipment/process (still using a vacuum truck) and the removal area as the process proceeds to achieve the cleanup goals of the site.

5. Following completion of the Marina bank excavation, the riverbank shall be overlaid with riprap protection according to the Backfill requirements in this Specification.

H. The riverbank excavation and backfilling (outside of the sheet pile wall) shall be completed while the area is not inundated by water. The Contractor shall comply with all the requirements of these Specifications as they relate to water quality, slope stability, and TESC.

1. Excavation of the riverbank material outside of the sheet pile wall shall be completed during low tides between June 15, 2013 and September 30, 2013.
2. All riverbank removal excavation shall be completed using land-based equipment.
3. A 2-ft vertical (elevation) or a 6-ft horizontal separation shall be required between the tide level and all excavation and backfill activity (outside of the sheet pile wall).
4. Contractor shall allow sufficient time to excavate bank material, survey the removal areas, allow for the Engineer to collect confirmation samples and place erosion control protection during one low-tide period while the area is not inundated by river water.
5. Contractor shall place temporary erosion protection over the exposed bank soil within the disturbed area prior to tidal inundation by river water. The Contractor shall use BMPs to limit erosion and to achieve water quality requirements. At a minimum, the erosion protection shall consist of geotextile fabric placed and anchored on the newly exposed surfaces. The Contractor shall determine if this minimum level of erosion protection is sufficient to limit erosion and protect water quality in accordance with the Water Quality Certification, and if not, shall install additional BMPs to limit erosion as necessary at no additional costs to the Contract. Geotextile fabric anchorages shall be in accordance with the manufacturer's recommendations and may consist of a temporary system until the Engineer indicates that the cleanup goals have been met for the area. After approval of the area by the Engineer, the Contactor shall install anchorages to keep the erosion protection in place until final finished filling and grading of the slope occurs.
6. Sampling will occur on three decision units in the north bank and three in the south bank (outside of the sheet pile wall). If sampling indicates that cleanup goals for the unit have not been met, the Contactor shall remove the erosion protection and complete additional removal to the levels indicated by the Engineer. Preparation of the area, additional removal, confirmation sampling, and re-establishment of the TESC on the area shall occur while the area is not inundated by river water during a single low tide cycle.
7. Contractor shall take steps to ensure slope stability during all excavation activities and periods of inactivity.
8. Backfill shall not occur until confirmation sampling is complete and a determination has been made by the Engineer that no additional removal is required.

9. The riverbank shall be constructed according to the requirements in this Specification and during periods when the riverbank is not inundated by water. It may be necessary to wait until dredging and sediment backfilling operations have been completed prior to finishing final backfilling and riprap protection of the riverbank slopes. The Contractor shall detail the intended backfill reconstruction sequence in the Earthwork Plan. The Contractor shall provide erosion protection of the slopes until final restoration is complete.

I. For grid cells that do not require confirmation sampling: Upon completion of upland and riverbank soil and associated debris excavation to the limits shown on the Drawings for the nine (9) grid cells that do not require sampling the Contractor shall:

1. Notification:

a. The Contractor shall notify the Engineer upon completion of excavation and demonstrate that the excavation configuration shown on the Drawings has been achieved via survey. The notification will not be considered "complete" without survey information that demonstrates the excavation has been completed in accordance with the lines and grades shown on the Drawings.

b. For the 9 confirmation grid cells that do not require sampling, the Engineer will notify the Contractor within 1 day (excluding Sundays and Holidays) of completion by the Contractor.

c. The Contractor shall be responsible for safety around open excavations and shall be responsible for backfilling the open excavations with clean backfill.

J. For grid cells that require confirmation sampling: Upon completion of upland and riverbank soil and associated debris excavation to the limits shown on the Drawings, the Engineer will conduct confirmation sampling within the upland soil grid cells and the riverbank units indicated on the Drawings to determine if the soil remaining at the base of each excavation meets the required cleanup goals.

1. Notification:

a. The Contractor shall notify the Engineer upon completion of excavation and demonstrate that the excavation configuration shown on the Drawings has been achieved via survey. The notification will not be considered "complete" without survey information that demonstrates that the excavation has been completed in accordance with the lines and grades shown on the Drawings.

b. For the confirmation grid cells and riverbank unit that do require sampling, the Engineer will notify the Contractor within 3 days

(excluding Sundays and Holidays) of a complete notification by the Contractor if the cleanup goals have been met each grid cell or riverbank unit.

(1) Six of the confirmation sampling grid cells will be tested for dioxins/furans which require more time for analysis than the other analytes. These 6 grid cells will be selected during the RAWP development process by the Port and the Contractor using criteria set forth by the EPA for grid cell sampling For these 6 confirmation grid cells, the Engineer will notify the Contractor within 10 days (excluding Sundays and Holidays) if the cleanup goals have been met within a grid cell..

2. Actions that will result from sampling include:

a. If the cleanup goals have been met within a grid cell or riverbank unit, it will be considered ready to backfill by the Engineer and shall be backfilled to the final site grades by the Contractor at a time they deem appropriate.

b. If the cleanup goals have not been met within a grid cell or riverbank unit, the Engineer will determine what additional depth of soil shall be removed from the excavation and inform the Contractor of the new required excavation elevation(s). The Contractor shall perform the additional removal and provide notification as described in this section. This process will continue until the site cleanup goals have been met.

3. The Contractor shall provide a safe entrance into the excavation for the Engineer to secure the confirmation samples and work with the Engineer to achieve the sample which may include providing an excavator with operator that can be used to reach to the bottom of the deeper excavations to obtain a sample.

4. The Contractor shall be responsible for safety around open excavations and shall be responsible for backfilling the open excavations with clean backfill.

3.03 EMBANKMENTS AND FILLS

A. The Contractor shall notify the Engineer one day (excluding Sundays and Holidays) before they begin to perform regrading of site soil so that the Engineer can observe the grading activities and the newly exposed soil as the grading proceeds. Contractor shall be responsible for observing and reporting visual impacts and debris to the Engineer. All regrading activities shall be observed by the Engineer and any debris or visually contaminated soil shall not be used as backfill.

B. Onsite material shall be used as backfill to balance out the fill on the site to achieve the final restoration grades only after confirmation sampling has demonstrated that site cleanup goals have been met in and around the area that will be the source of the onsite backfill. There are areas on the site where the planned excavation to remove contaminated material stops higher in elevation than the final restoration grades. Once the cleanup goals have been met in that area, the non-contaminated soil that will need to be removed to achieve the final site grades shall be re-used on the site in areas where the excavated site grade is below the final site grade, where there is no standing groundwater present, and where confirmation sampling has confirmed that no additional excavation will be needed. The site will be re-graded so there is a minimum of 12 inches of imported gravel borrow over all portions of the site.

1. Reused site soil may not be graded into excavation extending below the groundwater table. Any excavations with standing water must be filled with import gravel, after confirmation sampling has indicated that no additional excavation is necessary, until the gravel overtops the groundwater. Then re-graded soil may be used for additional backfill.

C. The Contractor shall place a geotextile fabric as an indicator layer between the excavated site grade or onsite backfill grade (in those areas where onsite backfill is placed) and the imported backfill. Geotextile shall be placed between the excavated (re-graded) site and imported backfill on all surfaces that are horizontal or sloping including sloping surfaces that remain after shoring is removed.

D. For areas behind the sheetpile wall, the Contractor shall place backfill as indicated in the drawings. Below the riprap sand shall be placed, See Section 02325 Dredging for performance requirements for sand.

E. The Contractor shall place material used for the construction of embankments and fills in horizontal layers upon earth which has been stabilized or otherwise approved by the Engineer for embankment construction. The following compaction methods shall be used:

1. For areas with standing water construct earth embankments and fills in successive horizontal layers not exceeding 2-foot lifts to above the level of standing water. A hoe-pack compactor shall be used over the entire area or at least 3 passes with a 10-ton vibratory compactor to a firm non-yielding surface.

2. For areas backfilled with regraded site soil, construct earth embankments and fills in successive horizontal layers not exceeding 1.5-foot thickness, at least 3 passes with a 10-ton vibratory compactor to a firm non-yielding surface.

3. For areas backfilled with gravel borrow, construct earth embankments and fills in successive horizontal layers not exceeding 8 inches in loose thickness. Compact each layer of the top 2 feet of embankment to 95% of

its maximum dry density, as determined by test method ASTM D-1557 (Modified Proctor) and each layer of embankment below the top 2 feet to 90% of the maximum dry density as determined by test method ASTM D-1557.

4. Carry the layers up full width from the bottom of the embankment or fill area. Compact the slopes of all embankments to the required density as part of the embankment compaction work. The backfill shall be compacted with modern, efficient compacting units satisfactory to the Engineer.

F. Prior to the placement of filter fabric for riprap slope, the bank shall be graded and dressed to eliminate any irregularities. Irregularities in the slope shall be filled with Gravel Borrow.

G. Place riprap bedding material (Gravel Borrow) in one operation in a manner to avoid displacing the underlying material or placing undue impact force on underlying materials and supporting subsoil. Place bedding in a manner to produce a resultant graded mass of stone with minimum voids. Placement of riprap bedding shall begin at the bottom of the slope and proceed upward.

H. Place riprap in one operation in a manner to avoid displacing the underlying material or placing undue impact force on underlying materials and supporting subsoil. Place riprap in a manner to produce a resultant graded mass of stone with minimum voids. Placement of riprap shall begin at the bottom of the slope and proceed upward.

3.04 COMPACTION CONTROL TESTS

A. Laboratory and field tests shall be performed in accordance with the applicable provisions of Section 01451 Quality Control; Testing Laboratory Services, to determine compliance with these specifications. Furnish soil samples suitable for the laboratory tests at no cost to the Port.

B. Compaction control density shall be at the specified percentage of the maximum density at optimum moisture content as determined by ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort, Methods A or B as applicable. Testing shall be performed at least once for each lift and at a minimum of one per 10,000 sf.

C. Field tests to determine in-place compliance with required densities as specified, shall be performed in accordance with ASTM D1556, D2167, or D6938.

D. Compaction test shall be completed by the Contactor and the results shall be provided to the Engineer daily as part of the Contractor's Daily Construction Report.

3.05 GRADING AND LEVELING

A. Non-paved areas (back slopes, fill slopes, landscape areas) shall be graded to a smooth and uniform appearance in accordance with the grades indicated on the Drawings.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. "Upland and Riverbank Subtitle "D" Waste" will be measured by the grades and lines shown on the drawings as demonstrated by certified survey.

1. No separate measurement will be made for stockpiling; modifying subsurface debris to make it suitable for offsite disposal; or loading, transporting, and disposing of soil and debris.

2. No separate measurement will be made for additional material that might be developed through sloping, benching, or sloughing that occurs on the site beyond the lines and grades shown on the Drawings.

B. "Upland and Riverbank Additional Subtitle "D" Waste" will be measured on a per cubic yard basis using a neat line volume based on the area of the required additional excavation, and a depth determined by the Engineer, and using the previous excavation bottom survey as a starting point for measurement.

1. No separate measurement will be made for stockpiling; modifying subsurface debris to make it suitable for offsite disposal; loading, transporting, and disposing of soil and debris; backfilling; or compaction of backfill.

C. "Upland and Riverbank Subtitle "C" Waste" will be measured by the grades and lines shown on the drawings as demonstrated by certified survey.

1. No separate measurement will be made for stockpiling; modifying subsurface debris to make it suitable for offsite disposal; or loading, transporting and disposing of soil and debris.

D. "Upland Re-Grading" will be measured by the site restoration lines and grades shown on the Drawings.

1. No separate measurement will be made for re-grading the site so the restoration contours are achieved.

2. No separate measurement will be made under this line item for imported backfill or additional volume beyond the lines and grades shown on the drawings if additional Subtitle D waste is removed from the site. Additional backfill is included under the additional excavation line item.

3. Item shall include all incidental work to achieve final site restoration excluding: fencing and gates.

E. "Riverbank Armor/Riprap" will be measured by ton based on certified weight tickets from delivery trucks (or barges). Present certified truck weight tickets to the Engineer at the time of delivery. No separate measurement will be made for filter fabric or bedding material placed on the riverbank slope; they are considered incidental to the work.

F. "Marina Removal Area" will be measured by each 4-hour duration for all labor, materials, and equipment required to provide selective removal of sediment in the Marina Removal Area as directed by the Engineer. The "Marina Removal Area" is shown on the drawings.

G. "Marina Soil Disposal" will be measured by ton based on certified truck weight tickets presented to the Engineer generated at the time of disposal for sediment removed from the Marina Removal Area.

H. "Marina Riprap Restoration" will be measured by ton based on certified weight tickets from delivery trucks for material to restore the Marina Removal Area. Present certified truck weight tickets to the Engineer at the time of delivery.

I. "SCL Relocation of Guy Wire – Force Account" will be on a Force Account basis in accordance with Document 0700 – General Conditions, Paragraph G-08.06. An estimated amount has been entered in the Schedule of Unit Prices.

4.02 PAYMENT

A. No separate payment will be made for the "Earthwork Plan" as required by this section. The cost for this portion of the Work will be considered incidental to the "Removal Action Work Plan" as described in 01400 – Removal Action Work Plan.

B. Payment for "Upland and Riverbank Subtitle "D" Waste" will be made at the contract lump sum price stated in the Schedule of Unit Price will be full compensation for furnishing all material, labor, equipment, and tools to excavate, haul and dispose of material including loading, hauling, temporary stockpiling and covering, disposal of the material at approved disposal facility, including all fees, permits and all incidentals to complete the work.

C. Payment for "Upland and Riverbank Additional Subtitle "D" Waste" will be made at the contract price per cubic yard as stated in the Schedule of Unit Prices and will be full compensation for furnishing all material, labor, equipment, and tools to excavate, haul and dispose of material and provide, haul, place and compact backfill. The unit price shall include loading, hauling, temporary stockpiling and covering, disposal of the material at approved disposal facility, including all fees, permits and all incidentals to complete the work.

D. Payment for "Upland and Riverbank Subtitle "C" Waste" will be made at the contract lump sum price stated in the Schedule of Unit Prices. The price shall be full compensation for furnishing all material, labor, equipment, and tools to excavate, haul and dispose of material including loading, hauling, temporary stockpiling and covering, disposal of the material at approved disposal facility, including all fees, permits and all incidentals to complete the work.

E. Payment for "Upland Re-Grading" will be made at the contract lump sum price stated in the Schedule of Unit Prices. The price shall be full compensation for furnishing all labor, equipment, materials, and incidentals necessary for the work required to achieve final site restoration including regrading as well as providing, hauling, placing and compacting backfill.

F. Payment for “Riverbank Armor/Riprap” will be paid for per ton as stated in the Schedule of Unit Prices. The price shall be full compensation for furnishing all labor, equipment, materials and incidentals required to provide, haul, and place the material as specified.

G. Payment for “Marina Removal Area” will be made at the contract unit price per 4-hr duration as stated in the Schedule of Unit Prices. The price shall be full compensation for furnishing all material, labor, equipment, and tools to excavate including all incidentals to complete the work.

H. Payment for “Marina Soil Disposal” will be made at the Contract unit price per ton as stated in the Schedule of Unit Prices. The price shall be full compensation for furnishing all material, labor, equipment, and tools to haul and dispose of material including loading, hauling, disposal of the material at approved disposal facility, including all fees, permits and all incidentals to complete the work.

I. Payment for “Marina Riprap Restoration” will be paid for at the Contract unit price per ton as stated in the Schedule of Unit Prices. The price shall be full compensation for furnishing all labor, equipment, materials, and incidentals required to provide, haul, and place the material as specified.

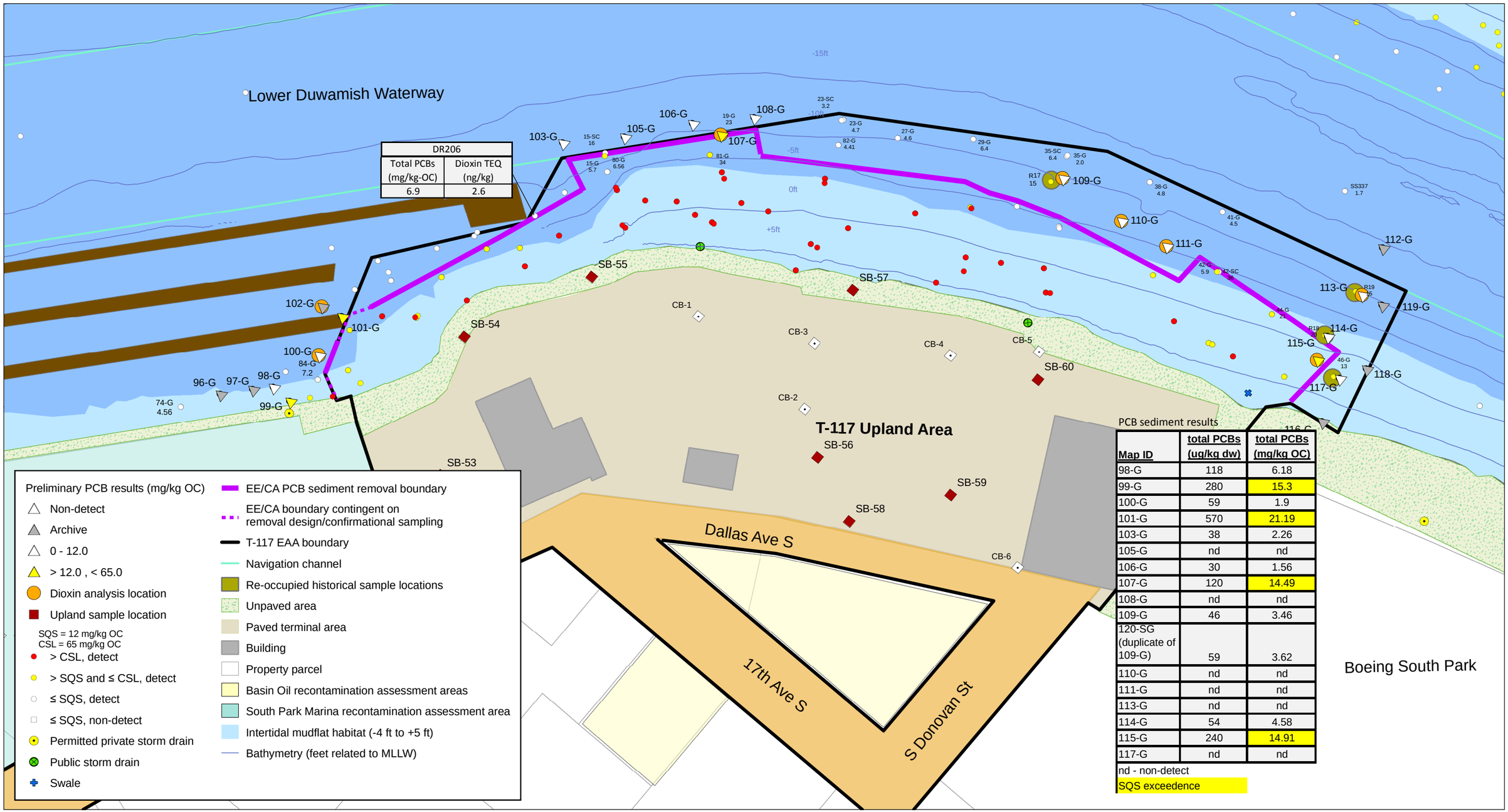
~~I.~~J. Payment for “Pile Driving – Unanticipated Obstructions” as stated in the Schedule of Unit Prices will be made on a Force Account basis in accordance with Document 00700 – General Conditions, Paragraph G-08.06 and shall be full compensation for Seattle City Light costs to relocate the guy wire that are at the specific direction of the Engineer.

End of Section

Attachment 3

Map 1. T-117 Sediment Sample Location (PCB mg/kg OC)

Prepared by Windward Environmental



PCB sediment results

Map ID	total PCBs (ug/kg dw)	total PCBs (mg/kg OC)
98-G	118	6.18
99-G	280	15.3
100-G	59	1.9
101-G	570	21.19
103-G	38	2.26
105-G	nd	nd
106-G	30	1.56
107-G	120	14.49
108-G	nd	nd
109-G	46	3.46
120-SG (duplicate of 109-G)	59	3.62
110-G	nd	nd
111-G	nd	nd
113-G	nd	nd
114-G	54	4.58
115-G	240	14.91
117-G	nd	nd

nd - non-detect
SQS exceedence

Wind Ward environmental LLC

0 100 200 Feet
0 30 60 Meters

N

Map 1. T-117 sediment sample locations (PCB mg/kg OC)

Prepared by KH 1:06/3/2008; MAP #3481; W:\Projects\03-08-12 T-117 (Malarkey)\Data\GIS\2008 EECA\Sediment boundary\3481 2008 sediment_upland sample locs

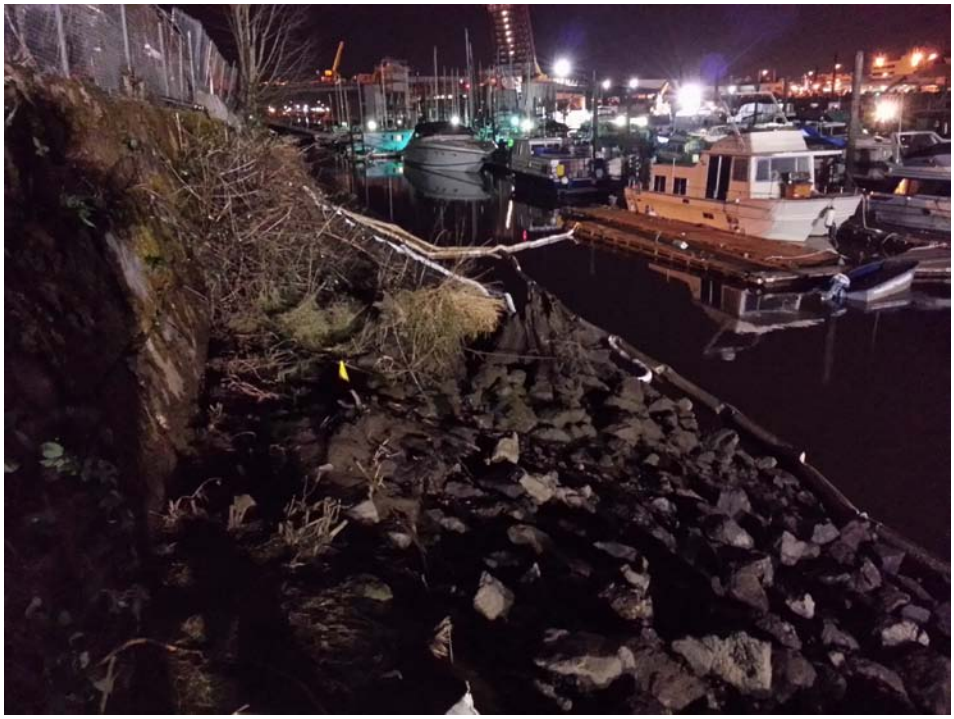
Attachment 4

Photographs of

South Park Marina Bank Conditions

Photograph 1: Yellow flag shows Station 99-G staked by the Port surveyor (photograph taken on 2/13/14).

Photograph 2: Conditions of South Park Marina Bank (photograph taken on 2/7/14). Station 99-G located immediately north of the tree stump (as indicated in Photograph 1).



Photograph 3: Conditions of South Park Marina Bank observed during low tide. Yellow flag indicates Station 99-G (photograph taken on 2/13/14).

Photograph 4: Conditions of South Park Marina Bank observed during low tide. Yellow flag indicates Station 99-G (photograph taken on 2/13/14).

Attachment 5

CQAP Attachment A: QAPP

Section B1.2 Riverbank Confirmation Sampling Design

Confirmation sample analyses for dioxins/furans shall focus on areas between the north and south buildings, over the entire nearshore/inland dimensions of that part of the Upland Area, and omitting grid cells where pre-excavation confirmation sampling has already occurred (nine samples, already part of the confirmation dataset). The designated dioxin/furan sampling area shall be subdivided into three approximately equal segments, north to south, following grid cell boundaries. Two grid cells in each of these three subareas shall have dioxin/furan analyses included in confirmation samples, for a total of six samples in the post-excavation dataset evaluated for dioxins/furans. Criteria for selection of grid cells for which dioxin/furan analyses will be performed shall include:

- At least 1 of the 6 grid cells selected shall be a grid cell where no excavations to meet RvALs are planned.
- The 2 selected grid cells in each subarea (and grid cells across subarea boundaries) shall not be adjacent or contiguous, to provide some degree of spatial coverage.
- The 2 selected grid cells in each subarea shall reflect different excavation elevations (minimum 3-ft difference).
- At least 2 of the 6 selected grid cells shall be locations where maximum total PCB concentrations (any depth, individual samples) were at least 100 mg/kg dw, that is 2 of the grid cells shall overlap TSCA removal areas.

In the event all of these criteria cannot be met, EPA will be consulted to review the selection of grid cells for additional dioxin/furan analyses. The selections of grid cells will also be largely based on Contractor sequencing because these grid cells must remain open for at least one week while samples are being analyzed.

Professional judgment and discussion with EPA will determine the prisms to be excavated further. It is unlikely that the entire Upland Area will be excavated at one time. It is anticipated that the Contractor will excavate a particular portion of the Upland Area and backfill it before other areas are excavated. Because the entire Upland Area will not be open for additional excavation when the entire dataset is generated, conservative decisions will be made as the excavation proceeds, such that there is a very high likelihood that the dataset (for each soil COC) will meet the three-part rule.

Sidewall samples will not be collected around the Upland Area boundary. With the exception of a small area of soil excavation (to 1.5 ft below ground surface) on the adjacent Boeing property, the soil excavation will not extend beyond the Upland Area. This small area is in Grid Cell RR.

B1.2 Riverbank Confirmation Sampling Design

Sediment data will be collected across the face of the excavated (using land-based equipment) north and south areas of the riverbank (outside of the sheet pile wall

enclosure) when the tide is below the sample collection locations. Each riverbank area is divided into three units, coincident with the adjacent upland excavation prisms. Within each unit, a 6-part composite sample will be collected along two transects lying up/down the bank face. These data will be compared to the sediment RvALs in Table B1-2. Sample collection locations are shown on Figure B1-1.

The post-excavation surface of both the north and south areas of the bank will be sloped. Conversely, the middle portion of the riverbank will be excavated to 0 ft MLLW within the Sediment Area and to higher elevations in the Upland Area, such that there will not be a sloped bank face.

Riverbank samples are six-part composites, with each sample being compared to the sediment RvALs (Figure B1-1). If data exceed any RvAL, additional excavation of the entire unit (1-ft cut into the bank face) will occur. New confirmation samples will be collected after this excavation pass is completed, and they will be analyzed for the indicator soil COCs, and compared to the soil RvALs. Each new sample is a six-part composite that may not exceed any indicator soil RvAL.

Sediment will be vacuumed from rip rap voids along a small portion of the riverbank on the South Park Marina property (to the north of T-117). No sampling will be conducted after this activity. No material suitable for sampling will remain, i.e., only rip rap will remain.

B1.3 Sediment Confirmation Sampling Design

Fourteen surface sediment samples arranged in two rows will be collected from three dredging units after dredging and bathymetric survey confirmation of target elevation achievement. Each sediment sample will compared to the sediment RvALs on a point-by-point basis. All samples are required to be below the sediment RvALs. . Dioxins/furans will be analyzed in six samples: one nearshore and one offshore from each of the three dredging units (Table B2-4).

Within each of the three dredging units (potentially to be adjusted by Contractor's Dredging Plan[2]), an exceedance in any sample will result in a cleanup dredging pass of the entire half/row of the dredging unit from which that sample was collected, regardless of the results of the other samples in the row of that unit. This is meant to address heterogeneity in COC distribution within the *in situ* sediment and within the anticipated dredging residuals. Further, any offshore row exceedances of the Washington State Sediment Management Standards Cleanup Screening Level (CSL) or 5-times any RvAL would result in a cleanup dredging pass of the entire dredging unit. After each cleanup pass, new confirmation samples will be collected in the entire re-dredged area from the same locations as those sampled initially (not only from those location that exceeded RvALs).

[2] If the Contractor's Dredging Plan substantially changes the dredging unit layout, EPA shall be consulted for potential revisions to the sediment confirmation sampling design.