APPENDIX N

End of Construction Season Decontamination

APPENDIX .: BOEING PLANT 2 DSOA CORRECTIVE MEASURE AND HABITAT PROJECT, DEMOBILIZATION AND DECONTAMINATION

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September 2015

I. INTRODUCTION

The purpose of this document is to detail the general sequence of work and the typical procedures that were used for decontamination and demobilize of equipment used for the Boeing DSOA project. This document also details the decontamination and restoration procedures used for the south shoreline.

II. OVERVIEW

REQUIREMENTS

1. The Contractor shall completely remove all mud, sediment, and dirt from all equipment prior to removing equipment from the site at the end of Work. The Contractor shall brush and/or spray wash equipment as needed to remove mud, sediment, and dirt (Construction Specifications Section 01705 3.02).
2. Remove all equipment, material, and temporary facilities from the site, unless otherwise requested or approved by the Owner.
3. Restore pavement and planting to the original condition, unless otherwise approved by the Owner.

SUMMARY

After completion of sediment generating remedial tasks for the Boeing DSOA Project Area, decontamination and demobilization activities commenced. The decon process started with barges and other on-water equipment. After on-water equipment decon was completed the demobilization of each separate area of the Dredge Return Water System (DRWS) began. Table 1 detail the decontamination method used for South Shoreline equipment and Table 2 of this document documents the completion date, sample date, and whether the sample met criteria for each area/piece of equipment. The sediment processing area (SPA) was deconned first, followed by the polishing step and then the settling basin. As decon and demob activities were completed, site restoration began. The site was restored to an equipment and debris free work area and the site was left clean and generally in the same condition as it was prior to starting the work, or as otherwise noted in other project documents.

Water generated from decontamination activities that did not contain decontamination chemicals or surfactants were managed in the DRWS or in one of the options listed below.

1. Decon water was collected and transported to Lafarge for treatment through their wastewater treatment system and subsequent discharge to King County under Lafarge's permit. Lafarge's wastewater treatment system had the ability to receive up to 25,000 gallons of wastewater a day.
2. Decon water was collected and transported to be treated at the North Boeing Field Treatment System. The North Boeing Field Treatment System had the ability to receive and process up to 15,000 gallons of wastewater a day depending on how much wastewater was being processed from other activities and processes.

III. DECONTAMINATION PROCEDURE

For bulk sampling the decision criteria was 1 ppm, which is consistent with PCB residential action levels. The decision criteria for wipe samples was non-detect (ND) and met vendor's standards. All sampling followed EPA method 8082 and was conducted according to a written sampling and analysis plan, including Quality Assurance Project Plan. See Table 1 for specific decision criteria for each item.

A. ON WATER EQUIPMENT

The on-water equipment included metal pilings, outfall piping, and barges. The decontamination methods implemented are detailed below.

1. Metal Piling

   Metal piling was pressure washed to remove any visible sediment. Water from decon of piling pumped to DRWS settling basin.

2. HDPE Piping

   No decon required for outfall piping. Outfall piping includes temporary outfall Z and DRWS outfalls. Floating pipe used for dewatering sediment barges was thoroughly flushed and cut into 50 foot lengths and placed into 400 foot linear feet groups. The pipe was then visually inspected and 1 wipe sample per group was collected. All wipe samples collected were non-detect.

3. Mobile Equipment

   Mobile equipment includes the Aberdeen barge, DB Skookum, the sediment barges, and the PC 800 excavator. All equipment and structures that have been in contact with liquid or non-liquid PCB remediation waste was decontaminated using mechanical means or pressure washing to achieve a "clean debris surface", as described in the CS3 RBDA. The sediment barge decon procedures are documented in the Boeing Duwamish Sediment Other Area Corrective Measure and Habitat Project: Sediment Barge Decontamination Procedures report.

B. SEDIMENT PROCESSING AREA (SPA)

The SPA includes the Tri-Flo, ecology blocks, asphalt, gravel, and liners. Decon methods for each item is detailed below.

1. Tri-Flo

   Philip Service Corp. (PSC) conducted decon of the Tri-Flo using a surfactant and a double wash and rinse process. Decon procedure for the Tri-Flo consisted of first pressure washing the equipment, then spraying surface with surfactant and agitating the surfactant with a brush, letting it sit for 10-15 minutes, then pressure washing again, and then repeating the procedure a second time. Five wipe samples at random locations were collected after decon of the Tri-Flo was completed. All samples were non-detect.

2. Ecology Blocks

   The ecology blocks were handled differently based on if the block was in contact with dredged material or if the block was covered by a liner. Blocks covered by a liner were visually inspected to verify that the block did not come in contact impacted sediments. Blocks not covered by a liner were pressure washed and placed into groups of 30 blocks. QA/QC involved random sampling of 1 block from the group of

30. Sampling protocol required the use of a rotary hammer that was used extract enough volume of material from around the block. Samples were taken near the bottom of the block on the side that was previously in contact with impacted sediment. All samples were non-detect. Broken ecology blocks were recycled.

3. Asphalt

   Asphalt was pressure washed followed by sampling while the asphalt was still in place. Sampling protocol involved breaking the asphalt up by a hammer and chisel in order to collect sufficient sample volume. Sample locations are shown in Figure 1 and frequency was based on different levels of potential previous contact with contaminated materials for each area. All samples were non-detect. All asphalt was recycled.

4. Gravel

   Gravel was stockpiled in approximate 100 CY piles with one composite sample per pile. All samples were non-detect. ~500 CY of gravel was left onsite for future use. Remaining material was used to build up the shoreline access/maintenance road or exported to other Boeing facilities.

5. Liners

   Liners were disposed of at an appropriate Subtitle D facility.

6. Mobile Equipment

   All mobile equipment, including trucks, loaders, and excavators were pressure washed with the water being contained and either processed onsite or trucked to Lafarge or North Boeing field for processing.

C. SETTLING BASIN

The settling basin consisted of ecology blocks, asphalt, gravel, liners and mobile equipment. All of these were deconned as previously described in section III.B. (2-6).

D. DREDGE RETURN WATER SYSTEM (DRWS)

The polishing step for the DRWS consisted of ecology blocks, gravel, liners, clarifier, cone tanks, sand filters, bag filters, granular activated carbon (GAC) vessels, electrocoagulation (EC) units, pumps and miscellaneous tanks. The decontamination methods for each item are detailed below.

1. Ecology blocks, gravel, and liners were handled as previously described in section III. B. (2, 4, 5).
2. Clarifier, Cone Tanks, Filters and Other Tanks

   Decon of the clarifier, cone tanks, sand filters, bag filters, GAC vessels, and miscellaneous tanks was performed by PSC and followed methods described in section III.B.1. Wipe samples were collected for each item (sample frequency based on size of item, see Table 1). All wipe sample analytical results were non-detect.

3. Sand Filter Media

   A single composite sample of the sand filter media was collected to determine proper disposal. The sample analytical results were non-detect. The used media was disposed of at a Subtitle D facility.

4. Granulated Activated Carbon (GAC)

   Used GAC was sampled to determine proper disposal. Sample analytical results for Aroclor 1248 detected less than 1 ppm (0.82 mg/kg). All other Aroclors were non-detect. The used media was disposed of at a Subtitle D facility.

5. EC Units

   Decon of the EC units was performed by the owner of the units, Baker Corp. (Baker), using the same double wash/rinse with use of surfactant process as done by PSC. One wipe sample per EC unit was collected as QA/QC. All wipe sample analytical results were non-detect. EC units were returned to Baker.

6. Pumps

   The pumps were pressure washed on the outside and a double wash/rinse with surfactant were performed for inner portion.

E. LAYDOWN AREA

The settling basin consisted of ecology blocks, asphalt, gravel, liners and mobile equipment. All of these were deconned as previously described in section III.B. (2, 4, 5).

F. GENERAL SITE

General site items include ecology blocks, asphalt, pumps, HDPE piping, and catch basins. The decontamination procedures and methods for these items are detailed below.

1. Ecology Blocks

   The blocks in this area followed the procedures as described in section III.B.2.

2. Asphalt

   The asphalt in the general site area included asphalt berms installed as pipe crossings as well as the base layer original asphalt. The asphalt berms were pressure washed prior to removal and recycled at an appropriate facility per section III.B.3. After the removal of all asphalt overlays, gravel and liners the base asphalt was inspected to identify areas in need of repair. In some areas the base asphalt layer was removed and repaved with new asphalt. Minor damage areas were patched. After all asphalt repairs were complete the asphalt was cleaned in quadrants as shown in Figure 2. To clean each quadrant a water truck saturated the asphalt and a power sweeper brushed the asphalt. The water truck and a pressure washer were then used clean the quadrant by pushing water towards the catch basin located in the center of the quadrant. A vac-truck vacuumed up the water as it entered the catch basin sump. The water produced from this process was taken to the North Boeing Field treatment plant for processing.

3. Pumps

   A fresh water flush performed to decon pumps used for rain water and low PCB concentration areas. A double wash and rinse recirculation with surfactant as described in section III.B.3 was performed to decon pumps in higher PCB concentration areas.

4. HDPE Piping

   The HDPE piping was deconned by performing a freshwater flush. The piping was then cut into 50 lengths and placed into 400 foot linear feet groups. The pipe was

then visually inspected and 1 wipe sample per group was collected. All wipe samples collected were non-detect.

5. Catch Basins

   Each catch basin was jetted after the decontamination of each area was completed. The water produced from this process was taken to the North Boeing Field treatment plant for processing as shown in Figure 3.

G. TRANSLOAD FACILITY

All equipment and structures at Lafarge that have been used for Boeing DSOA project were deconned according to Waste Management's Work Plan. Photos documenting typical decontamination of railcars used on the project have been included in section VII of this report.

IV. CONCLUSION

All equipment and material were deconned and demobed at the end of CS3 without incident.

TABLES

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Table 1: South Shoreline Equipment Decon Methods, QA/QC, and Criteria

Area	Item	Use (over/Under 50 PPM Material)	Decon Method	QA/QC	Decision Criteria
ON-WATER EQUIP.	Metal piling	<50 ppm	Pressure wash	Visual Inspection	N/A
	Outfall piping	<50 ppm	Fresh water flush	none	N/A
	Equipment	none	Pressure wash	Visual Inspection	N/A
SPA	Triflow	tsca	Stericycle decon *	5 wipe samples	If sample > ND, repeat decon process and verification sampling until ND result is obtained.
	Ecology blocks	covered by liner	none	Visual Inspection	N/A
	Ecology blocks	tsca	Pressure wash	Blocks placed in approx. 15-30 block groups and sampled by 1" diameter rotary hammer bit to 1" depth; samples taken until sufficient sample volume achieved. Collect from bottom half of block on the side in contact. 1 sample/ approx. 15-30 blocks.	If sample < 1 ppm reuse/resale/recycle. If sample > 1 ppm the 15-30 associated blocks disposed Subtitle D. If sample > 50 ppm the 15-30 associated blocks disposed Subtitle C.
	Asphalt	<50 ppm	Pressure wash	9 samples collected while asphalt is in place. Sample locations Figure 1.	If sample < 1 ppm recycle. If sample > 1 ppm associated volume disposed subtitle D. If sample > 50 ppm associated volume disposed Subtitle C.
	Gravel	<50 ppm	none	1 composite sample/100 CY.	If sample < 1 ppm reuse/recyle. If sample > 1 ppm 100 CY pile will be disposed at Subtitle D. If > 50 ppm 100 CY pile will be disposed at Subtitle C.
	Liners	N/A	N/A	N/A	N/A
SETTLING BASIN	Ecology blocks (exposed)	tsca	none	Blocks placed in approx. 15-30 block groups and sampled by 1" diameter rotary hammer bit to 1" depth; samples taken until sufficient sample volume achieved. Collect from bottom half of block on the side in contact. 1 sample/ approx. 15-30 blocks.	If sample < 1 ppm reuse/resale/recycle. If sample > 1 ppm the 15-30 associated blocks disposed Subtitle D. If sample > 50 ppm the 15-30 associated blocks disposed Subtitle C.
	Ecology blocks (covered by liner)	<50 ppm	Pressure wash	Visual Inspection	none
	Asphalt	tsca	Pressure wash	7 samples collected while asphalt is in place. Sample locations Figure 1.	If sample < 1 ppm recycle. If sample > 1 ppm associated volume disposed subtitle D. If sample > 50 ppm associated volume disposed Subtitle C.
	Gravel	<50 ppm	none	1 composite sample/100 CY.	If sample < 1 ppm reuse/recyle. If sample > 1 ppm 100 CY pile will be disposed at Subtitle D. If > 50 ppm 100 CY pile will be disposed at Subtitle C.
	Liners	N/A	N/A	N/A	N/A
	Clarifier	tsca	Stericycle decon *	4 wipe samples	If sample > ND, repeat decon process and verification sampling until ND result is obtained.

Table 1: South Shoreline Equipment Decon Methods, QA/QC, and Criteria

Area	Item	Use (over/Under 50 PPM Material)	Decon Method	QA/QC	Decision Criteria
DRWS	Cone Tanks	tsca	Stericycle decon *	2 wipe samples per tank	If sample > ND, repeat decon process and verification sampling until ND result is obtained.
	Ecology blocks	<50 ppm	none	Blocks placed in approx. 15-30 block groups and sampled by 1" diameter rotary hammer bit to 1" depth; samples taken until sufficient sample volume achieved. Collect from bottom half of block on the side in contact. 1 sample/ approx. 15-30 blocks.	If sample < 1 ppm reuse/resale/recycle. If sample > 1 ppm the 15-30 associated blocks disposed Subtitle D. If sample > 50 ppm the 15-30 associated blocks disposed Subtitle C.
	Gravel	tsca	none	1 composite sample/100 CY.	If sample < 1 ppm reuse/recyle. If sample > 1 ppm 100 CY pile will be disposed at Subtitle D. If > 50 ppm 100 CY pile will be disposed at Subtitle C.
	Liners	N/A	N/A	N/A	N/A
	Sand Filters	tsca	Stericycle decon *	1 wipe sample per skid	If sample > ND, repeat decon process and verification sampling until ND result is obtained.
	Sand Filter Media	tsca	none	1 composite sample	Sample will determine Subtitle D or C disposal.
	Bag Filters	tsca	Stericycle decon *	1 wipe sample per skid	If sample > ND, repeat decon process and verification sampling until ND result is obtained.
	GAC Vessel	tsca	Stericycle decon *	1 wipe sample per vessel	If sample > ND, repeat decon process and verification sampling until ND result is obtained.
	GAC	tsca	none	1 composite sample	Sample will determine Subtitle D or C disposal.
	Baker Pumps	tsca	Pressure wash outside and capsure double rinse recirculation for inner workings.	none	N/A
	EC Units	tsca	Stericycle decon *	1 wipe sample per unit	If sample > ND, repeat decon process and verification sampling until ND result is obtained.
	Gravel	<50 ppm	none	1 composite sample/100 CY.	If sample < 1 ppm reuse/recyle. If sample > 1 ppm 100 CY pile will be disposed at Subtitle D. If > 50 ppm 100 CY pile will be disposed at Subtitle C.

Table 1: South Shoreline Equipment Decon Methods, QA/QC, and Criteria

Area	Item	Use (over/Under 50 PPM Material)	Decon Method	QA/QC	Decision Criteria
LAY DOWN	Ecology Blocks	<50 ppm	none	Blocks placed in approx. 15-30 block groups and sampled by 1" diameter rotary hammer bit to 1" depth; samples taken until sufficient sample volume achieved. Collect from bottom half of block on the side in contact. 1 sample/ approx. 15-30 blocks.	If sample < 1 ppm reuse/resale/recycle. If sample > 1 ppm the 15-30 associated blocks disposed Subtitle D. If sample > 50 ppm the 15-30 associated blocks disposed Subtitle C.
	Liners	N/A	N/A	N/A	N/A
GENERAL SITE	Ecology blocks	<50 ppm	none	Blocks placed in approx. 15-30 block groups and sampled by 1" diameter rotary hammer bit to 1" depth; samples taken until sufficient sample volume achieved. Collect from bottom half of block on the side in contact. 1 sample/ approx. 15-30 blocks.	If sample < 1 ppm reuse/resale/recycle. If sample > 1 ppm the 15-30 associated blocks disposed Subtitle D. If sample > 50 ppm the 15-30 associated blocks disposed Subtitle C.
	Asphalt (Pipe Crossings)	<50 ppm	Pressure wash	Visual Inspection	N/A
	Pumps 3" sump	N/A	Clean water flush	Visual Inspection	N/A
	Pumps 1"	N/A	Clean water flush	Visual Inspection	N/A
	HDPE - 12" (not used)	N/A	N/A	Visual Inspection	N/A
	10"	tsca	Clean water flush	Visual Inspection	N/A
	6"	tsca	Clean water flush	Visual Inspection	N/A
	4"	tsca	Clean water flush	Visual Inspection	N/A
	3"	<50 ppm	none	none	Dispose Subtitle D
	10" Fittings (not used)	tsca	none	none	N/A

Table 2: Equipment and Material Decontamination Tracking

Item	Decon Method	Date Decon Completed	Sample Date	Samples Met Criteria (Y/N)	Notes
TriFlo	Stericycle decon*	2/27/2015	2/27/2015	Y	
In-contact Ecoglogy Blocks (Lot 1)	Pressure wash	3/2/2015	3/3/2015	Y	
In-contact Ecoglogy Blocks (Lot 2)	Pressure wash	3/2/2015	3/3/2015	Y	
In-contact Ecoglogy Blocks (Lot 3)	Pressure wash	3/3/2015	3/3/2015	Y	
In-contact Ecoglogy Blocks (Lot 4)	Pressure wash	3/3/2015	3/3/2015	Y	
In-contact Ecoglogy Blocks (Lot 5)	Pressure wash	3/3/2015	3/4/2015	Y	
In-contact Ecoglogy Blocks (Lot 6)	Pressure wash	3/25/2015	3/25/2015	Y	
In-contact Ecoglogy Blocks (Lot 7)	Pressure wash	3/26/2015	3/26/2015	Y	
In-contact Ecoglogy Blocks (Lot 8)	Pressure wash	3/30/2015	3/30/2015	Y	
In-contact Ecoglogy Blocks (Lot 9)	Pressure wash	3/30/2015	3/30/2015	Y	
In-contact Ecoglogy Blocks (Lot 10)	Pressure wash	3/31/2015	3/31/2015	Y	
In-contact Ecoglogy Blocks (Lot 11)	Pressure wash	4/2/2015	4/2/2015	Y	
In-contact Ecoglogy Blocks (Lot 12)	Pressure wash	4/6/2015	4/6/2015	Y	
In-contact Ecoglogy Blocks (Lot 13)	Pressure wash	4/8/2015	4/8/2015	Y	
In-contact Ecoglogy Blocks (Lot 14)	Pressure wash	4/8/2015	4/8/2015	Y	
In-contact Ecoglogy Blocks (Lot 15)	Pressure wash	4/8/2015	4/9/2015	Y	
In-contact Ecoglogy Blocks (Lot 16)	Pressure wash	4/9/2015	4/9/2015	Y	
SPA Area 1 - Asphalt	Pressure wash	3/5/2015	3/6/2015	Y	
SPA Area 2 - Asphalt	Pressure wash	3/5/2015	3/6/2015	Y	
SPA Area 3 - Asphalt	Pressure wash	3/8/2015	3/9/2015	Y	
SPA Area 4 - Asphalt	Pressure wash	3/8/2015	3/9/2015	Y	
SPA Area 5 - Asphalt	Pressure wash	3/9/2015	3/10/2015	Y	
SPA Area 6 - Asphalt	Pressure wash	3/9/2015	3/10/2015	Y	
SPA Area 7 - Asphalt	Pressure wash	3/10/2015	3/11/2015	Y	
SPA Area 8 - Asphalt	Pressure wash	3/10/2015	3/11/2015	Y	
SPA - Gravel 1	N/A	N/A	3/26/2015	Y	

* Stericycle decon will involve double wash/rinse with capsure (1. pressure wash 2. spray walls with capsure 3. brush 4. sit 10-15 mins 5. pressure wash 6. repeat)

Table 2: Equipment and Material Decontamination Tracking

Item	Decon Method	Date Decon Completed	Sample Date	Samples Met Criteria (Y/N)	Notes
SPA - Gravel 2	N/A	N/A	3/26/2015	Y	
SPA - Gravel 3	N/A	N/A	3/27/2015	Y	
SPA - Gravel 4	N/A	N/A	3/26/2015	Y	
SPA - Gravel 5	N/A	N/A	3/26/2015	Y	
SPA - Gravel 6	N/A	N/A	3/31/2015	Y	
SPA - Gravel 7	N/A	N/A	3/27/2015	Y	
SPA - Gravel 8	N/A	N/A	3/27/2015	Y	
SPA - Gravel 9	N/A	N/A	3/31/2015	Y	
Truck Lane 1 - Asphalt	Pressure wash	3/4/2015	3/4/2015	Y	
Truck Lane 1 - Gravel	N/A	N/A	3/27/2015	Y	
Truck Lane 2 - Asphalt	Pressure wash	4/9/2015	4/9/2015	Y	
Truck Lane 2 - Gravel	N/A	N/A	4/9/2015	Y	
Settling Basin Area 1 - Asphalt	Pressure wash	4/6/2015	4/6/2015	Y	
Settling Basin Area 2 - Asphalt	Pressure wash	4/9/2015	4/9/2015	Y	
Settling Basin Area 3 - Asphalt	Pressure wash	4/2/2015	4/2/2015	Y	
Settling Basin Area 4 - Asphalt	Pressure wash	4/7/2015	4/7/2015	Y	
Settling Basin Area 5 - Asphalt	Pressure wash	3/31/2015	3/31/2015	Y	
Settling Basin Area 6 - Asphalt	Pressure wash	4/6/2015	4/6/2015	Y	
Settling Basin - Gravel 1	N/A	N/A	4/8/2015	Y	
Settling Basin - Gravel 2	N/A	N/A	4/10/2015	Y	
Settling Basin - Gravel 3	N/A	N/A	4/10/2015	Y	
Settling Basin - Gravel 4	N/A	N/A	4/7/2015	Y	
Settling Basin - Gravel 5	N/A	N/A	4/10/2015	Y	
Settling Basin - Gravel 6	N/A	N/A	4/10/2015	Y	
Settling Basin - Gravel 7	N/A	N/A	4/8/2015	Y	
Settling Basin - Gravel 8	N/A	N/A	4/8/2015	Y	

* Stericycle decon will involve double wash/rinse with capsure (1. pressure wash 2. spray walls with capsure 3. brush 4. sit 10-15 mins 5. pressure wash 6. repeat)

Table 2: Equipment and Material Decontamination Tracking

Item	Decon Method	Date Decon Completed	Sample Date	Samples Met Criteria (Y/N)	Notes
Settling Basin - Gravel 9	N/A	N/A	4/9/2015	Y	
Clarifier 1	Stericycle decon*	4/2/2015	4/3/2015	Y	
Clarifier 2	Stericycle decon*	4/2/2015	4/3/2015	Y	
Clarifier 3	Stericycle decon*	4/2/2015	4/3/2015	Y	
Clarifier 4	Stericycle decon*	4/2/2015	4/3/2015	Y	
Cone Tank 1	Stericycle decon*	3/12/2015	3/12/2015	Y	
Cone Tank 2	Stericycle decon*	3/17/2015	3/17/2015	Y	
Misc Tank 1 (Post treatment)	Stericycle decon*	3/13/2015	3/13/2015	Y	
Misc Tank 2 (Defoam)	Stericycle decon*	3/13/2015	3/13/2015	Y	
Misc Tank 3 (cone tank overflow)	Stericycle decon*	3/12/2015	3/12/2015	Y	
Misc Tank 4 (Washwater)	Stericycle decon*	3/12/2015	3/12/2015	Y	
Sand Filter A	Stericycle decon*	3/2/2015	3/2/2015	Y	
Sand Filter B	Stericycle decon*	3/11/2015	3/11/2015	Y	
Sand Filter Media	N/A	N/A	2/26/2015	Y	
Bag Filter A	Stericycle decon*	3/11/2015	3/11/2015	Y	
Bag Filter B	Stericycle decon*	3/2/2015	3/2/2015	Y	
GAC Lead A	Stericycle decon*	3/2/2015	3/2/2015	Y	
GAC Lag A	Stericycle decon*	3/2/2015	3/2/2015	Y	
GAC Lead B	Stericycle decon*	3/11/2015	3/11/2015	Y	
GAC Lag B	Stericycle decon*	3/11/2015	3/11/2015	Y	
GAC Media	N/A	N/A	2/26/2015	Y	
EC Unit 1	Pressure wash and capsure double rinse recirculation for inner workings	3/11/2015	3/11/2015	Y	

* Stericycle decon will involve double wash/rinse with capsure (1. pressure wash 2. spray walls with capsure 3. brush 4. sit 10-15 mins 5. pressure wash 6. repeat)

Table 2: Equipment and Material Decontamination Tracking

Item	Decon Method	Date Decon Completed	Sample Date	Samples Met Criteria (Y/N)	Notes
EC Unit 2	Pressure wash and capsure double rinse recirculation for inner workings	3/10/2015	3/10/2015	Y	
Baker Pumps	Pressure wash and capsure double rinse recirculation for inner workings	N/A	N/A	N/A	
DRWS - Gravel 1	N/A	N/A	3/13/2015	Y	
DRWS - Gravel 2	N/A	N/A	3/13/2015	Y	
DRWS - Gravel 3	N/A	N/A	3/13/2015	Y	
DRWS - Gravel 4	N/A	N/A	3/13/2015	Y	
DRWS - Gravel 5	N/A	N/A	3/16/2015	Y	
DRWS - Gravel 6	N/A	N/A	3/18/2015	Y	
DRWS - Gravel 7	N/A	N/A	3/18/2015	Y	
DRWS - Gravel 8	N/A	N/A	3/19/2015	Y	
DRWS - Gravel 9	N/A	N/A	3/19/2015	Y	
DRWS - Gravel 10	N/A	N/A	3/19/2015	Y	
DRWS - Gravel 11	N/A	N/A	3/20/2015	Y	
DRWS - Gravel 12	N/A	N/A	3/20/2015	Y	
DRWS - Gravel 13	N/A	N/A	3/20/2015	Y	
RCRA - Gravel	N/A	N/A	2/26/2015	Y	
Base - Gravel	N/A	N/A	4/10/2015	Y	
HDPE - 400' Pipe 1	Freshwater Rinse	N/A	3/3/2015	Y	
HDPE - 400' Pipe 2	Freshwater Rinse	N/A	3/3/2015	Y	
HDPE - 400' Pipe 3	Freshwater Rinse	N/A	3/6/2015	Y	
HDPE - 400' Pipe 4	Freshwater Rinse	N/A	3/6/2015	Y	

* Stericycle decon will involve double wash/rinse with capsure (1. pressure wash 2. spray walls with capsure 3. brush 4. sit 10-15 mins 5. pressure wash 6. repeat)

Table 2: Equipment and Material Decontamination Tracking

Item	Decon Method	Date Decon Completed	Sample Date	Samples Met Criteria (Y/N)	Notes
HDPE - 400' Pipe 5	Freshwater Rinse	N/A	3/25/2015	Y	
HDPE - 400' Pipe 6	Freshwater Rinse	N/A	3/25/2015	Y	
HDPE - 400' Pipe 7	Freshwater Rinse	N/A	3/25/2015	Y	
HDPE - 400' Pipe 8	Freshwater Rinse	N/A	4/7/2015	Y	
HDPE - 400' Pipe 9	Freshwater Rinse	N/A	4/7/2015	Y	
HDPE - 400' Pipe 10	Freshwater Rinse	N/A	4/7/2015	Y	
HDPE - 400' Pipe 11	Freshwater Rinse	N/A	4/7/2015	Y	
HDPE - 400' Pipe 12	Freshwater Rinse	N/A	4/7/2015	Y	
HDPE - 400' Pipe 13	Freshwater Rinse	N/A	4/7/2015	Y	
HDPE - 400' Pipe 14	Freshwater Rinse	N/A	4/7/2015	Y	
HDPE - 400' Pipe 15	Freshwater Rinse	N/A	4/7/2015	Y	
HDPE - 400' Pipe 16	Freshwater Rinse	N/A	4/7/2015	Y	
HDPE - 400' Pipe 17	Freshwater Rinse	N/A	4/7/2015	Y	
HDPE - 400' Pipe 18	Freshwater Rinse	N/A	4/7/2015	Y	

* Stericycle decon will involve double wash/rinse with capsure (1. pressure wash 2. spray walls with capsure 3. brush 4. sit 10-15 mins 5. pressure wash 6. repeat)

FIGURES

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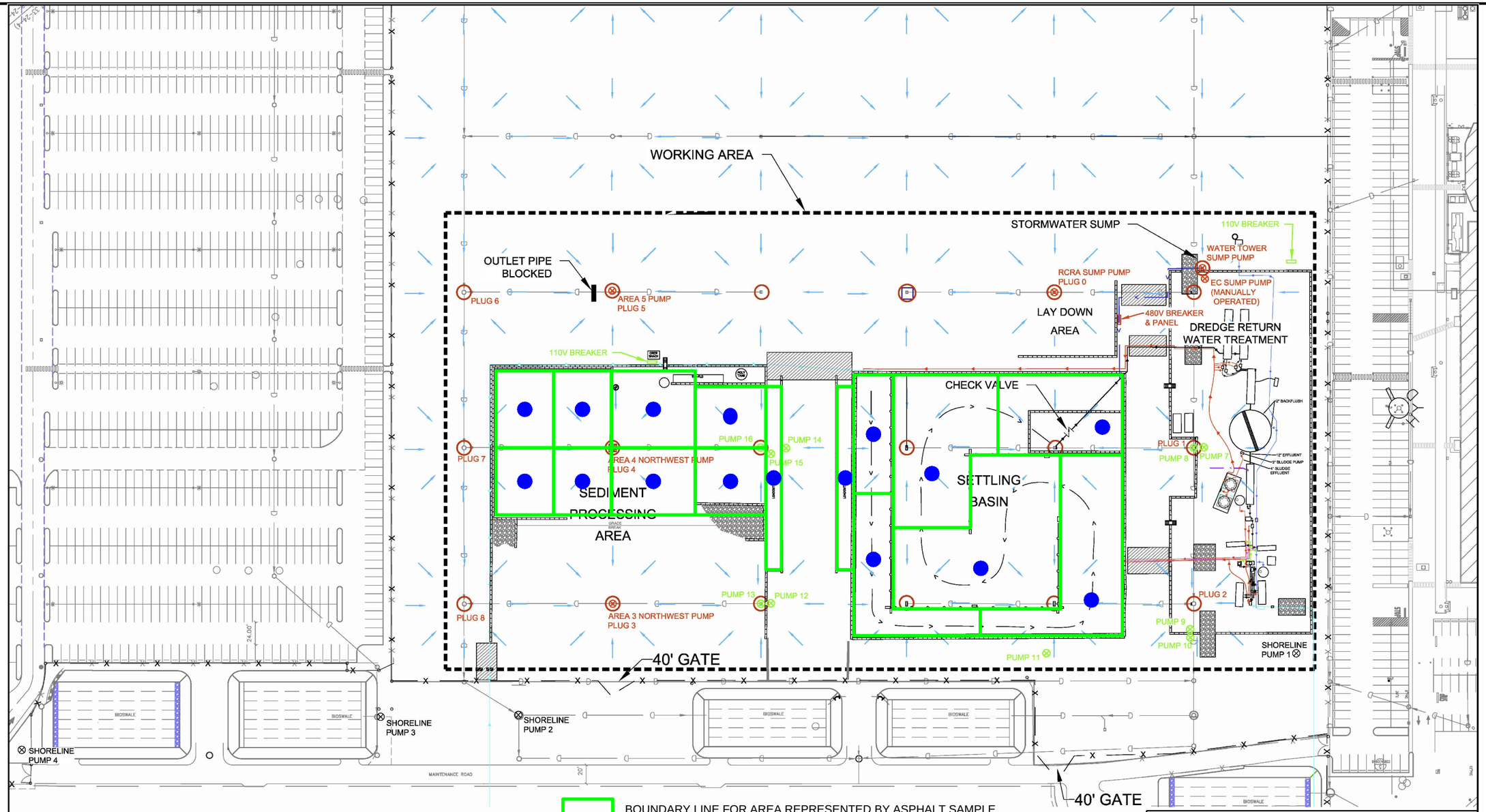

LEGEND

- CONTAINMENT AREA
- CATCH BASINS BLOCKED
- PIPE CROSSING

Plug

- 480 VOLT 3" SUMP PUMP
- 110 VOLT 3/4" SUMP PUMP
- 6" DIESEL PUMP

BOUNDARY LINE FOR AREA REPRESENTED BY ASPHALT SAMPLE

POTENTIAL SAMPLE LOCATIONS FOR ASPHALT = 16 SAMPLES

APPROXIMATE SCALE IN FEET

0 100 200

NOTE:

1. BASEMAP PROVIDED BY ENVIROCON.

BOEING

OFF SEASON BMP SITE MAP
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure
Boeing Plant 2
Seattle/Tukwila, Washington

By: APS	Date: 03/25/14	Project No. 131320090
		Figure 1

THE BOEING COMPANY

BOEING PLANT 2
DSOA CORRECTIVE MEASURE AND HABITAT PROJECT

OFF SEASON BMP SITE MAP AND
POTENTIAL ASPHALT SAMPLE PLAN
AUGUST 2015

DOF DALTON OLMSTED FUGLEVAND

FIGURE
1
AUGUST 20, 2015

PLOT TIME: 8/20/2015 2:48 PM MOD TIME: 8/20/2015 2:42 PM USER: Steven Rasmussen DWG: D:\Projects\Boeing CAD CS3\CAD\Figures\2015-08\CS3 Operations\2015-08-20 OffSeasonBMPSiteMap Figure.dwg

PLOT TIME: 8/20/2015 2:48 PM MOD TIME: 8/20/2015 2:42 PM USER: Steven Rasmussen DWG: D:\Projects\Boeing CAD CS3\CAD\Figures\2015-08\CS3 Operations\2015-08-20 OffSeasonBMPSiteMap Figure.dwg

WORKING AREA

STORMWATER SUMP

110V BREAKER

WATER TOWER SUMP PUMP

OUTLET PIPE BLOCKED

PLUG 6

AREA 5 PUMP PLUG 5

RCRA SUMP PUMP PLUG 0

EC SUMP PUMP (MANUALLY OPERATED)

LAY DOWN AREA

480V BREAKER & PANEL

DREDGE RETURN WATER TREATMENT

110V BREAKER

CHECK VALVE

PLUG 7

AREA 4 NORTHWEST SUMP PLUG 4

PUMP 16

PUMP 14

PUMP 15

SEDIMENT

SETTLING BASIN

PLUG 1

PUMP 8

PUMP 7

2" BACKFLUSH

2" EFFLUENT

3" SLUDGE PUMP

1" SLUDGE EFFLUENT

AREA

APPROXIMATE LOCATION GRAVEL STOCKPILE TO STAY ONSITE

PLUG 8

AREA 3 NORTHWEST SUMP PLUG 3

PUMP 13

PUMP

PLUG 2

PUMP 9

PUMP 10

PUMP 11

SHORELINE PUMP 1

40' GATE

BIOSWALE

SHORELINE PUMP 3

SHORELINE PUMP 2

SHORELINE PUMP 4

MAINTENANCE ROAD

24.00'

20'

40' GATE

LEGEND

CONTAINMENT AREA

CATCH BASINS BLOCKED

PIPE CROSSING

Plug

480 VOLT 3" SUMP PUMP

110 VOLT 3/4" SUMP PUMP

6" DIESEL PUMP

DECANTING BASIN

Decon Quadrants

APPROXIMATE SCALE IN FEET

0 100 200

NOTE:

1. BASEMAP PROVIDED BY ENVIROCON.

BOEING

OFF SEASON BMP SITE MAP
Duwamish Sediment Other Area and Southwest Bank Corrective Measure
Boeing Plant 2
Seattle/Tukwila, Washington

By: APS	Date: 03/25/14	Project No. 131320090
		Figure 1

THE BOEING COMPANY

BOEING PLANT 2
DSOA CORRECTIVE MEASURE AND HABITAT PROJECT

OFF SEASON BMP SITE MAP AND
Asphalt Decon Quadrants
AUGUST 2015

DOF DALTON OLMSTED FUGLEVAND

FIGURE
2
AUGUST 20, 2015

PLOT TIME: 8/20/2015 2:48 PM MOD TIME: 8/20/2015 2:42 PM USER: Steven Rasmussen DWG: D:\Projects\Boeing CAD CS3\CAD\Figures\2015-08\CS3 Operations\2015-08-20 OffSeasonBMPSiteMap Figure.dwg

WORKING AREA

STORMWATER SUMP

110V BREAKER

WATER TOWER SUMP PUMP

OUTLET PIPE BLOCKED

RCRA SUMP PUMP PLUG 0

EC SUMP PUMP (MANUALLY OPERATED)

PLUG 6

AREA 5 PUMP PLUG 5

LAY DOWN AREA

480V BREAKER & PANEL

DREDGE RETURN WATER TREATMENT

110V BREAKER

CHECK VALVE

PUMP 16

PUMP 14

PUMP 15

PLUG 7

AREA 4 NORTHWEST PUMP PLUG 4

SEDIMENT PROCESSING AREA

APPROXIMATE LOCATION GRAVEL STOCKPILE TO STAY ONSITE

SETTLING BASIN

PUMP 8

PUMP 7

PUMP 13

PUMP 12

PLUG 2

PLUG 8

AREA 3 NORTHWEST PUMP PLUG 3

PUMP 9

PUMP 10

PUMP 11

SHORELINE PUMP 1

40' GATE

SHORELINE PUMP 3

SHORELINE PUMP 2

SHORELINE PUMP 4

40' GATE

LEGEND

CONTAINMENT AREA

CATCH BASINS BLOCKED

PIPE CROSSING

Plug

480 VOLT 3" SUMP PUMP

110 VOLT 3/4" SUMP PUMP

6" DIESEL PUMP

CATCH BASIN AND LINE JETTING COMPLETE

APPROXIMATE SCALE IN FEET

0 100 200

NOTE:

1. BASEMAP PROVIDED BY ENVIROCON.

BOEING

OFF SEASON BMP SITE MAP
Duwamish Sediment Other Area and Southwest Bank Corrective Measure
Boeing Plant 2
Seattle/Tukwila, Washington

By: APS	Date: 03/25/14	Project No. 131320090
		Figure 1

THE BOEING COMPANY

BOEING PLANT 2
DSOA CORRECTIVE MEASURE AND HABITAT PROJECT

OFF SEASON BMP SITE MAP AND
CB AND LINE JETTING PLAN
AUGUST 2015

DOF DALTON OLMSTED FUGLEVAND

FIGURE
3
AUGUST 20, 2015

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PHOTOS

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2015-03-18 14.20.03 Haul truck delivers gravel from DWRS to shoreline road. Note the HDPE round, circled in red, used to protect monitoring well.

2015-03-18 09.39.56 Gravel within DWRS containment pulled back. Liner is segregated for disposal.

2015-02-26 16.04.16 Sand filters being deconned.

2015-02-26 16.12.11 TriFlow prepped for decon.

2015-03-20 07.53.56: Standing water in settling basin being pumped out. Water was taken to Lafarge for processing.

2015-03-20 09.15.40: Excavator loads stabilized sediment from the SPA into the dewatering box.

2015-03-23 07.33.49: Deconned ecology blocks loaded on to trailer for export.

2015-03-23 07.46.28: Excavator pulls back gravel within the DRWS. The underlying impermeable liner was segregated from the gravel for offsite disposal.

2015-03-24 10.43.30: Excavator pulls up asphalt berms.

2015-03-24 12.33.14: Underlying asphalt has minor damage after the berm was removed. Damaged asphalt repaired after all of the berms and asphalt overlays were removed.

2015-04-06 07.01.48: Forklift removes ecology block that was under the liner.

2015-04-07 14.04.43: Ecology blocks that came in contact with impacted sediment were pressure washed.

2015-04-07 06.39.07: Crewmembers pressure wash settling basin. Water produced is removed with a vac-truck.

2015-04-08 13.39.21: Bravo Environmental jets catch basin and lines after an area has been deemed "clean".

2015-04-08 07.36.25-1: Dewatered sediment in SPA was loaded into liner haul trucks for disposal.

2015-04-14 10.06.28: Saw cutting out around damaged asphalt to prep for patch.

2015-04-17 11.42.00: Crews lay new asphalt to repair damaged areas.

2015-04-23 09.34.08: A sweeper truck makes several passes across the asphalt to remove loose non-contaminated debris.

2015-04-17 11.42.00: Crews lay new asphalt to repair damaged areas.

2015-04-23 09.34.08: Water truck sprays the quadrant prior to the power sweeper brushing the area.

2015-04-27 09.14.17: Power sweeper makes passes brushing the asphalt while pushing water towards catch basin.

2015-04-27 11.02.00: The material is pressure washed to the vac hose for the final cleanup.

WM-001: Typical railcar with residual dredged sediment during railcar decontamination.

WM-002: As part of the decontamination process, dredged sediment is placed in bulk bags for disposal at Columbia Ridge Landfill (subtitle D).

BOEING DUWAMISH SEDIMENT OTHER AREA CORRECTIVE MEASURE AND HABITAT PROJECT: SEDIMENT BARGE DECONTAMINATION PROCEDURES

Prepared For:

Boeing

DOF DALTON OLMSTED FUGLEVAND

March 2015

I. INTRODUCTION

The purpose of this document is to detail the sequence of events and methods and procedures used to decontaminate the sediments barges utilized during the 2014-2015 Construction Season 3 (CS3) as part of demobilization activities for the Boeing Duwamish Sediment Other Area (DSOA) Corrective Measure and Habitat Project.

II. OVERVIEW

A. REQUIREMENTS

1. The Contractor shall completely remove all mud, sediment, and dirt from all equipment prior to removing equipment from the site between in-water CS and at the end of Work. The Contractor shall brush and/or spray wash equipment as needed to remove mud, sediment, and dirt (Construction Specifications Section 01750 3.02).
2. Equipment and barges visually inspected and photographed to document completion of decontaminated prior to departing the DSOA.

B. SUMMARY

At the completion of CS3 and final offload, residual sediment and water remained in each barge. This material remained in the barges after final offload due to limitations of the gantry crane's ten cubic yard bucket used for offload at the TTD. Remaining water and solids were required to be removed from each of the barges prior to departing the DSOA as part of the decontamination procedure at the end of each construction season. The photo below of the 101 Barge after offload is a typical example of material and water remaining each barge after final offload.

Offloaded 101 Barge: Example of Remaining Material in Barges after Offload

III. DECONTAMINATION PROCEDURE

Decontamination of the sediment barges required the use of the following equipment: skid steer loader, pressure washers, pumps, and hand tools. The skid steer was loaded on to each barge for

bulk removal of solids by consolidating remaining solids; stacking the material in a corner within the dredge's PC800 excavator swing radius. The PC800 was then used to transfer this material to one sediment barge (barge 104). Remaining material on each sediment barge after bulk solids removal was slurred and pumped to the Dredge Water Return System (DWRS) settling basin. Barge bin walls and decks were cleaned of all residual sediment. After the 100, 101, and 166 barges were decontaminated the 104, with consolidated solids from these barges, was taken to the TTD for offload. To assist with this final offload, the skid steer was loaded into the 104. The skid steer consolidated material for the gantry crane. Sediment from the 104 barge was disposed of with remaining dredged sediment from CS3 dredging. The 104 was then taken back to the DSOA. Any remaining material was slurried and pumped to the DWRS retention pond.

The 135 barge was initially gross deconned. The bulk of the material was transferred to the 104 barge before the 104 barge was sent to the TTD for final offload using the same methods as the other sediment barges. Once the 135 barge was sufficiently decontaminated it was put back into service and used for pile removal and decontamination. Final decontamination of the 135 barge occurred after pile removal and pile decontamination was complete. To perform final decontamination of the 135 barge a vac-truck was brought to the slip 4 dock where the remaining sediment in barge was slurried and removed by the vac-truck. This slurry was then transported to the DRWS and placed within the settling pond where it was removed during DRWS decontamination. Photos of each barge after decontamination attached.

Barge Number	Decon Start	Decon Complete	Demobe
100	2/23/2015	2/25/2015	2/28/2015
101	2/25/2015	2/26/2015	2/28/2015
104	2/26/2015	2/28/2015	3/3/2015
135	2/24/2015	3/12/2015	3/12/2015
166	1/8/2015	1/15/2015	2/28/2015

Table 1: Sediment Barge Decontamination & Demobilization Schedule

IV. CONCLUSION

The standard for successful decontamination of a sediment barge was that there was no visible sediment remaining on a barge. Once the contractor determined that decontamination of a barge was complete, the designated Boeing representative was notified and the barge was visually inspected for the presence of sediment. Noted deficiencies were recorded and the contractor required to correct these deficiencies prior to re-inspection. Only when a barge passed visual inspection, was it released from the site. All of the sediment barges were deconned at the end of CS3 without incident. Lessons learned from CS1 & CS2 and implemented for CS3 increased the efficiency and ease of decon resulting less time spent decontaminating equipment at the end of the final construction season.

V. PHOTOS

2015-01-15-17.16.19 166 barge sediment bin upon completion of decontamination inspection.

2015-02-25-12.23.28 100 barge sediment bin upon completion of decontamination inspection.

2015-02-26 101 barge sediment bin upon completion of decontamination inspection.

2015-02-25-12.23.28 104 barge sediment bin upon completion of decontamination inspection.

2015-03-12-10.12.24 135 barge sediment bin upon completion of decontamination inspection.