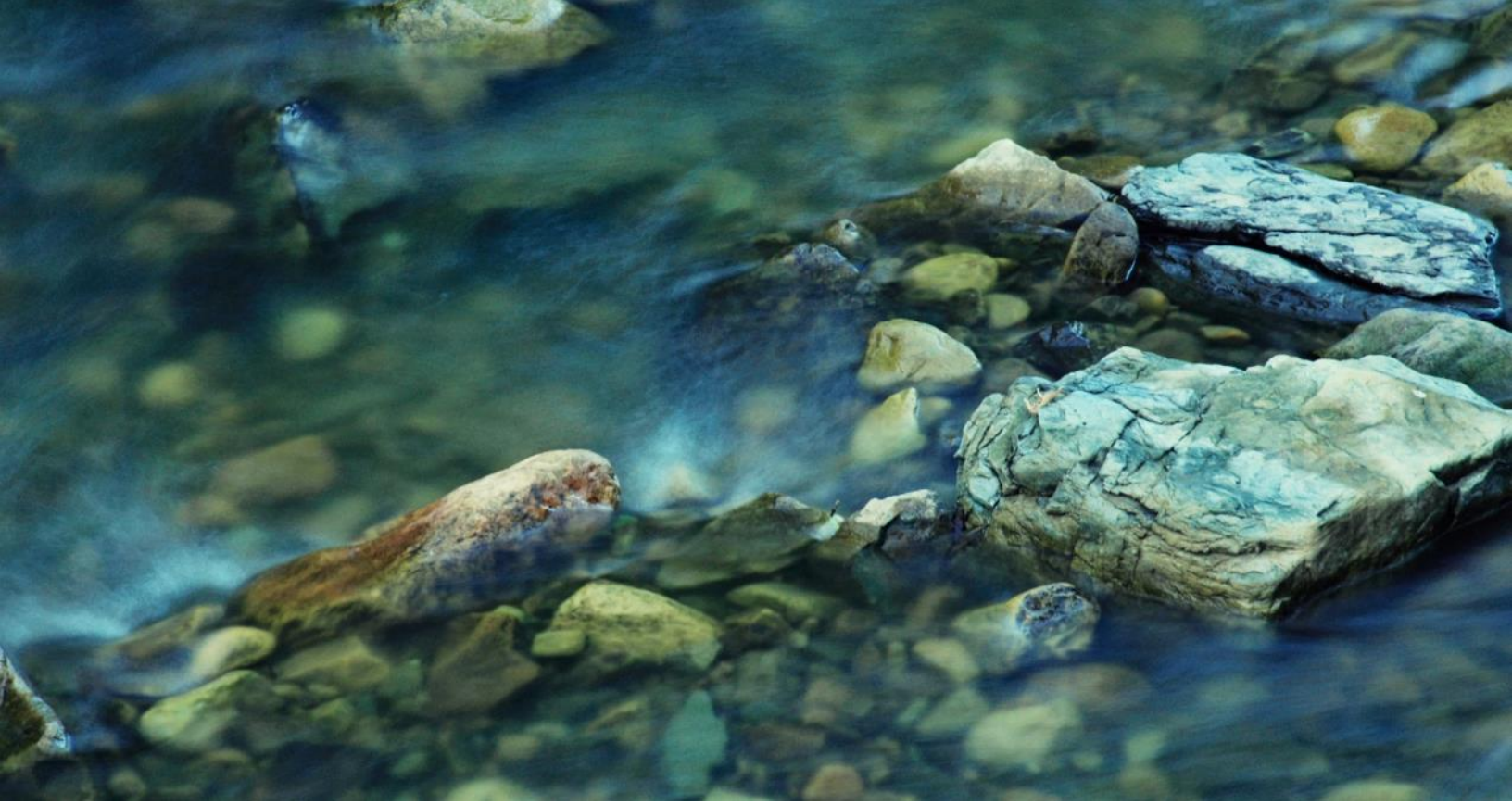

August 2017
Millennium Bulk Terminals – Longview

ANCHOR QEA

Former Reynolds Metals Reduction Plant Sediment Interim Action Completion Report

Prepared for
Washington Department of Ecology
300 Desmond Drive
Lacey, Washington 98503

On Behalf of
Northwest Alloys, Inc.
Millennium Bulk Terminals – Longview, LLC

August 2017
Millennium Bulk Terminals – Longview

Former Reynolds Metals Reduction Plant Sediment Interim Action Completion Report

Prepared for
Washington Department of Ecology
300 Desmond Drive
Lacey, Washington 98503

Prepared by
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On Behalf of
Northwest Alloys, Inc.
Millennium Bulk Terminals – Longview, LLC

Project Number: 160730-01.02
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APPENDICES

ABBREVIATIONS

AO	Agreed Order
cy	cubic yard
DO	dissolved oxygen
Ecology	Washington State Department of Ecology
EDR	Engineering Design Report
Former Reynolds Plant	former Reynolds Metals Reduction Plant
HME	Hickey Marine Enterprises
hp	horsepower
IA	Interim Action
IA Work Plan	Interim Action Work Plan
MBTL	Millennium Bulk Terminals – Longview, LLC
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MTCA	Model Toxics Control Act
Northwest Alloys	Northwest Alloys, Inc.
NTU	nephelometric turbidity units
RI/FS	Remedial Investigation/Feasibility Study
RMC	residual management cover
SCO	sediment cleanup objectives
SMS	Sediment Management Standard
Solmar	Solmar Hydro, Inc.
WAC	Washington Administrative Code
WDNR	Washington State Department of Natural Resources

1 Introduction

Millennium Bulk Terminals – Longview, LLC (MBTL) and Northwest Alloys, Inc. (Northwest Alloys) performed an Interim Action (IA) in the Columbia River adjacent to the former Reynolds Metals Reduction Plant (Former Reynolds Plant) in Longview, Washington, (see Figure 1) to remediate a localized area of impacted sediments. The IA was conducted under Model Toxics Control Act (MTCA) Agreed Order (AO) No. DE-8940, as amended on June 2, 2014, among MBTL, Northwest Alloys, and the Washington State Department of Ecology (Ecology). This Completion Report has been prepared in accordance with MTCA (Washington Administrative Code [WAC] 173-340-400 (6)(b)(ii)) to document the remedial activities performed and the engineer's opinion that, based on the testing results and inspections, the interim cleanup action was performed in substantial compliance with the *Interim Action Work Plan* (IA Work Plan; Anchor QEA 2014a), permits, plans, specifications, the *Engineering Design Report* (EDR; Anchor QEA 2014b), and the November 3, 2016 Addendum to the EDR (Anchor QEA 2016).[1]

1.1 Purpose and Scope

Under Ecology's oversight, MBTL and Northwest Alloys prepared a Final Remedial Investigation/Feasibility Study (RI/FS; Anchor QEA 2015) for remediation of the Former Reynolds Plant. A sediment remediation area was delineated based on sediment sampling, and four remedial alternatives were developed to meet site-specific cleanup standards based on the Sediment Management Standards (SMS; Chapter 173-204 WAC). The alternatives were then compared based on the considerations in SMS (WAC 173-204-570(3)), and a preferred alternative was selected that is permanent to the maximum extent practicable. This IA was based on the preferred alternative described in RI/FS Appendix J.[2] The IA Work Plan (Anchor QEA 2014a) was developed and included as Exhibit E to the June 2, 2014, amendment to the AO. The EDR (Anchor QEA 2014b) was prepared in August 2014 in general conformance with WAC 173-340-400 and was approved by Ecology in October 17, 2016 (Ecology 2016).

The remedy required the dredging of a minimum of 2 feet across the entire area identified for remediation (125 feet by 250 feet around Outfall 02A). The remediation area excluded an area that was 20 feet from the centerline of the outfall to prevent damaging it. A 2-foot allowable overdredge was included to allow for equipment tolerances. The IA Work Plan allowed for several transload options, including use of an off-site transload facility. Consistent with the Nationwide Permit 38 authorization from the Department of the Army, Seattle District, Corps of Engineers dated August 31, 2016, dredged sediments were transported by barge upriver to the The Dalles, Oregon, for disposal at the Subtitle D Wasco Landfill in Wasco County in Eastern Oregon.

[1] The addendum was also approved by Ecology on November 3, 2016, via email from Guy Barrett to Halah Voges at 1:10 PM.
[2] RI/FS Appendix J: Evaluation of Alternatives and Costs for Additional Management of Sediments Located Near Outfall 002A.

1.2 Site Description

The Former Reynolds Plant is located at 4029 Industrial Way, along the Columbia River just outside the city limits of Longview, Washington 98632 (see Figure 1). The Former Reynolds Plant includes Tax Parcels 6195302, 61950, and 61953, which are owned by Northwest Alloys. MBTL has been the owner of the plant assets and a tenant on the property since January 2011.

The Northwest Alloys-owned property extends to the extreme low water mark of the Columbia River. The aquatic lands located offshore of this point are owned by the state of Washington and are managed by the Washington State Department of Natural Resources (WDNR). The sediment remediation area is located on land leased to Northwest Alloys by WDNR (WDNR Aquatic Lands Lease 20-B09222).

1.3 Report Organization

The report was completed in general conformance with WAC 173-340-400 (6)(b)(ii). The report is organized in the following sections:

- **Section 2 – Construction Activities.** This section presents a summary of the construction activities performed for the IA, including dredging, dewatering, backfilling, and offloading of the sediments.
- **Section 3 – Construction Monitoring.** This section presents the monitoring activities that occurred during construction, including real-time water quality monitoring, daily surveys, and as-built surveys of the dredging and backfilling work.
- **Section 4 – Confirmational Sampling Results.** This section presents a summary of the procedures used to sample the backfilled materials and the results of the chemical testing of that sampling.
- **Section 5 – Deviations.** This section provides a summary of any deviations from the approved work plans that occurred during the IA.
- **Section 6 – Opinion of the Engineer.** This section summarizes construction oversight, protection monitoring, and performance monitoring activities performed for the IA.
- **Section 7 – References.**

Appendices to this document include the following:

- Appendix A – Inspector's Daily Reports
- Appendix B – Surveys
- Appendix C – Photographs
- Appendix D – Water Quality Report
- Appendix E – Confirmation Sampling Data Report

2 Construction Activities

This section summarizes the construction activities performed to implement the IA. Inspector's Daily Reports are included in Appendix A that document construction activities, site conditions, and visitors and equipment present on the site daily. These reports also include photo documentation of these activities.

2.1 Mobilization

Northwest Alloys and MBTL selected Hickey Marine Enterprises (HME) of Vancouver, Washington, to perform the IA work. HME hired Solmar Hydro, Inc. (Solmar) out of Portland, Oregon, to perform multibeam surveys for the project. Solmar performed the pre-dredge survey on October 24, 2016 (Appendix B).

HME hired Cascade Dive Co. with offices in Vancouver, Washington, to place floats along the alignment of Outfall 002A to provide a visual aide for the dredge operator so that the dredge operator would not accidentally dig too close to the outfall and diffuser, which could potentially undermine the stability of the pipe or possibly damage it. These floats were placed by a three-person dive crew on October 26, 2016.

HME mobilized the derrick and barges to the site on October 29, 2016. This included the derrick barge *Sea Vulture* with a 12-cubic-yard (cy) rehandling bucket, an 8-cy digging bucket, and a 14-cy cable arm bucket; haul barge *Scow 6*; haul barge *Reedsport*; haul barge *Umpqua*; 4-unit water management barge; derrick barge *Sea Lion* (used as a spud barge to hold the idle material barges); tug boat *Nova* with twin 400 horsepower (hp) engines; crew boat with twin 125 hp Mercury outboard motors; and crew boat with twin 200 hp Mercury outboard motors.

All haul barges were water tight and equipped with sumps in the corners of the barge to allow for easy pumping of free liquids.

2.2 Dredging

The dredge design required a minimum of 2 feet of sediment to be removed over the entire dredge prism with an allowable (payable) 2-foot over dredge. Dredging operations began on Monday, October 31, 2016, at about noon. The derrick began filling *Scow 6* using the 12-cy rehandling bucket.

Horizontal and vertical control was maintained using HYPACK 2013 DREDGEPACK software. Horizontal positioning was accomplished using a Hemisphere VS110 vector antenna and a Differential Global Positioning System beacon receiver. The vector antenna was located on the stern of the derrick, and the Trimble SPS 461 GPS/beacon receiver was located in the crane cab. Horizontal accuracy was less than 0.6 meter; 95 percent confidence level. Vertical control was maintained with

the use of a TideTrac electronic tide gauge located on the MBTL pier that provided water level readings every 3 minutes and markings on the mainline cable.

HME began at the upstream and inshore corner of the site and worked from inshore to offshore. It encountered a fair amount of debris while working on the upstream side of the outfall, which resulted in buckets that were only partially full (see photographs in Appendix C). Free water that accumulated in the haul barges was pumped into the water management barge (Section 2.3). Daily progress surveys were performed (Section 3.2). On November 1, 2016, it was determined that the rehandling bucket was not able to dig efficiently into the native sediments, so HME switched to the 8-cy digging bucket to achieve the required dredge depth.

Dredging continued through the week (October 31 to November 4, 2016), working from inshore to offshore in 50-foot-wide strips and upstream to downstream. Approximately 3,900 cy of sediments were dredged during this time. The post dredge multi-beam survey performed on November 4, 2014, showed there were some high spots remaining. These high spots were removed on Monday, November 7, 2016, prior to placing backfill. A total of 3,968 cy were removed.

Of the 3,968 cy removed, there were 234 cy of sediment removed that were below the 2-foot allowable overdredge depth. Throughout the dredge prism, there were 3.2 cy of material (less than 0.2 percent of the total required dredge volume) left above the minimum required dredge depth, which was considered negligible and acceptable because this material was generally located at the upstream limit of the dredge prism.

2.3 Dewatering

During dredging operations, free water was collected from the haul barges. This water was pumped from sumps in the haul barges to the water management barge for settling and subsequent pumping to the water treatment facility on the upland portion of the site. The water was pumped through a carbon filter system prior to entering the MBTL clarifiers of the treatment system. The discharge line was a 1.5-inch cam lock hose. A total of 261,200 gallons were offloaded and treated during the interim action.

At the offloading facility, approximately 26,300 gallons of free water that drained from the dredged sediments during transport was pumped off of the haul barges. This water was collected in a tank at the offloading facility, transferred to 120-barrel (5,280 gallons) vacuum tanker trucks, and hauled to the Wasco Landfill for disposal by Pacific Power Vacuum from Portland, Oregon. There were six tanker truck loads of water disposed.

2.4 Backfill

On November 7, 2016, and following confirmation via single beam survey that sediment removal to the required extents had been completed and approval to begin backfilling, HME moved the derrick barge *Sea Vulture* into position with material barge 7. Material barges 7 and 31 were filled with sand procured from Knife River Corporation. The sand was originally obtained from the Dibley Beach Pit and delivered to Knife River's Waterview Facility in Columbia City, Oregon, where it was stockpiled prior to loading it onto the barges. Stockpiling of the 7,420 tons of material occurred between October 25 and November 9, 2016. Physical and chemical test results of the backfill material are included in Table 1.

The general pattern for backfill was to fill the two supply barges on one day and place that material the following day. The material barges were filled on November 5, November 8, and November 10, 2016. Placement occurred on November 7, November 9, and November 11, 2016. Placement occurred from offshore moving inshore and from upstream moving downstream. The backfill material was placed by positioning the bucket just below the surface of the water and then opening the bucket, allowing the sand to fall through the water column and disperse during process. Backfill placement began on November 11, 2016, at 5:00 am and continued until approximately 6:30 am, when the placement of the residual management cover (RMC) downstream of the site began. This allowed the multibeam survey to be performed on the dredge/backfill site. This survey showed that there were a few low spots. These low spots were addressed and the placement of RMC continued. A total of 3,315 cy of backfill material was placed. A total of 60 cy was placed that exceeded the pre-dredge surface elevations with only 1 cy of that being greater than 1 foot over the pre-dredge surface.

2.5 Offloading

The three barges that were loaded with dredged material were held at the dredge site during backfilling activities, tied up to the spud barge *Sea Lion*. The *Sea Vulture*, and haul barges 6, *Reedsport*, and *Umpqua* were transported up river to an offloading facility in The Dalles, Oregon, during the weekend of November 12 and 13, 2016. On Monday, November 14, 2016, the offloading facility was constructed. It included two barges put in place to capture any spillage during offloading, several drip plates and splash guards that were placed between all barges so there were no gaps where sediment could fall into the river, a sediment bin for mixing offloaded sediment with a drying agent, and a bin to hold the drying agent. A water storage tank was also placed on one of the barges to pump any free water into prior to disposing of that water in the Wasco Landfill. On November 11, 2016, 20 cy of drying agent was delivered by Waste Connections.

Offloading of the barges began on November 15, 2016, and continued until November 18, 2016. The dredged material was either loaded directly into lined trucks or placed into a bin for amendment

with a drying agent. The material was then transported via truck to the Wasco Landfill for disposal. Spot checks were made to ensure there was no leakage from the trucks during transport. On November 18, 2016, the oversized debris was offloaded for disposal and the loading ramps, catwalks, spill plates, and barges were swept clean. The residuals were loaded into the final lined truck and taken to the landfill for disposal. All equipment was demobilized from the site.

Based on the scale tickets, a total of 131.86 tons of liquid and 6,408.5 tons of solids were disposed in the Wasco Landfill.

3 Construction Monitoring

3.1 Water Quality Monitoring

During dredging and backfilling operations water quality monitoring for turbidity and dissolved oxygen (DO) was performed. The permit requirements were that these parameters be measured throughout the water column. The sample depths were dependent on water depth; in water depths of greater than approximately 25 feet, samples were collected 10 feet below the surface, 10 feet above the bottom, and in the middle of the water column. The sample depths were adjusted for shallower water depths. The compliance criterion for turbidity was 5 nephelometric turbidity units (NTU) above background levels if background was below 50 NTU (background plus 10 percent if background was greater than 50 NTU). The compliance criterion for DO was greater than 10 milligrams per liter (mg/L). Samples were to be collected after operations had been underway for at least an hour and then again every 4 hours while operations continued, unless exceedances were observed. This would occur for 3 consecutive days as long as no exceedances were observed and then once a week following the initial period. If exceedances were observed then construction methods would need to be modified by implementing various best management practices such that the exceedances were no longer observed. See Appendix D for details.

During dredging operations, there were no observed exceedances of either turbidity or DO. Since dredging operations began late on Monday, October 31, 2016, only one sampling event occurred on that date. Therefore, monitoring activities were also performed on the fourth day of dredging operations (November 3, 2016), to ensure that it was well documented that there was no harm to the environment during this operation.

During backfill operations on the first day of operations (November 7, 2016), an exceedance of turbidity was observed in the bottom sample during the second sampling round of the day. HME doubled its cycle times to reduce turbidity impacts. Two follow-up measurements were collected, and the exceedances were still observed. It was hypothesized that because of the incoming tide, the river flows were reduced and, therefore, any incidental turbidity was not dispersed as it is in a higher river flow. Operations were ended for the day and placement procedures were modified for the future placement by continuing the longer cycle times and placing smaller quantities per bucket. No turbidity exceedances were observed on the final 2 days of backfill placement. There were no exceedances of the DO criterion.

3.2 As-Built Surveys

Daily progress surveys were performed at the end of each day's operations (dredging and backfilling). The daily surveys were performed using single beam bathymetric survey equipment.

Final surveys were performed using multi-beam surveys. The multi-beam surveys are included in Appendix B.

4 Confirmational Sampling Results

4.1 Confirmational Sampling Procedures

Confirmational samples of the in-place backfill were collected on November 11, 2016. Five samples and one duplicate sample were collected from the surface sediments (Figure 2). The samples were analyzed for grain size distribution, total organic carbon content, metals, semi-volatile organic compounds, including polycyclic aromatic hydrocarbons, polychlorinated biphenyls, and total petroleum hydrocarbons.

4.2 Results

The test results are included in Appendix E and are summarized in Table 1. No samples had detected chemical concentrations that exceeded the SMS freshwater Sediment Cleanup Objective (SCO). However, the laboratory detection limit for silver was slightly greater than the SCO (0.58 milligrams per kilogram [mg/kg] to 0.65mg/kg versus the SCO of 0.57mg/kg).

5 Deviations

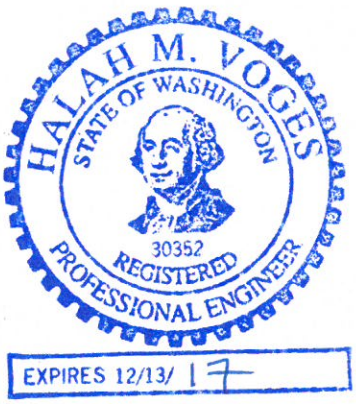
The work was generally performed in compliance with the approved work plan. There were no deviations from the work plan; however, the following variations, which were corrected in accordance with the work plan, were noted:

- Approximately 234 cy of sediment were removed below the allowable overdredge limit.
- A water quality exceedance for turbidity was observed during backfilling operations at the end of the first day of work. Additional testing protocols were implemented and placement methods were modified that day, per the Water Quality Certification. With no appreciable effect on the turbidity levels, placement was halted for the day. Operational procedures were further modified for the remaining days of backfilling and no additional exceedances were observed.

6 Opinion of the Engineer

The IA cleanup of contaminated sediments at the Former Reynolds Metals Reduction Plant in the Columbia River at Longview, Washington, has been completed in substantial compliance with the *Interim Action Work Plan* dated June 2014.

Halah M. Voges, PE
Principal Engineer
Anchor QEA, LLC



7 References

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Table

Table 1
Summary of Confirmational Sample Results

FINAL VALIDATED DATA

		Task	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction
		Location ID	Backfill Material	CS-01	CS-01	CS-02	CS-03	CS-04	CS-05
		Sample Date	10/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016
		Sample ID	Dibblee-101116	CS-01-0-6-11112016	CS-101-0-6-11112016	CS-02-0-6-11112016	CS-03-0-6-11112016	CS-04-0-6-11112016	CS-05-0-6-11112016
		Depth	--	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm
		Sample Type	N	N	FD	N	N	N	N
	SMS Freshwater SCO								
Conventional Parameters (mg/kg)									
Ammonia as nitrogen	230	**1.76 J**	**0.34 J**	**0.42 J**	**0.36 J**	0.5 U	**0.18 J**	**0.36 J**
Sulfide	39	0.532 U	0.197 U	0.3 U	0.196 U	0.263 U	1.24 U	1.3 U
Conventional Parameters (pct)									
Total organic carbon	--	**0.22 J**	**0.071 J**	**0.099 J**	**0.032 J**	**0.033 J**	**0.032 J**	**0.1 J**
Total solids	--	**92.8**	**79.4**	**82.5**	**75.5**	**84.9**	**83**	**78**
Total volatile solids	--	1 U	--	--	--	--	--	--
Grain Size (pct)									
Gravel (>2mm)	--	**6.08**	**8.85**	**11.6**	**1.66**	**29.6**	**15.5**	**1.4**
Sand (2.0mm – 0.063mm)	--	**91.1**	**89.1**	**86.7**	**97.1**	**66.9**	**81.7**	**97.6**
Silt, 5-63 micron	--	**1.7**	**1.7**	**1.3**	**0.8**	**2.7**	**2.4**	**1**
Clay, <5 micron	--	**1.1**	**0.3**	**0.6**	**0.4**	**0.8**	**0.4**	**0.2**
Percent retained 63 micron sieve (#230)	--	**0.16**	**0.18**	**0.14**	**0.08**	**0.18**	**0.19**	**0.16**
Percent retained 75 micron sieve (#200)	--	**0.55**	**0.63**	**0.58**	**0.35**	**0.62**	**0.76**	**0.95**
Percent retained 106 micron sieve (#140)	--	**1.23**	**1.42**	**1.37**	**0.98**	**1.08**	**1.57**	**2.91**
Percent retained 150 micron sieve (#100)	--	**15.9**	**18.4**	**17.2**	**16.8**	**8.42**	**16.7**	**29.4**
Percent retained 250 micron sieve (#60)	--	**41.2**	**40.6**	**41.9**	**50.6**	**22.7**	**36**	**50.6**
Percent retained 425 micron sieve (#40)	--	**22.6**	**19.6**	**18.7**	**23**	**20.5**	**19.7**	**11.7**
Percent retained 850 micron sieve (#20)	--	**9.43**	**8.24**	**6.82**	**5.24**	**13.4**	**6.77**	**1.87**
Percent retained 2000 micron sieve (#10)	--	**3.59**	**4.31**	**2.86**	**1.37**	**17.6**	**5.89**	**0.44**
Percent retained 4750 micron sieve (#4)	--	**2.49**	**4.54**	**8.78**	**0.29**	**12**	**9.59**	**0.96**
Metals (mg/kg)									
Antimony	--	0.534 U	0.61 U	0.584 U	0.654 U	0.58 U	0.602 U	0.617 U
Arsenic	14	**1.69**	**1.56**	**1.38**	**2.05**	**1.51**	**1.74**	**1.92**
Cadmium	2.1	0.534 U	0.61 U	0.584 U	0.654 U	0.58 U	0.602 U	0.617 U
Chromium	72	**6.82**	**4.77**	**4.03**	**5.4**	**5.38**	**5.95**	**6**
Copper	400	**8.73**	**6.23**	**4.9**	**8.07**	**23.1**	**7.19**	**7.58**
Lead	360	**2.21**	**2.12**	**1.84**	**2.14**	**2**	**2.35**	**2.44**
Mercury	0.66	0.0428 U	**0.0286 J**	0.0467 U	0.0523 U	0.0464 U	0.0482 U	0.0493 U
Nickel	26	**8.42**	**6.55**	**5.67**	**7.28**	**7.49**	**7.64**	**9.66**
Selenium	11	1.07 U	1.22 U	1.17 U	1.31 U	1.16 U	1.2 U	1.23 U
Silver	0.57	0.534 U	0.61 U	0.584 U	0.654 U	0.58 U	0.602 U	0.617 U
Zinc	3200	**36**	**31.7**	**28.6**	**31.9**	**31.7**	**32.7**	**38.1**
Organometallic Compounds (µg/kg)									
Butyltin (ion)	540	3.63 U	--	--	--	--	--	--
Dibutyltin (ion)	910	5.15 U	--	--	--	--	--	--
Tetrabutyltin	97	4.45 U	--	--	--	--	--	--
Tributyltin (ion)	47	3.44 U	--	--	--	--	--	--
Semivolatile Organics (µg/kg)									
1,2,4-Trichlorobenzene	--	6.98 U	8.16 U	7.79 U	8.42 U	7.59 U	7.6 U	8.04 U
1,2-Dichlorobenzene	--	6.98 U	8.16 U	7.79 U	8.42 U	7.59 U	7.6 U	8.04 U
1,4-Dichlorobenzene	--	6.98 U	8.16 U	7.79 U	8.42 U	7.59 U	7.6 U	8.04 U
1-Methylnaphthalene	--	5.58 U	6.52 U	6.22 U	6.73 U	6.07 U	6.07 U	6.42 U
2,4-Dimethylphenol	--	13.9 U	16.3 U	15.5 U	16.8 U	15.1 U	15.2 U	16 U

Table 1
Summary of Confirmational Sample Results

FINAL VALIDATED DATA

		Task	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction
		Location ID	Backfill Material	CS-01	CS-01	CS-02	CS-03	CS-04	CS-05
		Sample Date	10/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016
		Sample ID	Dibblee-101116	CS-01-0-6-11112016	CS-101-0-6-11112016	CS-02-0-6-11112016	CS-03-0-6-11112016	CS-04-0-6-11112016	CS-05-0-6-11112016
		Depth	--	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm
		Sample Type	N	N	FD	N	N	N	N
	SMS Freshwater SCO								
2-Methylnaphthalene	--	5.58 U	6.52 U	6.22 U	6.73 U	6.07 U	6.07 U	6.42 U
2-Methylphenol (o-Cresol)	--	6.98 U	8.16 U	7.79 U	8.42 U	7.59 U	7.6 U	8.04 U
3-Methylphenol & 4-Methylphenol (m&p-Cresol)	260	6.98 U	8.16 U	7.79 U	8.42 U	7.59 U	7.6 U	8.04 U
Acenaphthene	--	2.79 U	3.27 U	3.12 U	3.37 U	3.04 U	3.04 U	3.22 U
Acenaphthylene	--	2.79 U	3.27 U	3.12 U	3.37 U	3.04 U	3.04 U	3.22 U
Anthracene	--	2.79 U	3.27 U	3.12 U	3.37 U	3.04 U	3.04 U	3.22 U
Benzo(a)anthracene	--	2.79 U	3.27 U	3.12 U	**2.74 J**	3.04 U	3.04 U	3.22 U
Benzo(a)pyrene	--	4.19 U	4.89 U	4.67 U	**2.96 J**	**2.3 J**	4.56 U	4.82 U
Benzo(b)fluoranthene	--	4.19 U	4.89 U	4.67 U	**5.29**	**2.47 J**	4.56 U	4.82 U
Benzo(g,h,i)perylene	--	2.79 U	3.27 U	3.12 U	3.37 U	3.04 U	3.04 U	3.22 U
Benzo(k)fluoranthene	--	4.19 U	4.89 U	4.67 U	5.05 U	4.55 U	4.56 U	4.82 U
Benzoic acid	2900	349 UJ	407 UJ	389 UJ	421 UJ	379 UJ	380 UJ	401 UJ
Benzyl alcohol	--	13.9 U	16.3 U	15.5 U	16.8 U	15.1 U	15.2 U	16 U
bis(2-Ethylhexyl)phthalate	500	41.9 U	48.9 U	46.7 U	50.5 U	45.5 U	45.6 U	48.2 U
Butylbenzyl phthalate	--	27.9 U	32.7 U	31.2 U	33.7 U	30.4 U	30.4 U	32.2 U
Carbazole	900	4.19 U	4.89 U	4.67 U	5.05 U	4.55 U	4.56 U	4.82 U
Chrysene	--	2.79 U	3.27 U	3.12 U	**5.86**	3.04 U	3.04 U	3.22 U
Dibenzo(a,h)anthracene	--	2.79 U	3.27 U	3.12 U	3.37 U	3.04 U	3.04 U	3.22 U
Dibenzofuran	200	2.79 U	3.27 U	3.12 U	3.37 U	3.04 U	3.04 U	3.22 U
Diethyl phthalate	--	27.9 U	32.7 U	31.2 U	33.7 U	30.4 U	30.4 U	32.2 U
Dimethyl phthalate	--	27.9 U	32.7 U	31.2 U	33.7 U	30.4 U	30.4 U	32.2 U
Di-n-butyl phthalate	380	27.9 U	16.3 U	15.5 U	16.8 U	15.1 U	15.2 U	16 U
Di-n-octyl phthalate	39	27.9 U	32.7 U	31.2 U	33.7 U	30.4 U	30.4 U	32.2 U
Fluoranthene	--	2.79 U	3.27 U	3.12 U	**6.09**	3.04 U	3.04 U	3.22 U
Fluorene	--	2.79 U	3.27 U	3.12 U	3.37 U	3.04 U	3.04 U	3.22 U
Hexachlorobenzene	--	2.79 U	3.27 U	3.12 U	3.37 U	3.04 U	3.04 U	3.22 U
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	--	6.98 U	8.16 U	7.79 U	8.42 U	7.59 U	7.6 U	8.04 U
Indeno(1,2,3-c,d)pyrene	--	2.79 U	3.27 U	3.12 U	3.37 U	3.04 U	3.04 U	3.22 U
Naphthalene	--	5.58 U	6.52 U	6.22 U	6.73 U	6.07 U	6.07 U	6.42 U
n-Nitrosodiphenylamine	--	6.98 U	8.16 U	7.79 U	8.42 U	7.59 U	7.6 U	8.04 U
Pentachlorophenol	1200	27.9 UJ	65.2 U	62.2 U	67.3 U	60.7 U	60.7 U	64.2 U
Phenanthrene	--	2.79 U	3.27 U	3.12 U	**3.42**	3.04 U	3.04 U	3.22 U
Phenol	120	5.58 U	6.52 U	6.22 U	6.73 U	6.07 U	6.07 U	6.42 U
Pyrene	--	2.79 U	3.27 U	3.12 U	**5.65**	3.04 U	3.04 U	3.22 U
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	--	4.19 U	4.89 U	4.67 U	**4.4111 J**	**3.2457 J**	4.56 U	4.82 U
Total HPAH (SMS) (U = 1/2)	--	4.19 U	4.89 U	4.67 U	**36.17 J**	**17.69 J**	4.56 U	4.82 U
Total LPAH (SMS) (U = 1/2)	--	5.58 U	6.52 U	6.22 U	**13.53**	6.07 U	6.07 U	6.42 U
Total PAH (SMS) (U = 1/2)	--	5.58 U	6.52 U	6.22 U	**49.7 J**	**28.32 J**	6.07 U	6.42 U
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 0)	--	4.19 U	4.89 U	4.67 U	**3.8216 J**	**2.547 J**	4.56 U	4.82 U
Total HPAH (SMS) (U = 0)	--	4.19 U	4.89 U	4.67 U	**28.59 J**	**4.77 J**	4.56 U	4.82 U
Total LPAH (SMS) (U = 0)	--	5.58 U	6.52 U	6.22 U	**3.42**	6.07 U	6.07 U	6.42 U
Total PAH (SMS Freshwater 2013) (U = 0)	17000	5.58 U	6.52 U	6.22 U	**32.01 J**	**4.77 J**	6.07 U	6.42 U
Total PAH (SMS) (U = 0)	--	5.58 U	6.52 U	6.22 U	**32.01 J**	**4.77 J**	6.07 U	6.42 U
Pesticides (µg/kg)									

Table 1
Summary of Confirmational Sample Results

FINAL VALIDATED DATA

		Task	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction
		Location ID	Backfill Material	CS-01	CS-01	CS-02	CS-03	CS-04	CS-05
		Sample Date	10/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016
		Sample ID	Dibblee-101116	CS-01-0-6-11112016	CS-101-0-6-11112016	CS-02-0-6-11112016	CS-03-0-6-11112016	CS-04-0-6-11112016	CS-05-0-6-11112016
		Depth	--	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm
		Sample Type	N	N	FD	N	N	N	N
	SMS Freshwater SCO								
2,4'-DDD (o,p'-DDD)	--	1.05 U	--	--	--	--	--	--
2,4'-DDE (o,p'-DDE)	--	1.05 U	--	--	--	--	--	--
2,4'-DDT (o,p'-DDT)	--	1.05 U	--	--	--	--	--	--
4,4'-DDD (p,p'-DDD)	--	1.05 U	--	--	--	--	--	--
4,4'-DDE (p,p'-DDE)	--	1.05 U	--	--	--	--	--	--
4,4'-DDT (p,p'-DDT)	--	1.05 U	--	--	--	--	--	--
Aldrin	--	1.05 U	--	--	--	--	--	--
Chlordane, alpha- (Chlordane, cis-)	--	1.05 U	--	--	--	--	--	--
Chlordane, beta- (Chlordane, trans-)	--	1.05 U	--	--	--	--	--	--
Dieldrin	4.9	1.05 U	--	--	--	--	--	--
Endrin ketone	8.5	1.05 U	--	--	--	--	--	--
Heptachlor	--	1.05 U	--	--	--	--	--	--
Hexachlorobenzene	--	2.63 U	--	--	--	--	--	--
Hexachlorocyclohexane (BHC), beta-	7.2	1.05 U	--	--	--	--	--	--
Nonachlor, cis-	--	1.05 U	--	--	--	--	--	--
Nonachlor, trans-	--	1.05 U	--	--	--	--	--	--
Oxychlordane	--	1.05 U	--	--	--	--	--	--
Sum DDD (U = 1/2)	--	1.05 U	--	--	--	--	--	--
Sum DDE (U = 1/2)	--	1.05 U	--	--	--	--	--	--
Sum DDT (U = 1/2)	--	1.05 U	--	--	--	--	--	--
Total Chlordane (U = 1/2)	--	1.05 U	--	--	--	--	--	--
Total DDx (U = 1/2)	--	1.05 U	--	--	--	--	--	--
Sum DDD (U = 0)	310	1.05 U	--	--	--	--	--	--
Sum DDE (U = 0)	21	1.05 U	--	--	--	--	--	--
Sum DDT (U = 0)	100	1.05 U	--	--	--	--	--	--
Total Chlordane (U = 0)	--	1.05 U	--	--	--	--	--	--
Total DDx (U = 0)	--	1.05 U	--	--	--	--	--	--
Dioxin Furans (ng/kg)								
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	--	0.18 U	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	--	0.102 U	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	0.0715 U	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	0.0975 U	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	--	0.0753 U	--	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	--	0.741 U	--	--	--	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	--	**2.79 J**	--	--	--	--	--	--
Total Tetrachlorodibenzo-p-dioxin (TCDD)	--	0.18 U	--	--	--	--	--	--
Total Pentachlorodibenzo-p-dioxin (PeCDD)	--	**0.12 J**	--	--	--	--	--	--
Total Hexachlorodibenzo-p-dioxin (HxCDD)	--	0.0715 U	--	--	--	--	--	--
Total Heptachlorodibenzo-p-dioxin (HpCDD)	--	**0.689 J**	--	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	--	**0.239 J**	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	--	0.0582 U	--	--	--	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	--	0.0558 U	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	--	0.0941 U	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	0.0611 U	--	--	--	--	--	--

Table 1
Summary of Confirmational Sample Results

FINAL VALIDATED DATA

		Task	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction	MTCA_InterimAction
		Location ID	Backfill Material	CS-01	CS-01	CS-02	CS-03	CS-04	CS-05
		Sample Date	10/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016
		Sample ID	Dibblee-101116	CS-01-0-6-11112016	CS-101-0-6-11112016	CS-02-0-6-11112016	CS-03-0-6-11112016	CS-04-0-6-11112016	CS-05-0-6-11112016
		Depth	--	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm	0 - 6 cm
		Sample Type	N	N	FD	N	N	N	N
	SMS Freshwater SCO								
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	--	0.0901 U	--	--	--	--	--	--	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	0.066 U	--	--	--	--	--	--	
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	--	**0.298 J**	--	--	--	--	--	--	
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	--	0.101 U	--	--	--	--	--	--	
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	--	0.354 U	--	--	--	--	--	--	
Total Tetrachlorodibenzofuran (TCDF)	--	**0.549 J**	--	--	--	--	--	--	
Total Pentachlorodibenzofuran (PeCDF)	--	**0.14 J**	--	--	--	--	--	--	
Total Hexachlorodibenzofuran (HxCDF)	--	**0.0718 J**	--	--	--	--	--	--	
Total Heptachlorodibenzofuran (HpCDF)	--	**0.298 J**	--	--	--	--	--	--	
Total Dioxin/Furan (U = 1/2)	--	**4.4008 J**	--	--	--	--	--	--	
Total Dioxin/Furan (U = 0)	--	**3.327 J**	--	--	--	--	--	--	
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	--	**0.2100031 J**	--	--	--	--	--	--	
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0)	--	**0.027717 J**	--	--	--	--	--	--	
PCB Aroclors (µg/kg)									
Aroclor 1016	--	9.22 U	4.78 U	4.55 U	4.92 U	4.59 U	4.56 U	4.86 U	
Aroclor 1221	--	9.22 U	4.78 U	4.55 U	4.92 U	4.59 U	4.56 U	4.86 U	
Aroclor 1232	--	9.22 U	4.78 U	4.55 U	4.92 U	4.59 U	4.56 U	4.86 U	
Aroclor 1242	--	9.22 U	4.78 U	4.55 U	4.92 U	4.59 U	4.56 U	4.86 U	
Aroclor 1248	--	9.22 U	4.78 U	4.55 U	4.92 U	4.59 U	4.56 U	4.86 U	
Aroclor 1254	--	9.22 U	4.78 U	4.55 U	4.92 U	4.59 U	4.56 U	4.86 U	
Aroclor 1260	--	9.22 U	4.78 U	4.55 U	4.92 U	4.59 U	4.56 U	4.86 U	
Total PCB Aroclors (U = 1/2)	--	9.22 U	4.78 U	4.55 U	4.92 U	4.59 U	4.56 U	4.86 U	
Total PCB Aroclors (SMS Freshwater 2013) (U = 0)	110	9.22 U	4.78 U	4.55 U	4.92 U	4.59 U	4.56 U	4.86 U	
Total PCB Aroclors (U = 0)	--	9.22 U	4.78 U	4.55 U	4.92 U	4.59 U	4.56 U	4.86 U	
Total Petroleum Hydrocarbons (mg/kg)									
Diesel range hydrocarbons	340	18.8 U	30.2 U	29.1 U	32.3 U	28.5 U	28.5 U	31.4 U	
Oil range organics	3,600	37.5 U	60.5 U	58.3 U	64.6 U	56.9 U	57 U	62.8 U	

Table 1
Summary of Confirmational Sample Results

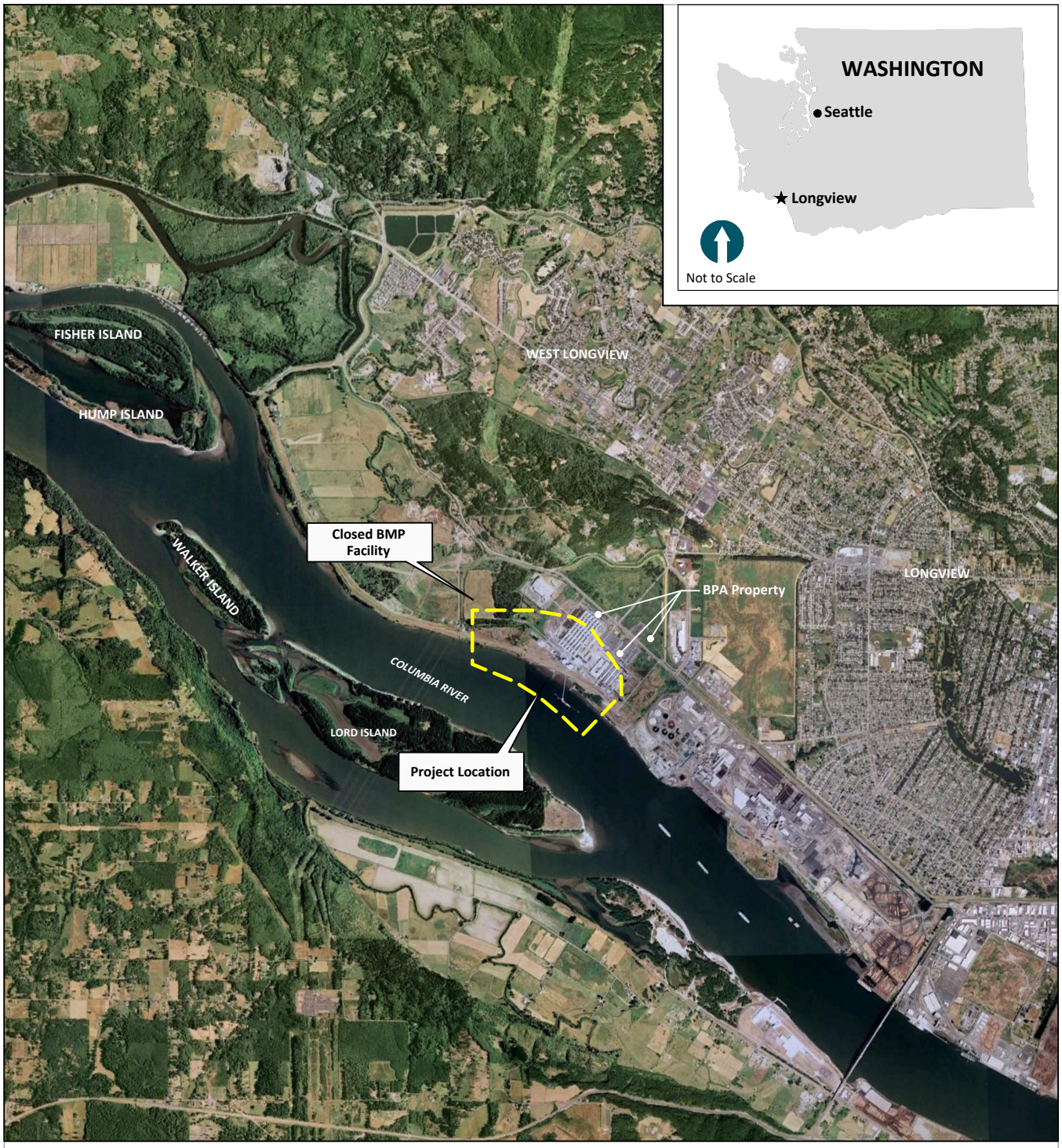
Notes:
Detected concentration is greater than SMS Freshwater Sediment Cleanup Objective (2013)
Non-detected concentration is above one or more identified screening levels
Bold = Detected result
-- = Results not reported or not applicable
J = Estimated value
U = Compound analyzed, but not detected above detection limit
UJ = Compound analyzed, but not detected above estimated detection limit

µg/kg = microgram per kilogram
CAEPA = California U.S. Environmental Protection Agency
cm = centimeter
cPAH = cacogenic polycyclic aromatic hydrocarbon
FD = field duplicate sample
FS = Feasibility Study
HPAH = high-molecular-weight polycyclic aromatic hydrocarbon

LPAH = low-molecular-weight polycyclic aromatic hydrocarbon
mg/kg = milligram per kilogram
N = normal sample
ng/kg = nanogram per kilogram
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
pct = percent
RI = Remedial Investigation
SMS = Sediment Management Standards
SCO = Sediment Cleanup Objective
TEQ = toxic equivalency
USEPA = U.S. Environmental Protection Agency

Totals are calculated as the sum of all detected results (U=0). If all results are not detected, the highest reporting limit value is reported as the sum.
Totals are calculated as the sum of all detected results and half of the reporting limit of undetected results (U=1/2). If all results are not detected, the highest reporting limit value is reported as the sum.
Total cPAH TEQ (7 minimum CAEPA 2005) calculation includes benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene,
Total LPAH (SMS) are the total of acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene. 2-Methylnapthalene is not included in the sum of LPAHs.
Total HPAH (SMS) are the total of benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, and pyrene.
Total PAH (SMS) are the total of acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene,
Sum DDD is the sum of 4,4'-DDD and 2,4'-DDD.
Sum DDE is the sum of 4,4'-DDE and 2,4'-DDE.
Sum DDT is the sum of 4,4'-DDT and 2,4'-DDT.
Total DDx is the sum of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT 2,4'-DDD, 2,4'-DDE, and 2,4'-DDT if measured.
Total chlordane is the sum of cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, and oxychlordane.
Dioxin/furan TEQ values were calculated with 2005 World Health Organization (WHO) TEF values for mammals.
Total PCB Aroclors is the total of all PCB Aroclors listed in this table.
USEPA Stage 2B data validation was completed by Laboratory Data Consultants (LDC).
Results are reported in dry weight basis.
All non-detect results are reported at the reporting limit.

Figures



SOURCE: Aerial from Google Pro, 2010.
HORIZONTAL DATUM: Washington State Plane South, NAD83, U.S. Feet.

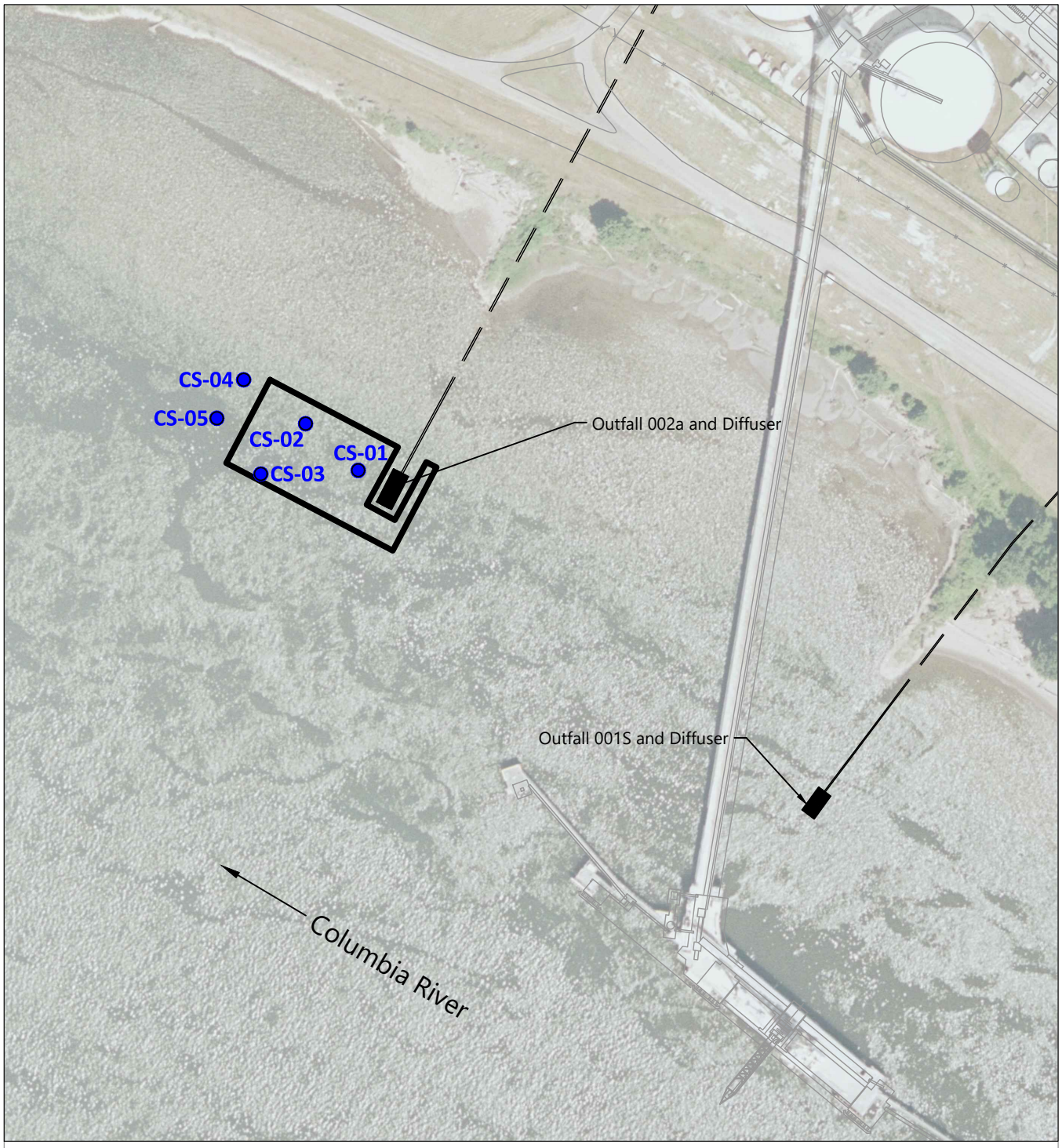
0 5000
Feet

Publish Date: 2017/06/21 9:02 AM | User: chewett
Filepath: K:\Projects\0730-MBT-Longview\01-C-03 (Implementation)\0730-WK-020 (2017Feb Sampling).dwg F1

ANCHOR QEA

Figure 1
Vicinity Map

Former Reynolds Metals Reduction Plant
Sediment Interim Action Completion Report



SOURCE: Aerial from Aerometric, dated May, 2013.
HORIZONTAL DATUM: Washington State Plane South, NAD83, U.S. Feet.

LEGEND:

Dredge Area

Confirmation Sample Location (November 11, 2016)

0 200
Feet

Publish Date: 2017/06/21 9:03 AM | User: chewett
Filepath: K:\Projects\0730-MBT-Longview\01-C-03 (Implementation)\0730-WK-020 (2017Feb Sampling).dwg F2

ANCHOR QEA

Figure 2
Confirmation Sample Locations (November 11, 2016)

Former Reynolds Metals Reduction Plant
Sediment Interim Action Completion Report

Appendix A
Inspector's Daily Reports

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 10/31/2016
REPORT NO.: 01

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO	CONTRACTOR NAME AND CONTACT	WEATHER TEMP. AND PRECIPITATION
Client: Trevor Simmons	General: HME	AM:
CC: Halah Voges	Subs:	PM: Cloudy, Showers, 55 degrees
Mark Larsen		TIME OF SITE VISIT/OBSERVATION
		From: 1430 To: 1730

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Dredging	Upstream of Outfall 02	Worked the whole area upstream of the outfall to the end of it (not offshore of the ourfall) and a single pass downstream of the outfall.

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Justin Bay	Prime	Barge Captain
Phillip Stacey	Prime	Operator
Vincent Stacey	Prime	Pile Buck
Jason	Prime	Hydrographic surveyor
Dennis Forsberg	Prime	Deck hand

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture with 12 CY rehandling bucket.	4			6
Prime		Barge #6	4			6
Prime		Water management barge	4			6
Prime		Two crew boats. One with twin 225 Mercury outboards (this one is also a hydrographic vessel) and one with twin 150 Mercury outboards	10			
Prime		Tug Nova. Twin 400 hp engines.	10			
Prime		Material Barge Umpqua		8		
Prime		Material Barge Reedsport		8		
Prime		Derrick Barge Sea Lion (used as a spud barge for material barges		8		

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Dredging and Water Management Operations

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald DATE: 10/31/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 10/31/2016
REPORT NO.: 01

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

DIARY

TIME	DISCUSSION
1200	Depart Tacoma
1415	Arrive Millennium Security Gate
1430	Met Sheri of HME at the dock. She called Justin Bay (the Barge Captain) and he sent a boat to pick me up.
1440	On the derrick barge Sea Vulture. Material barge #6 is being loaded and a water management barge is being filled with water from #6. There was also the derrick barge Sea Lion and two material barges on site (Upmqua and Reedsport) which were not involved in today's activities.
1520	I was told that dredging began a little after noon by HME. There is a fair amount of debris being removed. They are averaging about 5-6 cy per bucket load. Debris includes stumps, logs and wood debris.
~1600	Finish digging upstream of the outfall footprint. Repositioning downstream of the outfall.
1610	Begin digging inshore and downstram of the outfall.
1620	HME is running single beam daily survey.
1635	Done digging for the day. Pumping water from scow #6 to the water management barge.
1700	At dock and off site.

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Notified by Grette representatives that they performed two different water quality monitoring events with no exceedances.

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION

DAILY PROGRESS SURVEYS

PROGRESS SURVEY RECEIVED TODAY?	FOR WHICH DATE(S)?
☐ Yes ☒ No	First day of work. A survey was performed, but hasn't been received.

VISITORS

TIME	NAME	REPRESENTING	COMMENT

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald DATE: 10/31/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 10/31/2016
REPORT NO.: 01

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

MATERIALS TESTING

MATERIAL	DESCRIPTION OF TEST (location, type of test, and general findings)	PASS/FAIL

PHOTOS

Comment: Derrick Barge Sea Vulture dredging sediments.

Comment: Large wood and root structures removed from site and crew addressing dewatering hoses to water management barge.

Comment: Dredge material and debris in Scow #6.

Comment: Removing piling from dredge prism.

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald

DATE: 10/31/2016

CM-18 (Rev. 12/13)

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/01/2016
REPORT NO.: 02

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Cloudy Showers, 50 degrees	
CC:	Halah Voges	Subs:		PM: Cloudy, 58 degrees	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
				From: 0630	To: 1630

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Dredging	Downstream and offshore of Outfall 02A	Also did some cleanup work upstream on outfall 02A

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Justin Bay	Prime	Barge Captain
Phillip Stacey	Prime	Operator
Vincent Stacey	Prime	Pile Buck
Jason Meyer	Prime/Sub	Hydrographic surveyor
Dennis Forsberg	Prime	Deck hand
Russ Tayllor	Prime	Deck hand
Mark Rien	Prime	Project Manager

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture with 12 CY rehandling bucket. Switched to 8 CY digging bucket	10			
Prime		Barge #6	5			5
Prime		Water management barge	10			
Prime		Two crew boats. One with twin 225 Mercury outboards (this one is also a hydrographic vessel) and one with twin 150 Mercury outboards	10			
Prime		Tug Nova. Twin 400 hp engines.	10			
Prime		Material Barge Umpqua	5			5
Prime		Material Barge Reedsport				8
Prime		Derrick Barge Sea Lion (used as a spud barge for idle material barges				8

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Dredging and Water Management Operations

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald DATE: 11/01/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/01/2016
REPORT NO.: 02

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

DIARY

TIME	DISCUSSION
0615	Depart motel.
0630	Arrive Millennium Security Gate
0645	Arrive DB Sea Vulture.
0700	Held daily safety meeting.
0715	Begin dredging downsteam of Outfall 02 using the 12 cy rehandling bucket. Getting full buckets on the first cut, but the second cut (two cuts per Hypack location) isn't getting good penetration
0800	Switch to 8 CY digging bucket.
0900	Resume digging with new bucket. Working offshore of the outfall and doing a cleanup pass upstream of the outfall.
1145	Barge #6 is full. Repositioning derrick; moving Barge #6 away and bringing in the Umpqua; performing maintenance on the digging bucket; resenting the boom.
1315	Resume dredging.
1545	Surveying today's work
1550	Last bucket load of the day excavated.
1615	Off barge and on dock.
1630	Off site.

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Notified by Grette representatives that they performed two different water quality monitoring events with no exceedances. See their data for details.

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION

DAILY PROGRESS SURVEYS

PROGRESS SURVEY RECEIVED TODAY?	FOR WHICH DATE(S)?
☒ Yes ☐ No	10/31/2016

VISITORS

TIME	NAME	REPRESENTING	COMMENT

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald DATE: 11/01/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/01/2016
REPORT NO.: 02

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

MATERIALS TESTING

MATERIAL	DESCRIPTION OF TEST (location, type of test, and general findings)	PASS/FAIL

PHOTOS

Comment: Placing sediments in Scow #6 with rehandling bucket.

Comment: Digging bucket.

Comment: Dredge material in Scow #6 (near full).

Comment: Dewatering activities from Umpqua barge. Note that every corner of the barge has this screening fixture.

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald

DATE: 11/01/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/02/2016
REPORT NO.: 03

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO	CONTRACTOR NAME AND CONTACT	WEATHER TEMP. AND PRECIPITATION
Client: Trevor Simmons	General: HME	AM: Cloudy, 53 degrees
CC: Halah Voges	Subs:	PM: Cloudy, 60 degrees
Mark Larsen		TIME OF SITE VISIT/OBSERVATION
		From: 0700 To: 1700

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Dredging	Downstream and offshore of Outfall 02A	

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Justin Bay	Prime	Barge Captain
Phillip Stacey	Prime	Operator
Vincent Stacey	Prime	Pile Buck
Jason Meyer	Prime/Sub	Hydrographic surveyor
Dennis Forsberg	Prime	Deck hand
Russ Taylor	Prime	Deck hand

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture with 8 CY digging bucket	10			
Prime		Barge #6				8
Prime		Water management barge	10			
Prime		Two crew boats. One with twin 225 Mercury outboards (this one is also a hydrographic vessel) and one with twin 150 Mercury outboards	10			
Prime		Tug Nova. Twin 400 hp engines.	10			
Prime		Material Barge Umpqua	10			
Prime		Material Barge Reedsport				8
Prime		Derrick Barge Sea Lion (used as a spud barge for idle material barges				8

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Dredging and Water Management Operations

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald DATE: 11/02/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/02/2016
REPORT NO.: 03

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

DIARY

TIME	DISCUSSION
0630	Depart motel.
0645	Arrive Millennium Security Gate
0700	Arrive DB Sea Vulture. Held safety meeting.
0715	Water management and maintenance on the derrick (Manitowoc 4600).
0755	Begin dredging downstream of Outfall 02 using the 8 CY digging bucket.
1200	Repositioning barge. There is a large group of people on shore and then on the dock. Initially thought they were from Ecology, who were expected between 1300 and 1400.
1215	Resume dredging.
1240	Crane and bucket lubrication activity.
1305	Resume dredging.
1345	Ecology group on site to observe operations from the shoreline.
1445	Break from dredging to pump water off the haul barge.
1520	Resume dredging.
1615	Barge Umpqua is full. Dredging operations are complete for the day. Pumping water off the haul barge.
1645	Crew departs derrick barge.
1700	Off site.

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Notified by Grette representatives that they performed two different water quality monitoring events with no exceedances. See their data for details.
Displacement calculations were shared from Barge #6. Based on a conversion factor of 1.4 ton per CY, it is estimated that Barge #6 had 1161 cubic yards in it.

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION

DAILY PROGRESS SURVEYS

PROGRESS SURVEY RECEIVED TODAY?	FOR WHICH DATE(S)?
☒ Yes ☐ No	11/01/2016

VISITORS

TIME	NAME	REPRESENTING	COMMENT
	None on the derrick; Ecology observed from the shoreline	WSDOE	

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald DATE: 11/02/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/02/2016
REPORT NO.: 03

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

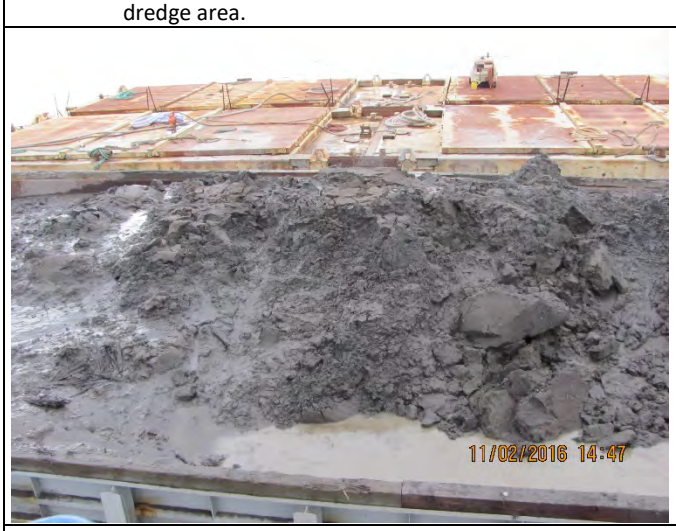
MATERIALS TESTING

MATERIAL	DESCRIPTION OF TEST (location, type of test, and general findings)	PASS/FAIL

PHOTOS

Comment: Full bucket of sediment with water draining back to dredge area.

Comment: Barge nearly full and pumping free water from the barge into the water management barge.



Comment: Another photo of the scow. Panorama from above.

Comment: Another photo of the scow. Panorama from left.

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REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald

DATE: 11/02/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/03/2016
REPORT NO.: 04

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Cloudy, 53 degrees	
CC:	Halah Voges	Subs:		PM: Cloudy, 64 degrees	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
	Nicole LaFranchise			From: 0700	To: 1700

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Dredging	Downstream and offshore of Outfall 02A	

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Justin Bay	Prime	Barge Captain
Phillip Stacey	Prime	Operator
Vincent Stacey	Prime	Pile Buck
Jason Meyer	Prime/Sub	Hydrographic surveyor
Dennis Forsberg	Prime	Deck hand
Russ Taylor	Prime	Deck hand

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture with 8 CY digging bucket	10			
Prime		Barge #6				8
Prime		Water management barge	10			
Prime		Two crew boats. One with twin 225 Mercury outboards (this one is also a hydrographic vessel) and one with twin 150 Mercury outboards	10			
Prime		Tug Nova. Twin 400 hp engines.	10			
Prime		Material Barge Umpqua				8
Prime		Material Barge Reedsport	10			
Prime		Derrick Barge Sea Lion (used as a spud barge for idle material barges				8

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Dredging and Water Management Operations

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald DATE: 11/03/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/03/2016
REPORT NO.: 04

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

DIARY

TIME	DISCUSSION
0645	Depart motel.
0700	Arrive Millennium Security Gate
0720	Arrive DB Sea Vulture with Mark Reid. Safety meeting was previously held.
0725	Reedsport haul barge is being loaded. The HME crew arrived at 0600. Dredging began at 0725. Standing water (likely rainwater) in the Readsport was pumped out between 0640 and 0725.
0830	Depart the derrick for the weekly MTCA meeting.
1000	Return to Sea Vulture. Take videos for MBT as requested. Dredging continues. The Umpqua was filled yesterday and HME reported that it contained 1568 CY based on displacement method and a 1.5 CY/ton. HME has revised their conversion factor to 1.5 CY/ton; based on that the volume in Scow #6 is 1084 CY.
1230	HME greasing the bucket and performing servicing.
1310	Resume dredging.
1600	Begin surveying the whole site with single beam hydrography.
1630	Dredging complete. Moving derrick out of the way so bathy can get whole area.
1645	Depart Sea Vulture
1700	Off site.

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Notified by Grette representatives that they performed two different water quality monitoring events with no exceedances. See their data for details.
Displacement calculations modified for Barge #6. Based on a conversion factor of 1.5 ton per CY, it is estimated that Barge #6 had 1084 cubic yards in it. The Umpqua had 1568 CY in it based on displacement measurements and a 1.5 ton per CY conversion.

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION

DAILY PROGRESS SURVEYS

PROGRESS SURVEY RECEIVED TODAY?	FOR WHICH DATE(S)?
☒ Yes ☐ No	11/02/2016

VISITORS

TIME	NAME	REPRESENTING	COMMENT

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald DATE: 11/03/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/03/2016
REPORT NO.: 04

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

MATERIALS TESTING

MATERIAL	DESCRIPTION OF TEST (location, type of test, and general findings)	PASS/FAIL

PHOTOS

Comment: Sediment in the haul barge Reedsport.

Comment: Sediment in the Reedsport late in the day.

Comment: Water management personnel pumping water from Reedsport to water management barge.

Comment: Scow #6 and Umpqua barges tied off to the derrick Sea Lion.

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald

DATE: 11/03/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/04/2016
REPORT NO.: 05

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Foggy, 47 degrees	
CC:	Halah Voges	Subs:		PM: Clear, 64 degrees	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
	Nicole LaFranchise			From: 0600	To: 1615

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Dredging	Downstream and offshore of Outfall 02A	

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Justin Bay	Prime	Barge Captain
Phillip Stacey	Prime	Operator
Vincent Stacey	Prime	Pile Buck
Jason Meyer	Prime/Sub	Hydrographic surveyor
Dennis Forsberg	Prime	Deck hand

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture with 8 CY digging bucket	10			
Prime		Barge #6				8
Prime		Water management barge	10			
Prime		Two crew boats. One with twin 225 Mercury outboards (this one is also a hydrographic vessel) and one with twin 150 Mercury outboards	10			
Prime		Tug Nova. Twin 400 hp engines.	10			
Prime		Material Barge Umpqua	1			8
Prime		Material Barge Reedsport	10			
Prime		Derrick Barge Sea Lion (used as a spud barge for idle material barges				8

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Dredging and Water Management Operations

DIARY

TIME	DISCUSSION
0530	Depart motel.

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald DATE: 11/06/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/04/2016
REPORT NO.: 05

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

TIME	DISCUSSION
0545	Arrive Millennium Security Gate
0610	Arrive DB Sea Vulture. Safety meeting held.
0630	Shifting derrick into position for dredging cleanup locations.
0710	Begin cleanup passes.
0915	Multibeam surveyers on site
1000	Finish cleanup passes.
1045	Servicing water pumps and taiting on multibeam results.
1200	Move onto site for cleanup passes
1345	Finish dredging high spots. Move Reedsport alongside the Umpqua to transload sediment because the Reesport has only about 2" of freeboard.
1545	Survey shows a few high spots are left but of minimal volume. I forwarded the survey and a recommendation to pick up several high spots that are downstream of the outfall on to Halah and Tom for their concurrence. HME decides to wait for final direction from us to get the last of the dredging on Monday morning prior to beginning backfill placement.
1605	Depart Sea Vulture
1615	Off site.
1830	Arrive Tacoma.

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Notified by Grette representatives that they performed two different water quality monitoring events with no exceedances. See their data for details.

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION

DAILY PROGRESS SURVEYS

PROGRESS SURVEY RECEIVED TODAY?	FOR WHICH DATE(S)?
☒ Yes ☐ No	11/03/2016, 11/04/2016

VISITORS

TIME	NAME	REPRESENTING	COMMENT

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald DATE: 11/06/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/04/2016
REPORT NO.: 05

ANCHOR QEA FIELD REP.: Bruce McDonald
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

MATERIALS TESTING

MATERIAL	DESCRIPTION OF TEST (location, type of test, and general findings)	PASS/FAIL

PHOTOS

Comment: Sediment in the haul barge Reedsport.

Comment: Survey vessel performing multibeam survey.

Comment: Reedsport with minimal freeboard.

Comment: Transfering sediment from Reedsport to Umpqua.

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Bruce McDonald

DATE: 11/06/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/07/2016
REPORT NO.: 06

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Cloudy, 54 degrees	
CC:	Halah Voges	Subs:		PM: Cloudy, 62 degrees	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
	Nicole LaFranchise			From: 0630	To: 1730

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Dredging	Downstream and offshore of Outfall 02A	Clean up three small high spots as indicated by 11/4/16 multi beam survey
Backfilling	Channelward of 20-foot contour line	Upriver extent of dredge prism

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Justin Bay	Prime	Barge Captain
Phillip Stacey	Prime	Operator
Vincent Stacey	Prime	Pile Buck
Jason Meyer	Prime/Sub	Hydrographic surveyor
Dennis Forsberg	Prime	Deck hand

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture with 8 CY digging bucket	2			
Prime		Derrick Barge Sea Vulture with 10 CY cleanup bucket	8			
Prime		Dredged Material Barge #6	2			8
Prime		Water management barge				10
Prime		Two crew boats. One with twin 225 Mercury outboards (this one is also a hydrographic vessel) and one with twin 150 Mercury outboards	10			
Prime		Tug Nova. Twin 400 hp engines.	6	4		
Prime		Backfill material Barge #7	10			
Prime		Backfill material Barge #31	10			
Prime		Derrick Barge Sea Lion (used as a spud barge for idle material barges				10
Prime		Two diesel loaders (used to manage backfill on barges)	10			

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Dredging and backfill placement

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/07/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/07/2016
REPORT NO.: 06

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

DIARY

TIME	DISCUSSION
0530	Depart Portland.
0630	Arrive Millennium Security Gate/safety orientation for Stone
0700	Arrive DB Sea Vulture. Safety meeting held.
0740	Shifting derrick and Barge #6 into position for dredging cleanup locations.
0810	Begin cleanup passes.
0830	Single beam survey of cleanup areas by Jason Meyer
0930	Grette Water Quality Monitoring team on site, begin background measurements
0930	Set up for sand placement from Barge #7 (approx. 1300 tons on barge)
0950-1315	Place sand backfill from 20-foot contour channelward to dredge prism extent (starting at upriver extent, moving down river)
1130	Grette completes first water quality monitoring event of day
1315	Barge #7 empty. Replace with Barge #31 (approx. 1400 tons on barge)
1330	Interim progress single beam survey by Jason Meyer
1415	Resume backfill placement from 20-foot contour channelward to dredge prism extent (continuing to downriver extent of prism)
1500-1645	Grette conducts second round of water quality monitoring for the day and conducts two follow up events.
1715	Offload of backfill sand from Barge #31 completed. End backfill placement activities.
1730	Return to Millennium ship dock/leave site.

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Notified by Grette representatives that they performed one water quality monitoring event #9 at 11:32 with no exceedances. Water quality monitoring event #10 was completed at 15:21 with an exceedance in the deep interval at the mixing boundary. A follow up event (#11) was conducted at 15:58 and an exceedance was measured in the deep interval at the mixing boundary. Event #12 was conducted at 16:36 with a measured exceedance in the deep interval at the mixing boundary. See Grette data for further details.
Event #9: 1132
Event #10: 1521
Event #11 (follow up): 1558
Event #12(follow up): 1636

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION
1558	Exceedance of turbidity guidelines at the mixing boundary and early warning water quality monitoring stations were measured. HME reduced backfill placement cycle times in an attempt to reduce turbidity downstream of operations. Increased turbidity measurements were hypothesized to be the result of an incoming tide and significantly reduced river velocity. Reduced cycle times did not result in lowering the turbidity as shown by follow up measurements (see Grette data for events 11 and 12). HME will modify procedures for 11/9/16 to better manage turbidity during the remaining duration of the work.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/07/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/07/2016
REPORT NO.: 06

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

DAILY PROGRESS SURVEYS

PROGRESS SURVEY RECEIVED TODAY?	FOR WHICH DATE(S)?
☐ Yes ☒ No	Survey of backfill placement on 11/7/16 will be conducted on 11/8/16.

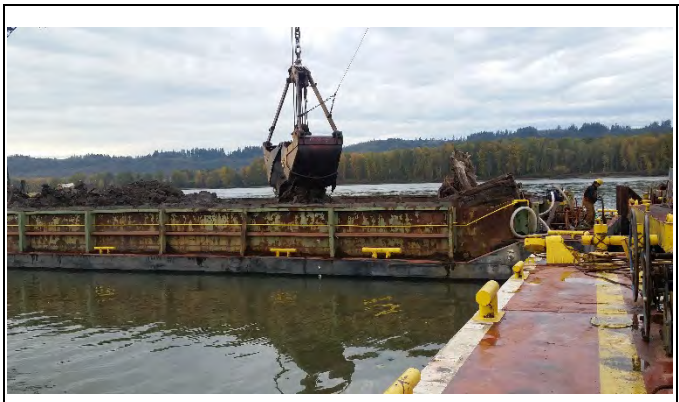
VISITORS

TIME	NAME	REPRESENTING	COMMENT

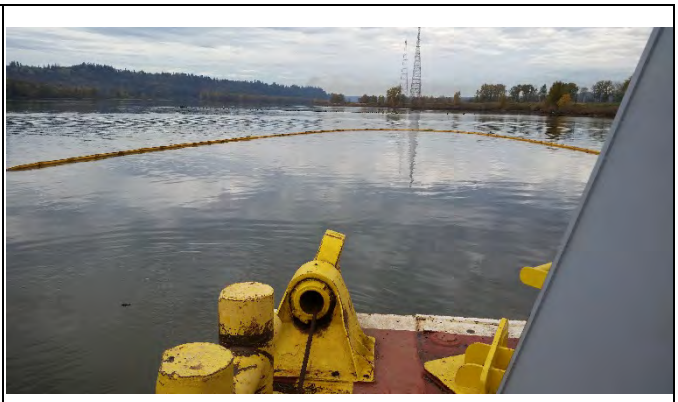
MATERIALS TESTING

MATERIAL	DESCRIPTION OF TEST (location, type of test, and general findings)	PASS/FAIL

PHOTOS

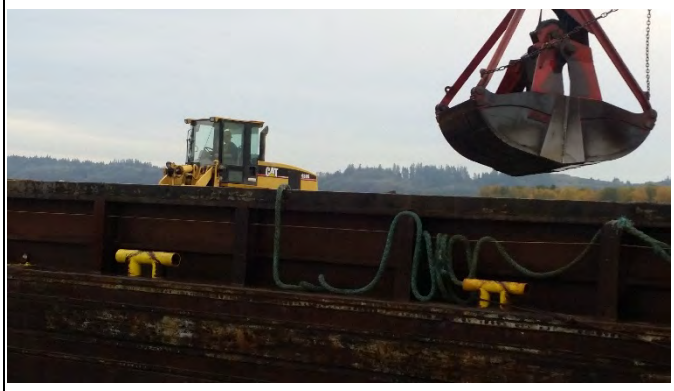


Comment: Loading final cleanup sediments onto Barge #6.



Comment: Configuration of oil boom downstream of operations.

Comment: 10 CY Atlas cleanup bucke placing backfill sand.



Comment: Management of backfill sand with loader on barge.

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REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/07/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/09/2016
REPORT NO.: 07

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Clear, 60 degrees	
CC:	Halah Voges	Subs:		PM: Clear, 66 degrees	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
	Nicole LaFranchise			From: 0700	To: 1730

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Backfilling	Shoreward of 20' Contour line	Moving channelward to shoreward

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Justin Bay	Prime	Barge Captain
Phillip Stacey	Prime	Operator
Vincent Stacey	Prime	Pile Buck
Jason Meyer	Prime/Sub	Hydrographic surveyor
Dennis Forsberg	Prime	Deck hand

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture with 10 CY cleanup bucket	10			
Prime		Dredged Material Barge #6				10
Prime		Water management barge				10
Prime		Two crew boats. One with twin 225 Mercury outboards (this one is also a hydrographic vessel) and one with twin 150 Mercury outboards	10			
Prime		Tug Nova. Twin 400 hp engines.	6	4		
Prime		Backfill material Barge #7	10			
Prime		Backfill material Barge #31	10			
Prime		Derrick Barge Sea Lion (used as a spud barge for idle material barges				10
Prime		Two diesel loaders (used to manage backfill on barges)	10			

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Dredging and backfill placement

DIARY

TIME	DISCUSSION
0530	Depart Portland.
0630	Arrive Millennium Security Gate

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone DATE: 11/09/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/09/2016
REPORT NO.: 07

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

TIME	DISCUSSION
0700	Arrive DB Sea Vulture (SV). Safety meeting held. Discuss strategy to address WQ improvement by slowing placement and reducing volume in material buckets
0725	Set up for backfill placement. Navigate vessels into position
0740	Begin placing backfill shoreward of 20' contour line. Placing material above outfall. Offloading Barge #7 (approx. 1300 tons)
0745	Grette WQ team setting up at background station
0805	Grette WQ team setting up at downriver station
0840	Placement paused to repair cable brake on SV. Notified by Grette WQ team that there were no exceedances measured during event #13
0905	HME relocates SV to downriver of outfall. Resume placement shoreward of 20' contour line moving downriver from outfall
1045	Relocating SV downriver and continuing placement shoreward of 20' contour. Placing upriver to downriver.
1130	Barge #7 empty. Replace with Barge #31 (approx. 1400 tons on barge)
1230	Grette WQ team on site, setting up for second daily measurement
1315	Resume backfill placement within channelward pass from downriver dredge prism extent and moving upriver. HME conducting progress survey using RTK to improve accuracy
1345-1415	Grette conducts second round of water quality monitoring for the day (WQ #14). Notified AQ that no exceedances were measured.
1500	Relocate SV and Barge 31 to immediately downriver of outfall. Begin placement on shoreward pass and moving downriver.
1700	Barge 31 emptied. Less than 15 buckets to place on inside pass.
1715	Disembark SV offload at MBTL dock.
1730	Sign out. Travel to Portland.

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Additional BMPs employed in an attempt to reduce downriver turbidity. HME slowing cycle times and dispensing less-full buckets. No WQ exceedances in AM or PM. AM=incoming tide, slow river velocity. PM=outgoing tide, increased river velocity.
Event #13: completed at 0820—no exceedance
Event #14: completed at 1405—no exceedance

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION
0700	Discussion with HME team regarding methodology for reducing downriver turbidity
0840	Notified by Philip (SV operator) that cable brake replacement would be required. Repair completed.

DAILY PROGRESS SURVEYS

PROGRESS SURVEY RECEIVED TODAY?	FOR WHICH DATE(S)?
☒ Yes ☒ No	Progress survey of backfill placement using RTK for work completed through 13:30.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone DATE: 11/09/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/09/2016
REPORT NO.: 07

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

VISITORS

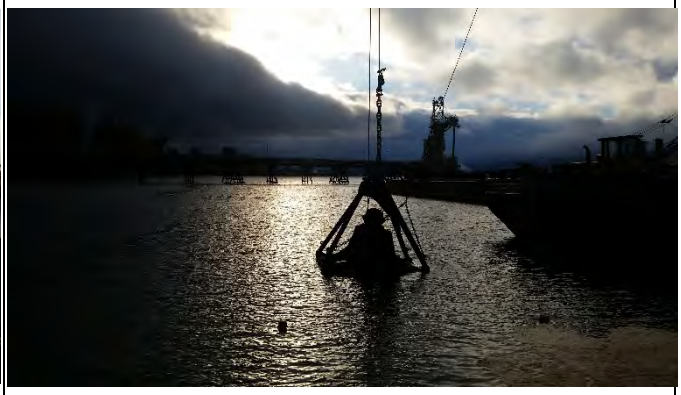
TIME	NAME	REPRESENTING	COMMENT

MATERIALS TESTING

MATERIAL	DESCRIPTION OF TEST (location, type of test, and general findings)	PASS/FAIL

PHOTOS

Comment: Offloading backfill material from clean fill Barge #7.



Comment: Placement of backfill material above outfall in dredge prism.

Comment: Moving clean fill Barge #31 into position.

Comment: Grette Water Quality crew conduction second monitoring event (#13).

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/09/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/11/2016
REPORT NO.: 08

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Clear, 58 degrees	
CC:	Halah Voges	Subs:		PM: Clear, 66 degrees	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
	Nicole LaFranchise			From: 0500	To: 1900

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Backfilling within dredge prism	Shoreward Pass	Small nearshore section of dredge prism
Place Residual Management Cover	Area designated immediately downriver of dredge prism	
Collect post backfill sampling	5 locations shown in EDR	

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Justin Bay	Prime	Barge Captain
Phillip Stacey	Prime	Operator
Vincent Stacey	Prime	Pile Buck
Jason Meyer	Prime/Sub	Hydrographic surveyor
Dennis Forsberg	Prime	Deck hand
Matt and Brent	Sub	Solmar (multi beam survey/sample collection)

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture with 10 CY cleanup bucket	10			
Prime		Dredged Material Barge #6				
Prime		Water management barge				10
Prime		Two crew boats. One with twin 225 Mercury outboards (this one is also a hydrographic vessel) and one with twin 150 Mercury outboards	10			
Prime		Tug Nova. Twin 400 hp engines.	8	2		
Prime		Backfill material Barge #7	10			
Prime		Backfill material Barge #31	10			
Prime		Derrick Barge Sea Lion (used as a spud barge for idle material barges				10
Prime		Two diesel loaders (used to manage backfill on barges)	10			
Sub		Solmar survey vessel/sampling platform (24' foot)	6	4		

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Dredging and backfill placement

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/11/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/11/2016
REPORT NO.: 08

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

DIARY

TIME	DISCUSSION
0330	Depart Portland
0430	Arrive Millennium Security Gate
0445	Arrive DB Sea Vulture (SV). Safety meeting held. Discuss strategy to complete backfill and Residual Management Cover (RMC) placement
0500	Set up for backfill placement. Navigate vessels into position
0625	Begin placing backfill in small nearshore area down river of outfall from Barge #31(approx. 1400 ton)
0650	First pass placement within dredge prism completed. Relocate SV and Barge #31 to RMC area
0700	Begin placing cover sand in RMC area
0900	Grette WQ team completed with Round 1. No exceedance.
0945	First pass placement within RMC area completed
0950	HME relocates SV and Barge #31 off project area in preparation for survey. Approx. 75 CY remaining on Barge #31 (approx. 1200 ton placed)
0955	Solmar begins final survey of backfill and RMC coverage
1010	Solmar survey completed. Begin processing data transmit to AQ Seattle for plotting
1130	Survey plots indicate need for additional backfill and RMC placement
1215	Resume backfill placement in dredge prism and RMC area. Placing material from Barge #7 (600 ton)
1320	Grette completes second round of water quality monitoring for the day. No exceedances measured
1530	Barge #7 empty (approx. 600 ton placed)
1600	Switch Barge #31 into place with SV. Begin placement of remaining 75 CY
1645	End cleanup placement, Barge #31 empty
1645	Move SV off of project area. Solmar begins survey.
1655	Solmar final survey completed.
1655	Anchor QEA boards Solmar vessel to collect samples of post cover placement surface sediment
1700	Anchor QEA collects post fill placement samples
1930	Anchor QEA signs off site. Travel to Rainier, Oregon to load samples from Solmar vessel and demobilize
1940	Depart for Portland. Transport samples under sampler custody for deliver to Apex Labs on 11/14/16

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Additional BMPs employed in an attempt to reduce downriver turbidity. HME slowing cycle times and dispensing less-full buckets. "Sprinkling" backfill at surface. No WQ exceedances in AM or PM.
Event #15: completed at 0900—no exceedance
Event #16: completed at 1320—no exceedance

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION
1230	Discuss areas to prioritize for additional placement (Jason, Mark, Greg, Philip). HME will offload remainder of material on Barge #7 and Barge #31 and mobilize SV and support to The Dalles. If additional backfill or RMC placement is required, HME will return after offload of dredge spoils has been completed.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/11/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/11/2016
REPORT NO.: 08

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

DAILY PROGRESS SURVEYS

PROGRESS SURVEY RECEIVED TODAY?	FOR WHICH DATE(S)?
☒ Yes ☐ No	Solmar multi beam survey #1 at 0955.
	Solmar multi beam survey #2 at 1645

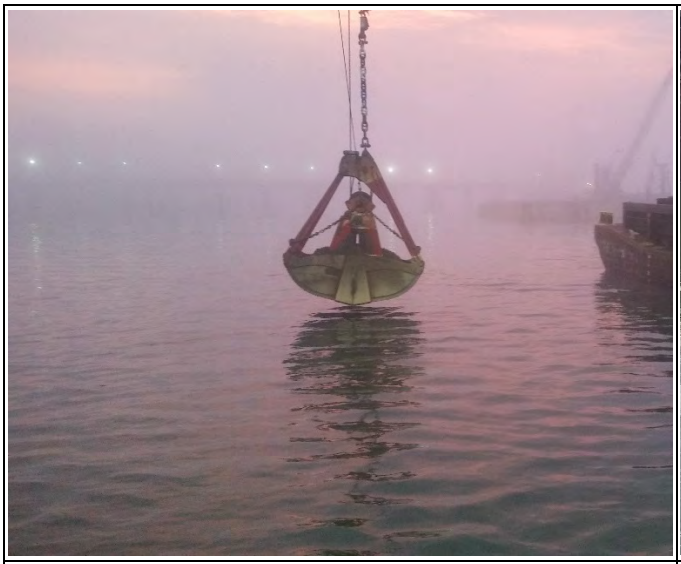
VISITORS

TIME	NAME	REPRESENTING	COMMENT

MATERIALS TESTING

MATERIAL	DESCRIPTION OF TEST (location, type of test, and general findings)	PASS/FAIL

PHOTOS



Comment: Offloading backfill material from clean fill Barge #31 and placing on shoreward edge of dredge prism.

Comment: HME using surface sprinkling/spreading technique to place material within the RMC area.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/11/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/11/2016
REPORT NO.: 08

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

Comment: HME using surface sprinkling/spreading technique to place material within the RMC area.

Comment: Offloading fill material from Barge #31.

Comment: Moving clean fill Barge #7 in to position to place material within the RMC area.

Comment: Solmar conducting multi-beam survey of dredge prism and RMC area.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/11/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/14/2016
REPORT NO.: 09

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Clear, 61 degrees	
CC:	Halah Voges	Subs:		PM: Cloudy, light rain, 60 degrees	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
	Nicole LaFranchise			From: 1530	To: 1900

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Prepare for offloading	The Dalles offload site	
Mobilize Barge Umpqua	The Dalles offload site	

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Darrel Ivy	Prime	Superintendent
Casey Cox	Prime	Operator (Sea Vulture)
Vincent Stacey	Prime	Laborer/operator
Jeff Oaks	Prime	Laborer/operator
Dennis Forsberg	Prime	Laborer/operator
Russell Taylor	Prime	Laborer
Sheri Bremer	Prime	Safety

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture	12			
Prime		Tug Nova. Twin 400 hp engines.	4	8		
Prime		Case skid steer loader (used to manage sediment on barges)		12		
Prime		John Deere 225C excavator	12			
Prime		Cat IT28F Loader	12			
Prime		Snorkelift Model 80				12
Prime		Sediment haul barge UMPQUA	2	10		
Prime		Sediment transfer barge #47	12			
Prime		Sediment transfer/water management barge #BK5	12			
Prime		Tenant lot sweeper (rider)	2	10		

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Dredging and backfill placement

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/14/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/14/2016
REPORT NO.: 09

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

DIARY

TIME	DISCUSSION
0600	HME on site, conduct daily tailgate safety meeting
0615	HME begins setup of offload site in The Dalles, OR
0615-1530	HME moves Sea Vulture(SV) derrick into place at offload site
	Position transfer barge #47 and water management/transfer barge #BK5 at offload site
	Install sediment bin and drying agent bin on land in sediment management area
	HME offloads approx. 12,000 gallons of water recovered from dredged material barges that had been accumultated in tank on barge #BK5
	Position excavator for loading from sediment bin to trucks
1530	Anchor QEA on site
1600	HME receives approx. 20 CY of drying agent from Waste Connections
1600-1900	HME making final preparations and installing final BMPs including splash guards, transfer plates, etc. Haul Barge UMPQUA moved from moorage into position for offloading
1900	End of day

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Site preparation was completed. HME to be on site at 0500 on 11/15 with offload to trucks starting at approx. 0600

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION

VISITORS

TIME	NAME	REPRESENTING	COMMENT

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/14/2016

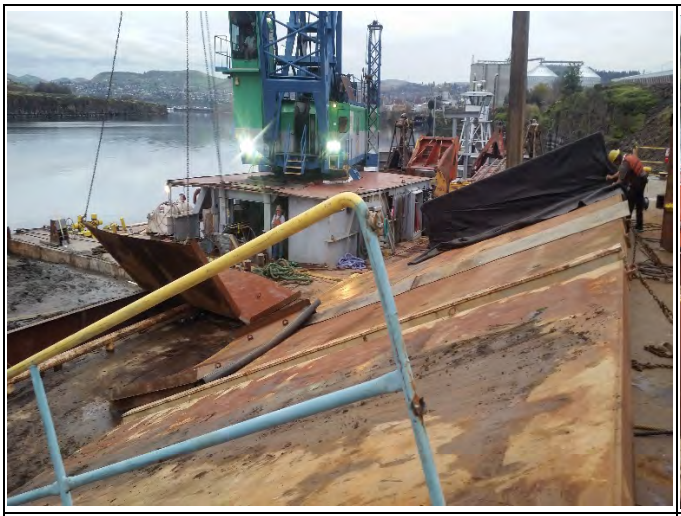
ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

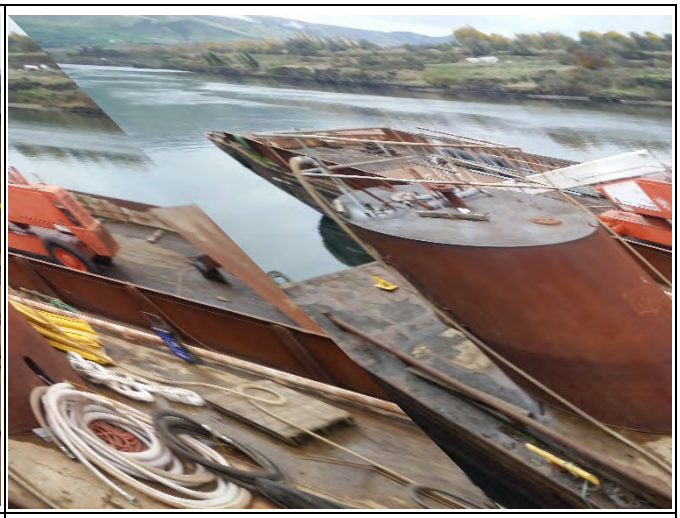
CONTRACT NO.: 160730-01.02
REPORT DATE: 11/14/2016
REPORT NO.: 09

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

PHOTOS



Comment: Installing drip plates between dock structure and Barge #BK5



Comment: Water storage tank positioned on Barge #BK5

Comment: Excavator in place for loading from sedminet bin to haul trucks

Comment: HME installing getotextile fabric as additional splash containment on sides of spill plates

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/14/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/15/2016
REPORT NO.: 10

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Light rain, light wind, 60 deg F	
CC:	Halah Voges	Subs:		PM: Partly cloudy, heavy wind, 55 deg F	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
	Nicole LaFranchise			From: 0600	To: 1730

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Offload sediment from UMPQUA and Barge #47	The Dalles offload site	
Transport sediment by truck to disposal facility	The Dalles offload site/Wasco County Landfill	

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Darrel Ivy	Prime	Superintendent
Casey Cox	Prime	Operator (Sea Vulture)
Vincent Stacey	Prime	Laborer/operator
Jeff Oaks	Prime	Laborer/operator
Dennis Forsberg	Prime	Laborer/operator
Russell Taylor	Prime	Laborer
Sheri Bremer	Prime	Safety

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture equipped with 14 CY environmental bucket	12			
Prime		Tug Nova. Twin 400 hp engines.	4	8		
Prime		Case skid steer loader (used to manage sediment on barges)	8	4		
Prime		John Deere 225C excavator	12			
Prime		Cat IT28F Loader	8	4		
Prime		Snorkelift Model 80				12
Prime		Sediment haul barge UMPQUA	12			
Prime		Sediment transfer barge #47	12			
Prime		Sediment transfer/water management barge #BK5	12			
Prime		Tenant lot sweeper (rider)	4	8		

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone DATE: 11/15/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/15/2016
REPORT NO.: 10

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Offload sediment from barges/load to truck

DIARY

TIME	DISCUSSION
0500	HME on site, conduct daily tailgate safety meeting
0600	HME begins offload from UMPQUA haul barge and barge #47 to lined trucks
1100	Offload to trucks continues. Approx 1/3 of volume on UMPQUA and #47 has been offloaded
1105-1300	AQ observes several trucks while in transit to Wasco County landfill facility. Trucks lined and tarped. No signs of leakage from observed trucks or trailers. Vehicles appear to be leaving site clean with no residual material on exterior or tires.
1315	HME shutsdown transloading operation to repair cable-arm on 14 CY transfer bucket
1415	Resume transloading from UMPQUA and #47 to trucks
1730	HME loads final haul truck and preloads bin in preparation for 11/16 startup
1730	Anchor QEA off site/HME continues preparations for 11/16 startup
1900	HME off site

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

None

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION

VISITORS

TIME	NAME	REPRESENTING	COMMENT

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/15/2016

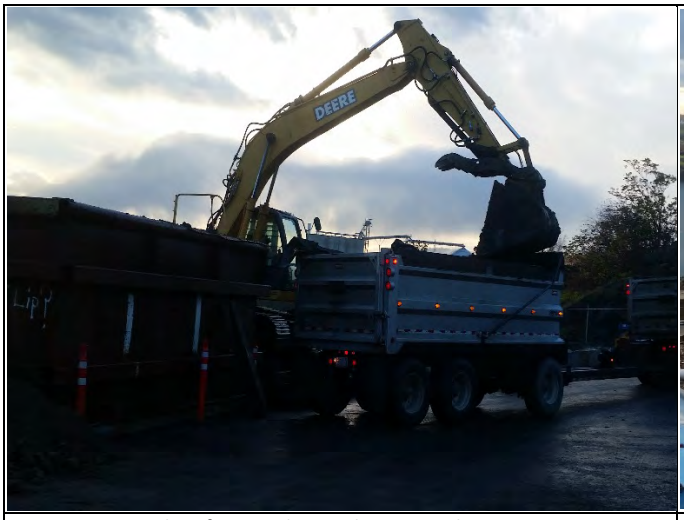
ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/15/2016
REPORT NO.: 10

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

PHOTOS



Comment: Loading from sediment bin to truck

Comment: Sea Vulture derrick transferring material from UMPQUA haul barge to sediment bin

Comment: Loading truck from sediment bin with drying agent stockpile in foreground

Comment: Truck loading area. HME staff continuously shoveling and sweeping minor spillage resulting from truck loading

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/15/2016

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/16/2016
REPORT NO.: 11

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Light rain, light wind, 43 deg F	
CC:	Halah Voges	Subs:		PM: Partly cloudy, mod. wind, 59 deg F	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
	Nicole LaFranchise			From: 0600	To: 1700

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Sediment offloading from barge	The Dalles offload site	
Transport to landfill	Wasco County Landfill	

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Darrel Ivy	Prime	Superintendent
Casey Cox	Prime	Operator (Sea Vulture)
Vincent Stacey	Prime	Laborer/operator
Jeff Oaks	Prime	Laborer/operator
Dennis Forsberg	Prime	Laborer/operator
Russell Taylor	Prime	Laborer
Sheri Bremer	Prime	Safety

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture equipped with 14 CY environmental bucket	12			
Prime		Tug Nova. Twin 400 hp engines.	4	8		
Prime		Case skid steer loader (used to manage sediment on barges)	8	4		
Prime		John Deere 225C excavator	12			
Prime		Cat IT28F Loader	8	4		
Prime		Snorkelift Model 80				12
Prime		Sediment haul barge Reedsport	7	5		
Prime		Sediment haul barge UMPQUA	5			7
Prime		Sediment transfer barge #47	12			
Prime		Sediment transfer/water management barge #BK5	12			
Prime		Tenant lot sweeper (rider)	4	8		

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

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REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/16/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/16/2016
REPORT NO.: 11

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Sediment offload from barges/load to truck

DIARY

TIME	DISCUSSION
0500	HME on site, conduct daily tailgate safety meeting
0530	HME continues offload from UMPQUA haul barge and barge #47 into trucks. Trucks transporting material to Wasco County Landfill.
0840	Pacific Power Vac offloading residual water collected in tank on Barge #BK5 (120 bbl vacuum trailer). HME consolidating remaining sediment on UMPQUA using skid steer loader.
0915	Offload to trucks resumes.
0930-1030	UMPQUA haul barge emptied/HME moves REEDSPORT and #6 haul barges into place and resumes offloading to trucks
0930-1330	Millennium staff (Heather Sievers and Cheryl Vezanni) on site to observe operations. Travel to landfill with Greg Speyer (HME) and Tim Stone (AQ)
1330	HME continues offload to trucks and hauling to Wasco County landfill
1700	HME loads final haul truck and preloads bin in preparation for 11/17 startup
1730	Anchor QEA off site. HME continues preparations for 11/17 startup
1800	HME off site

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Water transferred from Barge #BK5 tank to Pacific Power Vac 120 bbl vacuum tanker. Water transported to Wasco County landfill for disposal.

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION

VISITORS

TIME	NAME	REPRESENTING	COMMENT
0900	Greg Speyer	HME	Observe general operations, environmental compliance, safety compliance, and BMP implementation
0900	Cheryl Vezzani	Millennium	Observe general operations, environmental compliance, safety compliance, and BMP implementation
0900	Heather Sievers	Millenniuim	Observe general operations, environmental compliance, safety compliance, and BMP implementation

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/16/2016

ANCHOR QEA

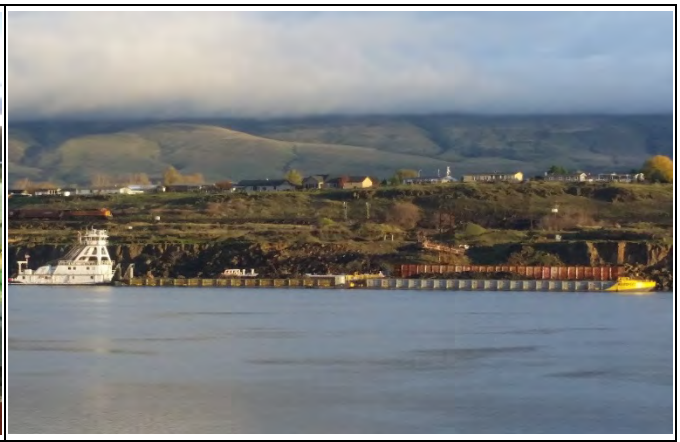
INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/16/2016
REPORT NO.: 11

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

PHOTOS

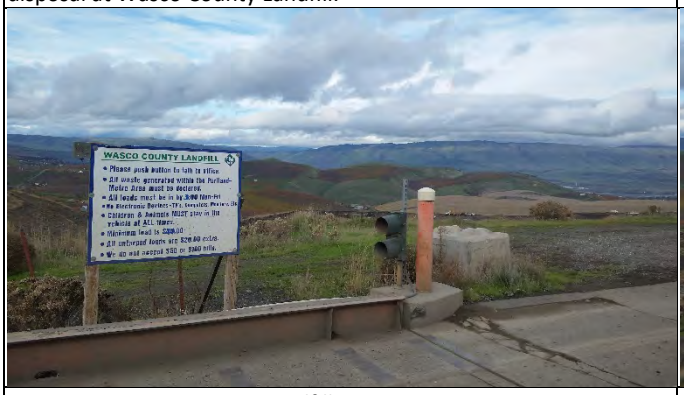
Comment: Material remaining on UMPQUA and Barge #47 (at start of 11/16 transload operations)



Comment: Tidewater tug holding haul barges #6 and REEDSPORT while awaiting placement at offload facility.

Comment: Pacific Power Vac. (sub to HME) 120 bbl vacuum tanker transferring water from tank on barge #BK5 for transport and disposal at Wasco County Landfill.

Comment: Tidewater tug moving haul barges REEDSPORT and #6 into place at offload site.



Comment: Wasco County Landfill

Comment: Haul trucks offloading at Wasco County Landfill

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REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/16/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/17/2016
REPORT NO.: 12

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Cloudy, light wind, 36 deg F	
CC:	Halah Voges	Subs:		PM: Clear, 51 deg F	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
	Nicole LaFranchise			From: 0545	To: 1800

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Offload sediment from barge	The Dalles offload site	
Transport sediment to landfill	Wasco County Landfill	

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Darrel Ivy	Prime	Superintendent
Casey Cox	Prime	Operator (Sea Vulture)
Vincent Stacey	Prime	Laborer/operator
Jeff Oaks	Prime	Laborer/operator
Dennis Forsberg	Prime	Laborer/operator
Russell Taylor	Prime	Laborer

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture equipped with 14 CY environmental bucket	12			
Prime		Tug Nova. Twin 400 hp engines.	4	8		
Prime		Case skid steer loader (used to manage sediment on barges)	8	4		
Prime		John Deere 225C excavator	12			
Prime		Cat IT28F Loader	8	4		
Prime		Snorkelift Model 80				12
Prime		Sediment haul barge #6	4	8		
Prime		Sediment haul barge Reedsport	8			4
Prime		Sediment haul barge UMPQUA				12
Prime		Sediment transfer barge #47	12			
Prime		Sediment transfer/water management barge #BK5	12			
Prime		Tenant lot sweeper (rider)	4	8		

TRAFFIC CONTROL

Was Traffic Control Required Today? ☐Yes ☒No	Was WZTC according to approved TCP? ☐Yes ☐No
Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

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REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/17/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/17/2016
REPORT NO.: 12

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Offload sediment from barges/load to trucks

DIARY

TIME	DISCUSSION
0530	HME on site, conduct daily tailgate safety meeting
0600	HME resumes offload from Reedsport haul barge and barge #47 into trucks. Trucks transporting material to Wasco County Landfill.
0800-1800	HME dewatering haul barges. Water from haul barges is being collected in tank on Barge #BK5. Contracted 120 bbl. liquid tankers are pumping water from the tank on Barge BK#5 and transporting to Wasco County landfill on an as-needed basis.
1350	Offload of Reedsport completed.
1400	HME relocating Reedsport (empty) and moving sediment haul barge #6 into place for offloading.
1420	HME begins offloading sediment from barge #6, loading to trucks, and transporting to Wasco County Landfill
1730	HME loads final haul truck and preloads bin in preparation for 11/17 startup
1800	HME/Anchor QEA off site

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Water transferred from Barge #BK5 tank to liquid tanker trucks. Water transported to Wasco County landfill for disposal.

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION

VISITORS

TIME	NAME	REPRESENTING	COMMENT
0900	Greg Speyer	HME	Observe general operations, environmental compliance, safety compliance, and BMP implementation
0900	Cheryl Vezzani	Millennium	Observe general operations, environmental compliance, safety compliance, and BMP implementation
0900	Heather Sievers	Millenniuim	Observe general operations, environmental compliance, safety compliance, and BMP implementation

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/17/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/17/2016
REPORT NO.: 12

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

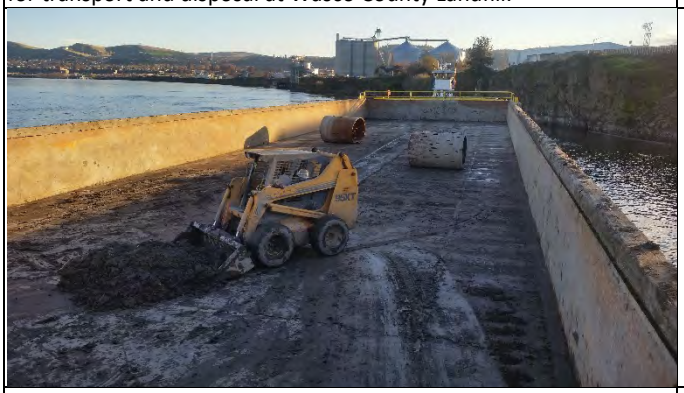
PHOTOS

Comment: Overview of offload setup. Offloading from Reedsport sediment haul barge.

Comment: Dewatering haul barge #6 in preparation for sediment offloading. Pumping to tank on barge #BK5.

Comment: 120 bbl tanker removing water from tank on barge #BK5 for transport and disposal at Wasco County Landfill.

Comment: Loading sediment to haul truck.



Comment: HME completing cleanout of Reedsport haul barge.

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REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/17/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/18/2016
REPORT NO.: 13

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

REPORT SUBMITTED TO		CONTRACTOR NAME AND CONTACT		WEATHER TEMP. AND PRECIPITATION	
Client:	Trevor Simmons	General:	HME	AM: Cloudy, light wind, 36 deg F	
CC:	Halah Voges	Subs:		PM: Cloudy, light wind, 44 deg F	
	Mark Larsen			TIME OF SITE VISIT/OBSERVATION	
	Nicole LaFranchise			From: 0530	To: 1730

CONSTRUCTION ACTIVITY

CONSTRUCTION TASK	LOCATION OF WORK	COMMENT/NOTES
Offload sediment from barge to truck/transport to landfill	The Dalles offload site/Wasco County Landfill	
Demobilize/cleanup of offload site	The Dalles offload site	

PERSONNEL ON SITE

NAME (or labor category)	PRIME/SUB/OTHER	NOTES (quantity, apprentice, training)
Darrel Ivy	Prime	Superintendent
Casey Cox	Prime	Operator (Sea Vulture)
Vincent Stacey	Prime	Laborer/operator
Jeff Oaks	Prime	Laborer/operator
Dennis Forsberg	Prime	Laborer/operator
Russell Taylor	Prime	Laborer

EQUIPMENT ON SITE

PRIME/SUB	EQUIP ID	EQUIPMENT DESCRIPTION	HOURS			
			Oper	Stdby	Down	Idle
Prime		Derrick Barge Sea Vulture equipped with 14 CY environmental bucket	12			
Prime		Tug Nova. Twin 400 hp engines.	6	6		
Prime		Case skid steer loader (used to manage sediment on barges)	12			
Prime		John Deere 225C excavator	12			
Prime		Cat IT28F Loader	10	2		
Prime		Snorkelift Model 80				12
Prime		Sediment haul barge Reedsport				12
Prime		Sediment haul barge UMPQUA				12
Prime		Sediment haul barge #6	12			
Prime		Sediment transfer barge #47	12			
Prime		Sediment transfer/water management barge #BK5	12			
Prime		Tenant lot sweeper (rider)	8	4		

TRAFFIC CONTROL

Was Traffic Control Required Today?	☐Yes ☒No	Was WZTC according to approved TCP?	☐Yes ☐No

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REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/18/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/18/2016
REPORT NO.: 13

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

Do all Flaggers/Spotters have current flagging card? ☐Yes ☒No	Comments:

PHOTOS AND VIDEO

Were photos/video taken today? ☒Yes ☐No	Subject: Transloading sediment from barges to trucks/demobilize transload facility

DIARY

TIME	DISCUSSION
0530	HME on site, conduct daily tailgate safety meeting
0600	Begin staging and lining haul trucks at sediment transfer site
0615	HME resumes offloading of sediment from barge #6. Loading to trucks and hauling to Wasco County Landfill. HME adding drying agent as needed to stabilize barge #6 sediment.
0730-1500	HME subcontractor offloading residual water collected in tank on Barge #BK5 and transferring 120 bbl tanker trailer. Liquid transported to Wasco County Landfill for processing and disposal.
0830	HME continues offloading sediment from barge #6. Loading specific trailers with woody debris segregated on deck of barge #6.
1130	Full length "side-dump" semi trailer on site and loaded with oversize woody debris for transport to landfill.
1140	HME offloading final bulk material from barges #6 and #47. HME will retain one truck for residuals, final cleanup debris, and remaining drying agent.
1200-1530	HME begins cleanup and demobilization of offload infrastructure. Cleaning residuals from decks and spill plates of all vessels and transferring to remaining cleanup truck. HME operating lot sweeper to clean pavement of entire site. Loading ramps, catwalks, spill plates, etc. onto barges for transport to HME facility in Vancouver.
1530-1700	HME sends final cleanup truck to landfill with sweepings, remaining drying agent, etc. HME staff completing final hand cleanup and sweeping. HME and Tidewater lashing and relocating barges for downriver transport.
1730	Site demobilization and cleanup completed. HME staff off site.

OTHER OBSERVATIONS

(Note any force account, changes, material testing, problems encountered, production rates, material delivery, water volume discharged or treated, etc.)

Water transferred from Barge #BK5 120 bbl tanker trucks. Water transported to Wasco County landfill for disposal.

DIFFICULTIES

(Note disputes, questionable items, unsatisfactory work, safety, permit compliance, etc.)

TIME	DISCUSSION

VISITORS

TIME	NAME	REPRESENTING	COMMENT

LIMITATIONS: The Anchor QEA field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Anchor QEA field representative and our acceptance of any non-conforming work does not relieve the contractor from complying with its contract documents. Anchor QEA does not have the authority to direct the contractor's work. Any information provided by the Anchor QEA field representative is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of the work, and adherence to the contract documents.

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/18/2016

ANCHOR QEA

INSPECTOR'S DAILY REPORT (IDR)

CONTRACT NO.: 160730-01.02
REPORT DATE: 11/18/2016
REPORT NO.: 13

ANCHOR QEA FIELD REP.: Tim Stone
PROJECT NAME/LOCATION: Millennium Bulk Terminals – Longview; MTCA Interim Action Project

PHOTOS

Comment: Consolidating and removing material remaining on barge #6

Comment: Addition of dring agent to material in truck loading bin

Comment: Oversized woody debris segregated on deck of barge #6

Comment: Loading oversized woody debris to side dump trailer

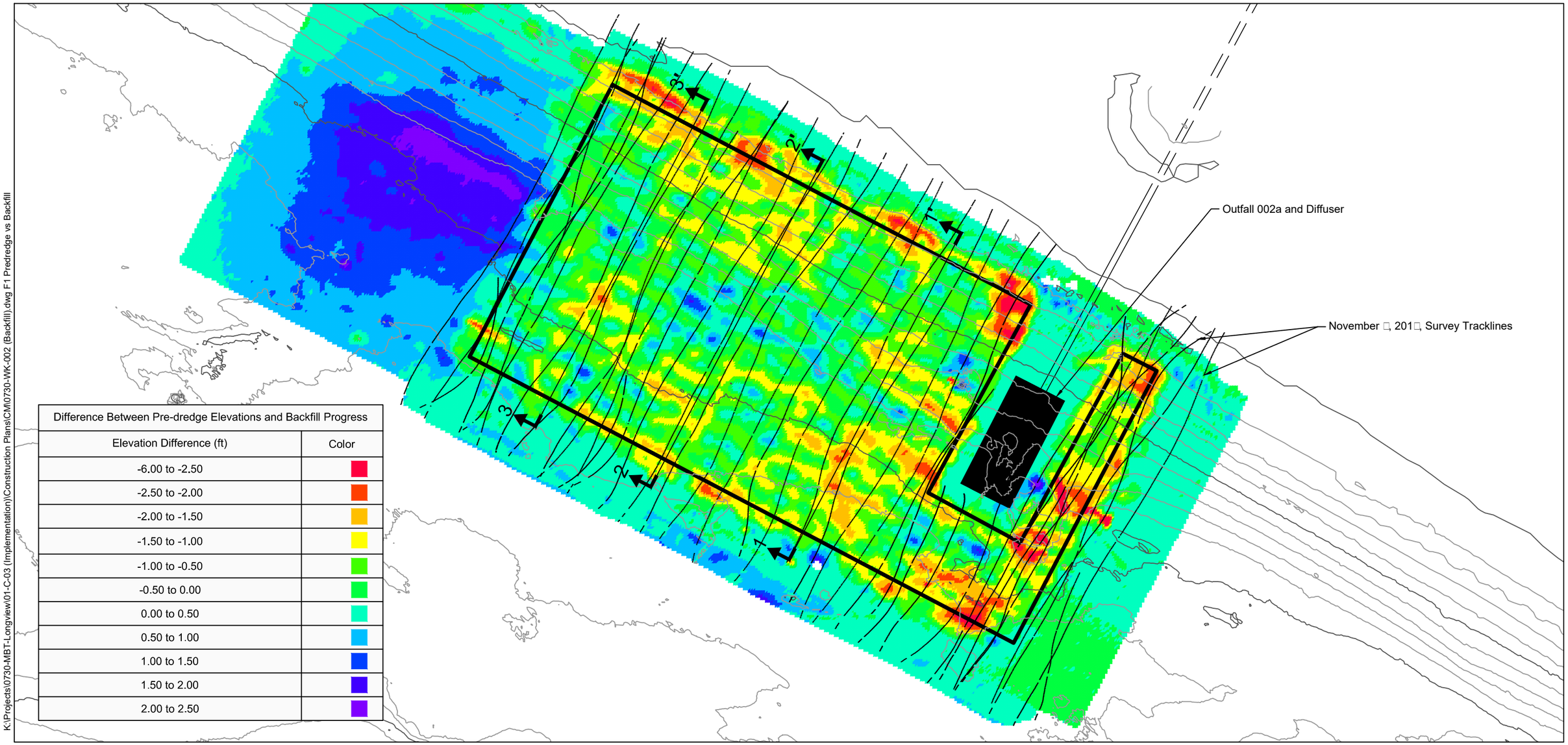
Comment: Dismantelling and loading spill plates onto barge

Comment: HME loading cleanup debris and sweeping offload facility pavement

REVIEWED BY: *(PM initial/date)*

FIELD REP. SIGNATURE: Timothy J. Stone
DATE: 11/18/2016

Appendix B
Surveys



SOURCE: Bathymetry from Terrasond, dated June 14, 2010, March 4, 2013, and July 22, 2014. Post-dredge bathymetry from Meyer Hydrographic, dated October to November 11, 201□.
HORIZONTAL DATUM: Washington State Plane South, NAD83, U.S. Feet.
VERTICAL DATUM: Columbia River Datum (CRD).
NOTES: □levations are relative to the pre-dredge survey.

LEGEND:

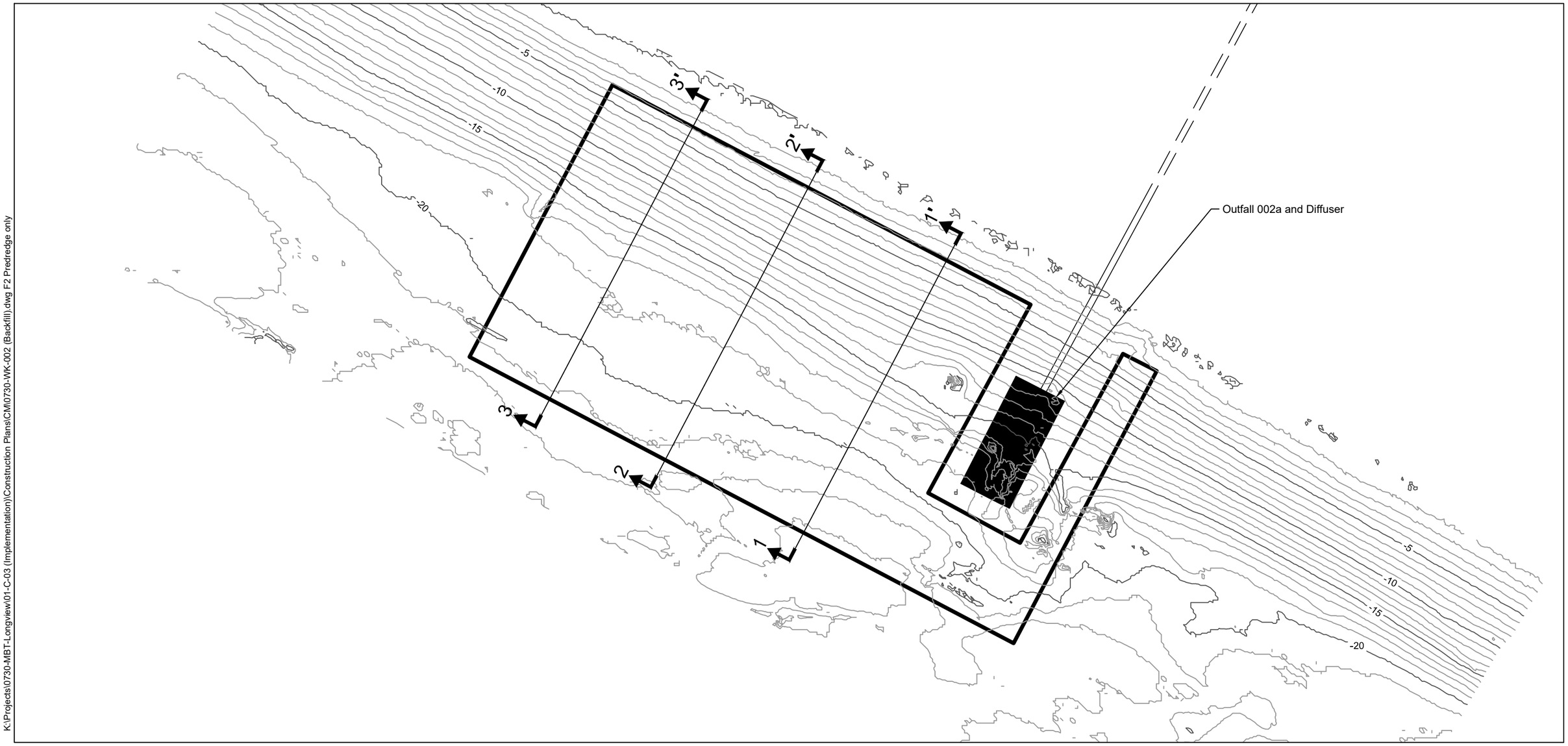
Pre-construction Contours (2' and 10' Intervals)

Dredge Area

0 40
Scale in Feet

ANCHOR QEA

Figure □
Pre-dredge Conditions Compared Against Backfill Progress as of November 11, 201□
Former Reynolds Metal Reduction Plant Interim Action



SOURCE: Bathymetry from Terrasond, dated June 14, 2010, March 4, 2013, and July 22, 2014.
HORIZONTAL DATUM: Washington State Plane South, NAD83, U.S. Feet.
VERTICAL DATUM: Columbia River Datum (CRD).

LEGEND:

Pre-construction Contours (1' and 5' Intervals)

Dredge Area

0 40
Scale in Feet

K:\Projects\0730-MBT-Longview\01-C-03 (Implementation)\Construction Plans\CM\0730-WK-002 (Backfill).dwg F2 Predredge only
Aug 01, 2017 10:24am chewett

ANCHOR QEA

Figure 2
Pre-dredge Bathymetry
Former Reynolds Metal Reduction Plant Interim Action

3
2
1
0+00
0+20
0+40
0+60
0+80
1+00
1+20
1+40
1+60
1+80
2+00
2+20
2+40
2+60
2+80

Appendix C
Photographs

Sediment stacked in haul barge.

Dredge debris segregated on haul barge.

Dewatering free water off sediment haul barge to water management barge.

Sediment stacked high in the clamshell bucket.

Material stacked in the haul barge *Umpqua*. Note dewatering activities in the stern.

Haul barge *Reedsport* being loaded in the foreground. *Umpqua* tied up in the background.

Multibeam hydrographic survey vessel running transects in the fog.

Placing clean sand backfill on November 7, 2016.

Clamshell bucket getting another load of backfill material.

About to open the bucket to spread the backfill. Note the buoys that delineate the outfall's location.

Water quality monitoring vessel deploying instrumentation.

Offloading a haul barge at The Dalles, Oregon. Note the spill apron and fabric to prevent spillage into the river.

Tanker truck being loaded with water for disposal at Wasco County landfill.

Maneuvering Haul Barge No. 6 into place for offloading.

Truck scale and entrance sign at Wasco County landfill.

Loading stabilized sediments into trucks for trip up the hill to the landfill.

Offloading sediments from a haul barge to the sediment mixing bin. Note the spill plates and splash guards to contain any spillage.

Transferring sediment into the sediment mixing bin.

Stacking the last of the sediments on a haul barge to facilitate the removal by the clamshell bucket.

Removing large debris from the barge for disposal.

Demobilizing spill plates.

Final cleanup with a power broom.

Appendix D
Water Quality Report

FORMER REYNOLDS REDUCTION PLAN INTERIM ACTION – REMEDIATION OF SEDIMENTS IN THE COLUMBIA RIVER

WATER QUALITY MONITORING WEEKLY REPORT (FINAL)

PREPARED FOR:

MILLENNIUM BULK TERMINALS – LONGVIEW, LLC
4029 INDUSTRIAL WAY
LONGVIEW, WA 98638
ATTN: KRISTIN GAINES

PREPARED BY:

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NOVEMBER 14, 2016

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

TABLE OF CONTENTS

TABLES

1 INTRODUCTION

Water quality monitoring was performed during an interim remedial action (Interim Action) at the Former Reynolds Plant in Longview, Washington. The Interim Action is required by an amendment to Agreed Order No. DE-8940 under the Model Toxic Control Act (MTCA). The former Reynolds Plant is located on the north bank of the Columbia River at 4029 Industrial Way, Longview, Washington, 98632.

A Water Quality Monitoring Plan (WQMP) has been prepared for this action (Anchor 2014). Grette Associates is implementing this plan, as described in this summary report.

2 PLAN ELEMENTS

Reference the WQMP for detailed information including background information, site sediment and water chemistry, monitoring plan details, and contingency response and notification. Table 1 summarizes the applicable water quality standards. Table 2 summarizes the elements of the WQMP (Anchor 2014).

Table 1. Water quality parameters and criteria

Monitoring Parameters	Water Quality Criterion
Dissolved Oxygen	>8.0 milligrams per liter
Turbidity	If background is less than 50 NTU: Background plus 5 NTU If background is more than 50 NTU: Background plus 10 percent

Note:
NTU = nephelometric turbidity unit

Table 2. Monitoring parameters, schedules, locations, and depths

Parameters	Schedules	Locations	Depths
1. Turbidity (NTU) 2. DO (mg/L) 3. Temperature (°C)*	Tier 1: Twice per day, daily Tier 2: Twice per day, two days per week	Mixing Boundary Station (MB).** 300 ft. downstream of dredge/fill Early Warning Station (EW). 200 ft. downstream of dredge/fill. Background Station (BG). 300 ft upstream of Outfall -001S.	Within 3 ft of surface Mid-depth of water column Within 3 feet of bottom

Notes:
* For informational purposes
** Point of compliance for water quality criteria
DO = Dissolved Oxygen
NTU = nephelometric turbidity unit

3 WATER COLUMN MONITORING

3.1 MONITORING SCHEDULE

Week 1

Grette Associates conducted Tier 1 sampling during all four days of dredging (October 31 through November 3). Sampling was conducted according to the WQMP except for the following modifications:

- October 31: Dredging started at approximately 14:00 and was scheduled to stop by 17:00. The crew waited for one hour to conduct the first sample per the WQMP. The second sample was started approximately one hour later in order to ensure two samples were completed.

- In some cases, sampling at the early warning point was slightly more than 200 feet from dredging in order to avoid the dredge derrick and boom.

- For one sample, EW6, there was no safe access around the boom to collect the early warning sample. Sampling would have required the contractor to stop work in order to provide access. Compliance was already documented at the mixing boundary. In coordination with Anchor, Grette Associates decided to not sample the early warning point during that cycle.

- Water depths at EW8 and MB8 were too shallow to sample at intervals in the WQMP, see notes in Table 5.

Because of the short dredging day on October 31, the Project team decided to conduct Tier 1 sampling on all four days in order to ensure consistency with the WQMP even though monitoring results showed no exceedances during the first three days of dredging.

Week 2

Grette Associates conducted Tier 1 sampling during all three days of sediment backfill (November 7, 9, and 11) and also residuals placement (November 11). Sampling was conducted according to the WQMP. Sample timing on the last day (November 11) was influenced by weather (delayed sampling due to fog in the morning) and work schedule (timing of residuals placement in the afternoon).

3.2 MONITORING RESULTS

This report is submitted to Millennium Bulk Terminals- Longview, LLC (MBT-L) and presents monitoring results for the on-site Interim Action implementation.

Week 1 - Dredging

Dredging occurred on each day during the reporting period. Water quality monitoring was conducted twice daily to record the parameters shown in Table 2 as well as dissolved oxygen in

percent saturation. Dissolved oxygen was recorded in either percent saturation or mg/L during Events 1 through 4, in which case the other metric was calculated using a USGS DO saturation table inclusive of water temperatures (collected) and barometric pressure (observed at NOAA Station 9440422 at Longview), as indicated in the results tables.

Water quality criteria at the mixing boundary were met for both turbidity or dissolved oxygen during all sample events. Turbidity at the early warning station consistently was less than 4 NTU over background. Dissolved oxygen was consistently greater than 10 mg/L.

Week 2 – Backfill and Residuals Placement

Backfilling occurred on each day during the reporting period. Regular water quality monitoring was conducted twice daily to record the parameters shown in Table 2 as well as dissolved oxygen in percent saturation. Dissolved oxygen was recorded in both percent saturation and mg/L.

During the second sample on November 7, a turbidity exceedance was observed at the deep mixing boundary station (9.6 NTU compared to 2.2 NTU background, Table 3, Event 10). This triggered the exceedance protocol described in WQMP Section 4.2. The exceedance was confirmed at the deep mixing boundary station after resampling background and mixing boundary (Table 3, Event 11); repeated runs at the deep mixing boundary station indicated variable conditions (Table 3, Event 11). Grette Associates staff notified Anchor QEA staff (Site Engineer and Project Manager), at which point the Site Engineer notified the contractor and requested operational modifications during backfilling (slowing placement cycle times). Grette Associates resampled all three stations approximately one half-hour later[1] and observed a continued exceedance at the deep mixing boundary station as well as turbidity above exceedance levels at all depths at the early warning station (Table 3, Event 12).

On November 8, Anchor QEA and Grette Associates MBT-L with a time series report of the sampling results and exceedance to report to Ecology. MBT-L coordinated with Ecology, and with Ecology's approval operations resumed on November 9.

There were no further exceedances during backfill (November 9 and 11) or residuals placement (November 11, Event 16). With the exception of the exceedances described in Events 10-12, water quality criteria at the mixing boundary were met for turbidity during all sample events and turbidity at the early warning station consistently was less than 4 NTU over background.

For all sample events, including 10 through 12, dissolved oxygen was consistently greater than 10 mg/L.

3.3 REFERENCE

Anchor QEA 2014. Water Quality Monitoring Plan: Former Reynolds Metals Reduction Plant Interim Action – Remediation of Sediments in the Columba River. Prepared for Washington Department of Ecology, August 2014.

[1] The WQMP calls for a one hour resample, but in order to complete monitoring before daily operations stopped, resampling was conducted more quickly.

Table 3. Turbidity results and compliance

Date	Sample Event No.	Personnel	Primary Activity	Sample Depth	Mixing Boundary	Early Warning	Background	Compliance Achieved?	Notes
10/31/2016	1	CC/CW	dredging	Shallow	3.8	4.3	4.4	yes	
10/31/2016	1	CC/CW	dredging	Middle	4	4.6	4.5	yes	
10/31/2016	1	CC/CW	dredging	Deep	4.3	4.8	4.6	yes	
10/31/2016	2	CC/CW	dredging	Shallow	2.6	4	4.1	yes	
10/31/2016	2	CC/CW	dredging	Middle	2.5	3.8	4.2	yes	
10/31/2016	2	CC/CW	dredging	Deep	3.1	4.2	4	yes	
11/1/2016	3	CC/CW	dredging	Shallow	7.7	7.5	5.7	yes	
11/1/2016	3	CC/CW	dredging	Middle	7.8	8.4	5.9	yes	
11/1/2016	3	CC/CW	dredging	Deep	7.8	8.1	6.3	yes	
11/1/2016	4	CC/CW	dredging	Shallow	12.8	13.5	12.8	yes	
11/1/2016	4	CC/CW	dredging	Middle	12.6	15.8	13.6	yes	
11/1/2016	4	CC/CW	dredging	Deep	12.2	15.9	14.1	yes	
11/2/2016	5	CC/CW	dredging	Shallow	5.4	7.2	4.3	yes	
11/2/2016	5	CC/CW	dredging	Middle	5.7	7.1	4.4	yes	
11/2/2016	5	CC/CW	dredging	Deep	5.2	8.4	4.5	yes	
11/2/2016	6	CC/CW	dredging	Shallow	2.8	NS	2.6	yes	no safe access for EW
11/2/2016	6	CC/CW	dredging	Middle	3.3	NS	2.6	yes	no safe access for EW
11/2/2016	6	CC/CW	dredging	Deep	3.2	NS	2.7	yes	no safe access for EW
11/3/2016	7	CC/CW	dredging	Shallow	1.9	1.5	1.1	yes	
11/3/2016	7	CC/CW	dredging	Middle	1.8	1.4	1.2	yes	
11/3/2016	7	CC/CW	dredging	Deep	1.8	2.2	1.3	yes	
11/4/2016	8	CC/CW	dredging	Shallow	4.6	2.9	1.9	yes	
11/4/2016	8	CC/CW	dredging	Middle	3.8	NS	2.0	yes	EW too shallow for 3
11/4/2016	8	CC/CW	dredging	Deep	4.7	3.5	2.0	yes	
11/7/2016	9	CC/SM	backfill	Shallow	2	2.0	1.8	yes	
11/7/2016	9	CC/SM	backfill	Middle	2.6	2.0	1.9	yes	
11/7/2016	9	CC/SM	backfill	Deep	2.2	2.2	1.9	yes	
11/7/2016	10	CC/SM	backfill	Shallow	3.7	3.4	2.6	yes	
11/7/2016	10	CC/SM	backfill	Middle	3.6	3.5	2.6	yes	
11/7/2016	10	CC/SM	backfill	Deep	9.6	5.3	2.9	no	exceedance
11/7/2016	11	CC/SM	backfill	Shallow	2.8	-	2.4	yes	

Date	Sample Event No.	Personnel	Primary Activity	Sample Depth	Mixing Boundary	Early Warning	Background	Compliance Achieved?	Notes
11/7/2016	11	CC/SM	backfill	Middle	5.7	-	2.7	yes	
11/7/2016	11	CC/SM	backfill	Deep	8.6	-	2.7	no	exceedance; retake x 3 (~30 sec)
11/7/2016	11	CC/SM	backfill	Deep	7.7	-	2.7	yes	borderline
11/7/2016	11	CC/SM	backfill	Deep	4.7	-	2.7	yes	
11/7/2016	12	CC/SM	backfill	Shallow	3.8	7.7	2.5	yes	EW exceedance level
11/7/2016	12	CC/SM	backfill	Middle	4.4	13.9	2.4	yes	EW exceedance level
11/7/2016	12	CC/SM	backfill	Deep	7.9	22.6	2.6	no	exceedance; EW exceedance level
11/9/2016	13	CC/CW	backfill	Shallow	2.2	1.8	1.3	yes	
11/9/2016	13	CC/CW	backfill	Middle	2.7	2.6	1.5	yes	
11/9/2016	13	CC/CW	backfill	Deep	3.2	4.0	1.4	yes	
11/9/2016	14	CC/CW	backfill	Shallow	2.2	1.8	0.5	yes	
11/9/2016	14	CC/CW	backfill	Middle	2.7	1.6	0.6	yes	
11/9/2016	14	CC/CW	backfill	Deep	3.4	4.3	0.7	yes	
11/9/2016	15	CC/CW	backfill	Shallow	2.8	1.5	1.1	yes	
11/9/2016	15	CC/CW	backfill	Middle	1.8	1.4	1.3	yes	
11/11/2016	15	CC/CW	backfill	Deep	6.1	1.5	1.3	yes	
11/11/2016	16	CC/CW	backfill	Shallow	0.8	0.9	0.3	yes	
11/11/2016	16	CC/CW	backfill	Middle	0.8	1.0	0.5	yes	
11/11/2016	16	CC/CW	backfill	Deep	1.0	0.9	0.5	yes	

Table 4. Dissolved oxygen results and compliance

Date	Sample Event No.	Personnel	Primary Activity	Sample Depth	Mixing Boundary	Early Warning	Background	Compliance Achieved?	Notes
10/31/2016	1	CC/CW	dredging	Shallow	*10.16*	*10.24*	*10.17*	yes	*calculated mg/L*
10/31/2016	1	CC/CW	dredging	Middle	*10.15*	*10.15*	*10.11*	yes	*calculated mg/L*
10/31/2016	1	CC/CW	dredging	Deep	*10.15*	*10.12*	*10.11*	yes	*calculated mg/L*
10/31/2016	2	CC/CW	dredging	Shallow	*10.15*	*10.16*	*10.31*	yes	*calculated mg/L*
10/31/2016	2	CC/CW	dredging	Middle	*10.11*	*10.12*	*10.16*	yes	*calculated mg/L*
10/31/2016	2	CC/CW	dredging	Deep	*10.11*	*10.11*	*10.13*	yes	*calculated mg/L*
11/1/2016	3	CC/CW	dredging	Shallow	*10.16*	10.26	10.24	yes	*calculated mg/L*
11/1/2016	3	CC/CW	dredging	Middle	*10.11*	10.14	10.13	yes	*calculated mg/L*
11/1/2016	3	CC/CW	dredging	Deep	*10.13*	10.10	10.10	yes	*calculated mg/L*
11/1/2016	4	CC/CW	dredging	Shallow	10.29	10.34	10.31	yes	
11/1/2016	4	CC/CW	dredging	Middle	10.21	10.21	10.19	yes	
11/1/2016	4	CC/CW	dredging	Deep	10.18	10.19	10.18	yes	
11/2/2016	5	CC/CW	dredging	Shallow	10.25	10.21	10.27	yes	
11/2/2016	5	CC/CW	dredging	Middle	10.23	10.29	10.16	yes	
11/2/2016	5	CC/CW	dredging	Deep	10.18	10.16	10.16	yes	
11/2/2016	6	CC/CW	dredging	Shallow	10.29	NS	10.28	yes	no safe access for EW
11/2/2016	6	CC/CW	dredging	Middle	10.22	NS	10.23	yes	no safe access for EW
11/2/2016	6	CC/CW	dredging	Deep	10.21	NS	10.21	yes	no safe access for EW
11/3/2016	7	CC/CW	dredging	Shallow	10.35	10.37	10.33	yes	
11/3/2016	7	CC/CW	dredging	Middle	10.20	10.20	10.20	yes	
11/3/2016	7	CC/CW	dredging	Deep	10.19	10.18	10.18	yes	
11/4/2016	8	CC/CW	dredging	Shallow	10.26	10.29	10.37	yes	
11/4/2016	8	CC/CW	dredging	Middle	10.27	NS	10.30	yes	EW too shallow for 3
11/4/2016	8	CC/CW	dredging	Deep	10.25	10.28	10.28	yes	
11/7/2016	9	CC/SM	backfill	Shallow	10.36	10.34	10.35	yes	
11/7/2016	9	CC/SM	backfill	Middle	10.30	10.30	10.30	yes	
11/7/2016	9	CC/SM	backfill	Deep	10.30	10.29	10.30	yes	
11/7/2016	10	CC/SM	backfill	Shallow	10.39	10.38	10.37	yes	

Date	Sample Event No.	Personnel	Primary Activity	Sample Depth	Mixing Boundary	Early Warning	Background	Compliance Achieved?	Notes
11/7/2016	10	CC/SM	backfill	Middle	10.35	10.33	10.34	yes	
11/7/2016	10	CC/SM	backfill	Deep	10.34	10.33	10.32	yes	
11/7/2016	11	CC/SM	backfill	Shallow	10.38	-	10.35	yes	
11/7/2016	11	CC/SM	backfill	Middle	10.35	-	10.33	yes	
11/7/2016	11	CC/SM	backfill	Deep	10.33	-	10.32	yes	
11/7/2016	11	CC/SM	backfill	Deep	-	-	-	yes	
11/7/2016	11	CC/SM	backfill	Deep	-	-	-	yes	
11/7/2016	12	CC/SM	backfill	Shallow	10.40	10.42	10.38	yes	
11/7/2016	12	CC/SM	backfill	Middle	10.35	10.38	10.34	yes	
11/7/2016	12	CC/SM	backfill	Deep	10.34	10.35	10.33	yes	
11/9/2016	13	CC/CW	backfill	Shallow	10.35	10.34	10.35	yes	
11/9/2016	13	CC/CW	backfill	Middle	10.28	10.28	10.28	yes	
11/9/2016	13	CC/CW	backfill	Deep	10.26	10.28	10.26	yes	
11/9/2016	14	CC/CW	backfill	Shallow	10.31	10.31	10.28	yes	
11/9/2016	14	CC/CW	backfill	Middle	10.27	10.27	10.28	yes	
11/9/2016	14	CC/CW	backfill	Deep	10.27	10.27	10.27	yes	
11/9/2016	15	CC/CW	backfill	Shallow	10.42	10.41	10.37	yes	
11/9/2016	15	CC/CW	backfill	Middle	10.34	10.34	10.33	yes	
11/11/2016	15	CC/CW	backfill	Deep	10.34	10.33	10.32	yes	
11/11/2016	16	CC/CW	backfill	Shallow	10.36	10.31	10.31	yes	
11/11/2016	16	CC/CW	backfill	Middle	10.30	10.28	10.30	yes	
11/11/2016	16	CC/CW	backfill	Deep	10.27	10.28	10.29	yes	

Table 5. Field form summary

													Yes/No				
Sta. ID	Date	Time	Coord (N [WSPS])	Coord (E [WSPS])	Weather	Total Water Depth (ft)	Sample	Water Depth (ft)	Turb. (NTU)	DO (%Sat)	DO (mg/L)	Temp (deg C)	Mtl	Shn	Dsc	Odr	Comments
BG1	10/31/2016	14:45	302610.94	1006594.22	rain	24.8	Shallow	3	4.4	97.1	NR	13.2	N	N	N	N	No exceed.
BG1	10/31/2016	14:45	302610.94	1006594.22	rain	24.8	Middle	12.5	4.5	96.6	NR	13.2	N	N	N	N	No exceed.
BG1	10/31/2016	14:45	302610.94	1006594.22	rain	24.8	Deep	21.5	4.6	96.6	NR	13.2	N	N	N	N	No exceed.
EW1	10/31/2016	15:13	303264.01	1005578.06	rain	22.0	Shallow	3	4.3	97.8	NR	13.2	N	N	N	N	No exceed.
EW1	10/31/2016	15:13	303264.01	1005578.06	rain	22.0	Middle	11	4.6	96.9	NR	13.2	N	N	N	N	No exceed.
EW1	10/31/2016	15:13	303264.01	1005578.06	rain	22.0	Deep	19	4.8	96.7	NR	13.2	N	N	N	N	No exceed.
MB1	10/31/2016	15:22	303392.27	1005474.02	rain	21.1	Shallow	3	3.8	97.0	NR	13.2	N	N	N	N	No exceed.
MB1	10/31/2016	15:22	303392.27	1005474.02	rain	21.1	Middle	10	4.0	96.9	NR	13.2	N	N	N	N	No exceed.
MB1	10/31/2016	15:22	303392.27	1005474.02	rain	21.1	Deep	17.5	4.3	96.9	NR	13.2	N	N	N	N	No exceed.
BG2	10/31/2016	15:42	302513.22	1006586.92	rain/overcast	31.0	Shallow	3	4.1	98.5	NR	13.2	N	N	N	N	No exceed.
BG2	10/31/2016	15:42	302513.22	1006586.92	rain/overcast	31.0	Middle	15.5	4.2	97.0	NR	13.2	N	N	N	N	No exceed.
BG2	10/31/2016	15:42	302513.22	1006586.92	rain/overcast	31.0	Deep	28	4.0	96.8	NR	13.2	N	N	N	N	No exceed.
EW2	10/31/2016	16:10	303330.61	1005520.43	rain/overcast	18.0	Shallow	3	4.0	97.4	NR	13.3	N	N	N	N	No exceed.
EW2	10/31/2016	16:10	303330.61	1005520.43	rain/overcast	18.0	Middle	9	3.8	97.0	NR	13.3	N	N	N	N	No exceed.
EW2	10/31/2016	16:10	303330.61	1005520.43	rain/overcast	18.0	Deep	15	4.2	96.9	NR	13.3	N	N	N	N	No exceed.
MB2	10/31/2016	16:17	303333.75	1005471.57	overcast	20.0	Shallow	3	2.6	97.7	NR	13.5	N	N	N	N	No exceed.
MB2	10/31/2016	16:17	303333.75	1005471.57	overcast	20.0	Middle	10	2.5	97.3	NR	13.5	N	N	N	N	No exceed.
MB2	10/31/2016	16:17	303333.75	1005471.57	overcast	20.0	Deep	17	3.1	97.1	NR	13.4	N	N	N	N	No exceed.
BG3	11/1/2016	8:16	302634.06	1006626.45	overcast	14.8	Shallow	3	5.7	97.1	NR	13.3	N	N	N	N	No exceed.
BG3	11/1/2016	8:16	302634.06	1006626.45	overcast	14.8	Middle	7	5.9	96.7	NR	13.3	N	N	N	N	No exceed.
BG3	11/1/2016	8:16	302634.06	1006626.45	overcast	14.8	Deep	11	6.3	96.6	NR	13.2	N	N	N	N	No exceed.
EW3	11/1/2016	10:11	303278.06	1005564.26	partly cloudy	23.7	Shallow	3	7.5	NR	10.26	13.3	N	N	N	N	No exceed.
EW3	11/1/2016	10:11	303278.06	1005564.26	partly cloudy	23.7	Middle	11.5	8.4	NR	10.14	13.3	N	N	N	N	No exceed.
EW3	11/1/2016	10:11	303278.06	1005564.26	partly cloudy	23.7	Deep	20	8.1	NR	10.10	13.3	N	N	N	N	No exceed.
MB3	11/1/2016	10:18	303315.16	1005524.71	partly cloudy	16.0	Shallow	3	7.7	NR	10.24	13.3	N	N	N	N	No exceed.
MB3	11/1/2016	10:18	303315.16	1005524.71	partly cloudy	16.0	Middle	8	7.8	NR	10.13	13.3	N	N	N	N	No exceed.
MB3	11/1/2016	10:18	303315.16	1005524.71	partly cloudy	16.0	Deep	13	7.8	NR	10.10	13.3	N	N	N	N	No exceed.
BG4	11/1/2016	13:30	302556.30	1006654.01	overcast	18.2	Shallow	3	12.8	97.9	10.31	13.0	N	N	N	N	No exceed.
BG4	11/1/2016	13:30	302556.30	1006654.01	overcast	18.2	Middle	9	13.6	96.8	10.19	13.0	N	N	N	N	No exceed.
BG4	11/1/2016	13:30	302556.30	1006654.01	overcast	18.2	Deep	15	14.1	96.7	10.18	13.0	N	N	N	N	No exceed.
EW4	11/1/2016	13:52	303263.52	1005553.91	overcast/fog	26.2	Shallow	3	13.5	98.1	10.34	13.0	N	N	N	N	No exceed.
EW4	11/1/2016	13:52	303263.52	1005553.91	overcast/fog	26.2	Middle	13	15.8	97.0	10.21	13.0	N	N	N	N	No exceed.
EW4	11/1/2016	13:52	303263.52	1005553.91	overcast/fog	26.2	Deep	23	15.9	96.7	10.19	13.0	N	N	N	N	No exceed.

													Yes/No				
Sta. ID	Date	Time	Coord (N [WSPS])	Coord (E [WSPS])	Weather	Total Water Depth (ft)	Sample	Water Depth (ft)	Turb. (NTU)	DO (%Sat)	DO (mg/L)	Temp (deg C)	Mtl	Shn	Dsc	Odr	Comments
MB4	11/1/2016	13:59	303368.06	1005392.03	cloudy	23.3	Shallow	3	12.8	97.7	10.29	13.0	N	N	N	N	No exceed.
MB4	11/1/2016	13:59	303368.06	1005392.03	cloudy	23.3	Middle	11.5	12.6	97.0	10.21	13.0	N	N	N	N	No exceed.
MB4	11/1/2016	13:59	303368.06	1005392.03	cloudy	23.3	Deep	20	12.2	96.7	10.18	13.0	N	N	N	N	No exceed.
MB5	11/2/2016	9:00	303390.82	1005349.38	overcast	15.4	Shallow	3	5.4	97.5	10.25	13.1	N	N	N	N	No exceed.
MB5	11/2/2016	9:00	303390.82	1005349.38	overcast	15.4	Middle	7	5.7	97.4	10.23	13.1	N	N	N	N	No exceed.
MB5	11/2/2016	9:00	303390.82	1005349.38	overcast	15.4	Deep	12	5.2	96.9	10.18	13.1	N	N	N	N	No exceed.
EW5	11/2/2016	9:10	303323.54	1005527.38	overcast	18.0	Shallow	3	7.2	97.2	10.21	13.1	N	N	N	N	No exceed.
EW5	11/2/2016	9:10	303323.54	1005527.38	overcast	18.0	Middle	8	7.1	98.0	10.29	13.1	N	N	N	N	No exceed.
EW5	11/2/2016	9:10	303323.54	1005527.38	overcast	18.0	Deep	15	8.4	96.8	10.16	13.1	N	N	N	N	No exceed.
BG5	11/2/2016	9:18	302603.12	1006625.11	overcast	22.7	Shallow	3	4.3	97.7	10.27	13.1	N	N	N	N	No exceed.
BG5	11/2/2016	9:18	302603.12	1006625.11	overcast	22.7	Middle	11	4.4	96.7	10.16	13.1	N	N	N	N	No exceed.
BG5	11/2/2016	9:18	302603.12	1006625.11	overcast	22.7	Deep	19	4.5	96.7	10.16	13.1	N	N	N	N	No exceed.
BG6	11/2/2016	13:04	302559.00	1006607.24	overcast	26.3	Shallow	3	2.6	97.2	10.28	12.8	N	N	N	N	No exceed.
BG6	11/2/2016	13:04	302559.00	1006607.24	overcast	26.3	Middle	13	2.6	96.7	10.23	12.8	N	N	N	N	No exceed.
BG6	11/2/2016	13:04	302559.00	1006607.24	overcast	26.3	Deep	23	2.7	96.5	10.21	12.8	N	N	N	N	No exceed.
MB6	11/2/2016	13:27	303398.67	1005353.13	overcast	20.6	Shallow	3	2.8	97.3	10.29	12.8	N	N	N	N	No exceed.
MB6	11/2/2016	13:27	303398.67	1005353.13	overcast	20.6	Middle	10	3.3	96.7	10.22	12.8	N	N	N	N	No exceed.
MB6	11/2/2016	13:27	303398.67	1005353.13	overcast	20.6	Deep	17	3.2	96.5	10.21	12.8	N	N	N	N	No exceed.
EW6	11/2/2016	NS	NS	NS	overcast	NS	Shallow	NS	NS	NS	NS	NS	NS	NS	NS	NS	1
EW6	11/2/2016	NS	NS	NS	overcast	NS	Middle	NS	NS	NS	NS	NS	NS	NS	NS	NS	1
EW6	11/2/2016	NS	NS	NS	overcast	NS	Deep	NS	NS	NS	NS	NS	NS	NS	NS	NS	1
BG7	11/3/2016	8:12	302542.45	1006552.71	clear/fog	29.0	Shallow	3	1.1	98.1	10.33	13.0	N	N	N	N	No exceed.
BG7	11/3/2016	8:12	302542.45	1006552.71	clear/fog	29.0	Middle	14	1.2	96.9	10.20	13.0	N	N	N	N	No exceed.
BG7	11/3/2016	8:12	302542.45	1006552.71	clear/fog	29.0	Deep	26	1.3	96.7	10.18	13.0	N	N	N	N	No exceed.
EW7	11/3/2016	8:28	303329.70	1005368.41	clear/fog	27.9	Shallow	3	1.5	98.5	10.37	13.0	N	N	N	N	No exceed.
EW7	11/3/2016	8:28	303329.70	1005368.41	clear/fog	27.9	Middle	14	1.4	96.9	10.20	13.0	N	N	N	N	No exceed.
EW7	11/3/2016	8:28	303329.70	1005368.41	clear/fog	27.9	Deep	25	2.2	96.7	10.18	13.0	N	N	N	N	No exceed.
MB7	11/3/2016	8:22	303373.82	1005292.39	clear/fog	29.2	Shallow	3	1.9	98.3	10.35	13.0	N	N	N	N	No exceed.
MB7	11/3/2016	8:22	303373.82	1005292.39	clear/fog	29.2	Middle	14	1.8	96.9	10.20	13.0	N	N	N	N	No exceed.
MB7	11/3/2016	8:22	303373.82	1005292.39	clear/fog	29.2	Deep	26	1.8	96.7	10.19	13.0	N	N	N	N	No exceed.
BG8	11/4/2016	12:55	302542.78	1006663.90	fog/clear	20.7	Shallow	3	1.9	98.1	10.37	12.9	N	N	N	N	No exceed.
BG8	11/4/2016	12:55	302542.78	1006663.90	fog/clear	20.7	Middle	10	2.0	97.4	10.30	12.9	N	N	N	N	No exceed.
BG8	11/4/2016	12:55	302542.78	1006663.90	fog/clear	20.7	Deep	17	2.0	97.3	10.28	12.9	N	N	N	N	No exceed.
EW8	11/4/2016	13:33	303448.41	1005396.41	clear/fog	6.0	Shallow	1	2.9	97.5	10.29	12.9	N	N	N	N	2
EW8	11/4/2016	13:33	303448.41	1005396.41	clear/fog	6.0	Middle	NS	NS	NS	NS	NS	NS	NS	NS	NS	2

													Yes/No				
Sta. ID	Date	Time	Coord (N [WSPS])	Coord (E [WSPS])	Weather	Total Water Depth (ft)	Sample	Water Depth (ft)	Turb. (NTU)	DO (%Sat)	DO (mg/L)	Temp (deg C)	Mtl	Shn	Dsc	Odr	Comments
EW8	11/4/2016	13:33	303448.41	1005396.41	clear/fog	6.0	Deep	2	3.5	97.4	10.28	12.9	N	N	N	N	2
MB8	11/4/2016	13:24	303466.54	105333.79	clear/fog	4.0	Shallow	2	4.6	97.3	10.26	12.9	N	N	N	N	3
MB8	11/4/2016	13:24	303466.54	105333.79	clear/fog	4.0	Middle	3	3.8	97.3	10.27	12.9	N	N	N	N	3
MB8	11/4/2016	13:24	303466.54	105333.79	clear/fog	4.0	Deep	4	4.7	97.2	10.25	12.9	N	N	N	N	3
BG9	11/7/2016	11:04	302568.89	1006512.34	overcast, no wind	27	Shallow	3	1.8	98.3	10.35	13.0	N	N	N	N	No exceed.
BG9	11/7/2016	11:04	302568.89	1006512.34	overcast, no wind	27	Middle	14	1.9	97.8	10.30	13.0	N	N	N	N	No exceed.
BG9	11/7/2016	11:04	302568.89	1006512.34	overcast, no wind	27	Deep	24	1.9	97.8	10.30	13.0	N	N	N	N	No exceed.
EW9	11/7/2016	11:24	303305.25	1005501.35	mostly cloudy, calm	23	Shallow	3	2.0	98.2	10.34	13.0	N	N	N	N	No exceed.
EW9	11/7/2016	11:24	303305.25	1005501.35	mostly cloudy, calm	23	Middle	12	2.0	97.8	10.30	13.0	N	N	N	N	No exceed.
EW9	11/7/2016	11:24	303305.25	1005501.35	mostly cloudy, calm	23	Deep	20	2.2	97.7	10.29	13.0	N	N	N	N	No exceed.
MB9	11/7/2016	11:32	303392.43	1005368.68	mostly cloudy, calm	21	Shallow	3	2.0	98.4	10.36	13.0	N	N	N	N	No exceed.
MB9	11/7/2016	11:32	303392.43	1005368.68	mostly cloudy, calm	21	Middle	10	2.6	97.8	10.30	13.0	N	N	N	N	No exceed.
MB9	11/7/2016	11:32	303392.43	1005368.68	mostly cloudy, calm	21	Deep	18	2.2	97.8	10.30	13.0	N	N	N	N	No exceed.
BG10	11/7/2016	15:00	302487.66	1006569.68	mostly cloudy, calm	29	Shallow	3	2.6	98.2	10.37	12.9	N	N	N	N	none
BG10	11/7/2016	15:00	302487.66	1006569.68	mostly cloudy, calm	29	Middle	15	2.6	97.9	10.34	12.9	N	N	N	N	none
BG10	11/7/2016	15:00	302487.66	1006569.68	mostly cloudy, calm	29	Deep	26	2.9	97.7	10.32	12.9	N	N	N	N	none
EW10	11/7/2016	15:11	303348.55	1005399.73	mostly cloudy, calm	23	Shallow	3	3.4	98.4	10.38	12.9	Y	N	N	N	4, no exceed.
EW10	11/7/2016	15:11	303348.55	1005399.73	mostly cloudy, calm	23	Middle	11	3.5	97.9	10.33	12.9	Y	N	N	N	4, no exceed.
EW10	11/7/2016	15:11	303348.55	1005399.73	mostly cloudy, calm	23	Deep	20	5.3	97.8	10.33	12.9	Y	N	N	N	4, no exceed.
MB10	11/7/2016	15:21	303394.01	1005364.92	overcast, calm	23	Shallow	3	3.7	98.4	10.39	12.9	Y	N	N	N	4, no exceed.
MB10	11/7/2016	15:21	303394.01	1005364.92	overcast, calm	23	Middle	11	3.6	98.0	10.35	12.9	Y	N	N	N	4, no exceed.
MB10	11/7/2016	15:21	303394.01	1005364.92	overcast, calm	23	Deep	20	9.6	98.0	10.34	12.9	Y	N	N	N	4, exceedance.
BG11	11/7/2016	15:46	302537.78	1006521.48	overcast, calm	26	Shallow	3	2.4	97.9	10.35	12.9	N	N	N	N	none
BG11	11/7/2016	15:46	302537.78	1006521.48	overcast, calm	26	Middle	13	2.7	97.7	10.33	12.8	N	N	N	N	none
BG11	11/7/2016	15:46	302537.78	1006521.48	overcast, calm	26	Deep	23	2.7	97.6	10.32	12.8	N	N	N	N	none
MB11	11/7/2016	15:58	303442.45	1005222.69	overcast, calm	21	Shallow	3	2.8	98.2	10.38	12.9	Y	N	N	N	4, no exceed.
MB11	11/7/2016	15:58	303442.45	1005222.69	overcast, calm	21	Middle	11	5.7	97.9	10.35	12.9	Y	N	N	N	4, no exceed.
MB11	11/7/2016	15:58	303442.45	1005222.69	overcast, calm	21	Deep	18	8.6	97.7	10.33	12.9	Y	N	N	N	4, exceedance.
MB11	11/7/2016	15:58	303442.45	1005222.69	overcast, calm	21	Deep	18	7.7	-	-	-	Y	N	N	N	4, borderline.
MB11	11/7/2016	15:58	303442.45	1005222.69	overcast, calm	21	Deep	18	4.7	-	-	-	Y	N	N	N	4, no exceed.
BG12	11/7/2016	16:23	302521.35	1006542.13	overcast, calm	27	Shallow	3	2.5	98.2	10.38	12.8	N	N	N	N	none
BG12	11/7/2016	16:23	302521.35	1006542.13	overcast, calm	27	Middle	13	2.4	97.8	10.34	12.8	N	N	N	N	none
BG12	11/7/2016	16:23	302521.35	1006542.13	overcast, calm	27	Deep	24	2.6	97.7	10.33	12.8	N	N	N	N	none
EW12	11/7/2016	16:30	303390.95	1005345.54	overcast, calm	23	Shallow	3	7.7	98.6	10.42	12.8	Y	N	N	N	4, exceedance.
EW12	11/7/2016	16:30	303390.95	1005345.54	overcast, calm	23	Middle	11	13.9	98.2	10.38	12.8	Y	N	N	N	4, exceedance.

													Yes/No				
Sta. ID	Date	Time	Coord (N [WSPS])	Coord (E [WSPS])	Weather	Total Water Depth (ft)	Sample	Water Depth (ft)	Turb. (NTU)	DO (%Sat)	DO (mg/L)	Temp (deg C)	Mtl	Shn	Dsc	Odr	Comments
EW12	11/7/2016	16:30	303390.95	1005345.54	overcast, calm	23	Deep	20	22.6	97.9	10.35	12.8	Y	N	N	N	4, exceedance.
MB12	11/7/2016	16:36	303444.38	1005241.69	overcast, calm	24	Shallow	3	3.8	98.9	10.40	12.8	Y	N	N	N	4, 5, no exceed.
MB12	11/7/2016	16:36	303444.38	1005241.69	overcast, calm	24	Middle	12	4.4	97.9	10.35	12.8	Y	N	N	N	4, 5, no exceed.
MB12	11/7/2016	16:36	303444.38	1005241.69	overcast, calm	24	Deep	21	7.9	97.8	10.34	12.8	Y	N	N	N	4,5 exceedance.
BG13	11/9/2016	8:00	302532.79	1006645.24	partly cloudy	24.8	Shallow	3	1.3	98.1	10.35	12.9	N	N	N	N	none
BG13	11/9/2016	8:00	302532.79	1006645.24	partly cloudy	24.8	Middle	12	1.5	97.3	10.28	12.9	N	N	N	N	none
BG13	11/9/2016	8:00	302532.79	1006645.24	partly cloudy	24.8	Deep	21	1.4	97.1	10.26	12.9	N	N	N	N	none
EW13	11/9/2016	8:15	302370.35	1005524.30	partly cloudy	24	Shallow	3	1.8	97.9	10.34	12.9	Y	N	N	N	6, no exceed.
EW13	11/9/2016	8:15	302370.35	1005524.30	partly cloudy	24	Middle	12	2.6	97.3	10.28	12.9	Y	N	N	N	6, no exceed.
EW13	11/9/2016	8:15	302370.35	1005524.30	partly cloudy	24	Deep	21	4.0	97.2	10.28	12.8	Y	N	N	N	6, no exceed.
MB13	11/9/2016	8:20	303333.47	1005453.17	partly cloudy	24.7	Shallow	3	2.2	98.0	10.35	12.9	Y	N	N	N	4, no exceed.
MB13	11/9/2016	8:20	303333.47	1005453.17	partly cloudy	24.7	Middle	12	2.7	97.3	10.28	12.9	Y	N	N	N	4, no exceed.
MB13	11/9/2016	8:20	303333.47	1005453.17	partly cloudy	24.7	Deep	21	3.2	97.1	10.26	12.9	Y	N	N	N	4, no exceed.
BG14	11/9/2016	13:45	302535.73	1006657.10	partly cloudy	24.3	Shallow	3	0.5	98.3	10.28	13.3	N	N	N	N	none
BG14	11/9/2016	13:45	302535.73	1006657.10	partly cloudy	24.3	Middle	12	0.6	98.2	10.28	13.3	N	N	N	N	none
BG14	11/9/2016	13:45	302535.73	1006657.10	partly cloudy	24.3	Deep	21	0.7	98.1	10.27	13.3	N	N	N	N	none
EW14	11/9/2016	13:53	303390.50	1005350.89	partly cloudy	23.5	Shallow	3	1.8	98.7	10.31	13.3	Y	N	N	N	7, no exceed.
EW14	11/9/2016	13:53	303390.50	1005350.89	partly cloudy	23.5	Middle	12	1.6	98.2	10.27	13.3	Y	N	N	N	7, no exceed.
EW14	11/9/2016	13:53	303390.50	1005350.89	partly cloudy	23.5	Deep	19	4.3	98.2	10.27	13.3	Y	N	N	N	7, no exceed.
MB14	11/9/2016	14:05	303431.32	1005297.53	overcast	22.5	Shallow	3	2.2	98.7	10.31	13.3	Y	N	N	N	7, no exceed.
MB14	11/9/2016	14:05	303431.32	1005297.53	overcast	22.5	Middle	11	2.7	98.2	10.27	13.3	Y	N	N	N	7, no exceed.
MB14	11/9/2016	14:05	303431.32	1005297.53	overcast	22.5	Deep	19	3.4	98.1	10.27	13.3	Y	N	N	N	7, no exceed.
BG15	11/11/2016	8:34	302561.75	1006578.67	fog	24.7	Shallow	3	1.1	97.9	10.37	12.7	Y	N	Y	N	7, 8, 9, no exceed
BG15	11/11/2016	8:34	302561.75	1006578.67	fog	24.7	Middle	12	1.3	97.5	10.33	12.7	Y	N	Y	N	7, 8, 9, no exceed
BG15	11/11/2016	8:34	302561.75	1006578.67	fog	24.7	Deep	21	1.3	97.4	10.32	12.7	Y	N	Y	N	7, 8, 9, no exceed
EW15	11/11/2016	8:53	303468.75	1005288.08	fog	12	Shallow	3	1.5	98.2	10.41	12.7	Y	N	Y	N	7, 8, 9, no exceed
EW15	11/11/2016	8:53	303468.75	1005288.08	fog	12	Middle	6	1.4	97.5	10.34	12.7	Y	N	Y	N	7, 8, 9, no exceed
EW15	11/11/2016	8:53	303468.75	1005288.08	fog	12	Deep	9	1.5	97.4	10.33	12.7	Y	N	Y	N	7, 8, 10, no exceed
MB15	11/11/2016	8:47	303454.26	1005201.64	fog	22.6	Shallow	3	2.8	98.3	10.42	12.7	Y	N	Y	N	7, 8, 10, no exceed
MB15	11/11/2016	8:47	303454.26	1005201.64	fog	22.6	Middle	11	1.8	97.6	10.34	12.7	Y	N	Y	N	7, 8, 10, no exceed
MB15	11/11/2016	8:47	303454.26	1005201.64	fog	22.6	Deep	19	6.1	97.5	10.34	12.7	Y	N	Y	N	7, 8, 10, no exceed
BG16	11/11/2016	12:52	302507.16	1006715.09	overcast	22.5	Shallow	3	0.3	98.2	10.31	13.2	N	N	N	N	slack tide
BG16	11/11/2016	12:52	302507.16	1006715.09	overcast	22.5	Middle	11	0.5	97.9	10.30	13.1	N	N	N	N	slack tide
BG16	11/11/2016	12:52	302507.16	1006715.09	overcast	22.5	Deep	19	0.5	97.9	10.29	13.1	N	N	N	N	slack tide
EW16	11/11/2016	13:07	303299.30	1005538.43	overcast	25.7	Shallow	3	0.9	97.8	10.31	12.9	N	N	N	N	No exceed.

													Yes/No				
Sta. ID	Date	Time	Coord (N [WSPS])	Coord (E [WSPS])	Weather	Total Water Depth (ft)	Sample	Water Depth (ft)	Turb. (NTU)	DO (%Sat)	DO (mg/L)	Temp (deg C)	Mtl	Shn	Dsc	Odr	Comments
EW16	11/11/2016	13:07	303299.30	1005538.43	overcast	25.7	Middle	12	1.0	97.4	10.28	12.9	N	N	N	N	No exceed.
EW16	11/11/2016	13:07	303299.30	1005538.43	overcast	25.7	Deep	22	0.9	97.4	10.28	12.9	N	N	N	N	No exceed.
MB16	11/11/2016	13:11	303363.20	1005388.73	overcast	23.1	Shallow	3	0.8	98.2	10.36	13.0	N	N	N	N	No exceed.
MB16	11/11/2016	13:11	303363.20	1005388.73	overcast	23.1	Middle	11	0.8	97.8	10.30	13.0	N	N	N	N	No exceed.
MB16	11/11/2016	13:11	303363.20	1005388.73	overcast	23.1	Deep	20	1.0	97.4	10.27	12.9	N	N	N	N	No exceed.

Notes:
NR = not recorded, see DO compliance summary and DO conversion spreadsheet
NS = not sampled, see notes on compliance summary
1 = No data taken due to safety concerns (BMPs blocking access), discussed and OK'd by MS/BM.
2 = Depths modified to allow for 3 samples in 6 feet of water; no exceedances
3 = Too shallow for 3 samples (4 feet), samples at 1 and 2 feet below surface; no exceedances
4 = bubbles/foam on surface
5 = operations slowed
6 = bubbles/foam mostly contained within the boom
7 = little foam
8 = river appears turbid
9 = debris and LWD present throughout area and appears to be coming from upstream - visible up to Weyerhaeuser Co.
10 = slight delay of backfilling between MB and EW readings

Appendix E
Confirmation Sampling Data Report

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Tuesday, February 7, 2017

Cindy Fields
Anchor QEA, LLC Tigard
6650 SW Redwood Lane Ste. 333
Portland, OR 97224

RE: MBT-L MTCA INT. Act / 160730-01.02

Enclosed are the results of analyses for work order A6K0424, which was received by the laboratory on 11/14/2016 at 1:17:00PM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: dthomas@apex-labs.com, or by phone at 503-718-2323.

Apex Laboratories

Darwin Thomas, Business Development Director

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CS-01-0-6-11112016	A6K0424-01	Sediment	11/11/16 17:10	11/14/16 13:17
CS-101-0-6-11112016	A6K0424-02	Sediment	11/11/16 17:15	11/14/16 13:17
CS-02-0-6-11112016	A6K0424-03	Sediment	11/11/16 17:40	11/14/16 13:17
CS-03-0-6-11112016	A6K0424-04	Sediment	11/11/16 18:05	11/14/16 13:17
CS-04-0-6-11112016	A6K0424-05	Sediment	11/11/16 18:30	11/14/16 13:17
CS-05-0-6-11112016	A6K0424-06	Sediment	11/11/16 19:00	11/14/16 13:17

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-01-0-6-11112016 (A6K0424-01)			**Matrix: Sediment**		**Batch: 6110593**			
Diesel	ND	15.1	30.2	mg/kg dry	1	11/16/16 23:03	NWTPH-Dx/SG	
Oil	ND	30.2	60.5	"	"	"	"	
Surrogate: o-Terphenyl (Surr)			*Recovery: 102 %*	*Limits: 50-150 %*	"	"	"	
CS-101-0-6-11112016 (A6K0424-02)			**Matrix: Sediment**		**Batch: 6110593**			
Diesel	ND	14.6	29.1	mg/kg dry	1	11/16/16 23:45	NWTPH-Dx/SG	
Oil	ND	29.1	58.3	"	"	"	"	
Surrogate: o-Terphenyl (Surr)			*Recovery: 103 %*	*Limits: 50-150 %*	"	"	"	
CS-02-0-6-11112016 (A6K0424-03)			**Matrix: Sediment**		**Batch: 6110593**			
Diesel	ND	16.1	32.3	mg/kg dry	1	11/17/16 00:05	NWTPH-Dx/SG	
Oil	ND	32.3	64.6	"	"	"	"	
Surrogate: o-Terphenyl (Surr)			*Recovery: 104 %*	*Limits: 50-150 %*	"	"	"	
CS-03-0-6-11112016 (A6K0424-04)			**Matrix: Sediment**		**Batch: 6110593**			
Diesel	ND	14.2	28.5	mg/kg dry	1	11/17/16 00:26	NWTPH-Dx/SG	
Oil	ND	28.5	56.9	"	"	"	"	
Surrogate: o-Terphenyl (Surr)			*Recovery: 102 %*	*Limits: 50-150 %*	"	"	"	
CS-04-0-6-11112016 (A6K0424-05)			**Matrix: Sediment**		**Batch: 6110593**			
Diesel	ND	14.2	28.5	mg/kg dry	1	11/17/16 00:47	NWTPH-Dx/SG	
Oil	ND	28.5	57.0	"	"	"	"	
Surrogate: o-Terphenyl (Surr)			*Recovery: 104 %*	*Limits: 50-150 %*	"	"	"	
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**		**Batch: 6110593**			
Diesel	ND	15.7	31.4	mg/kg dry	1	11/17/16 01:08	NWTPH-Dx/SG	
Oil	ND	31.4	62.8	"	"	"	"	
Surrogate: o-Terphenyl (Surr)			*Recovery: 101 %*	*Limits: 50-150 %*	"	"	"	

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Darwin Thomas, Business Development Director

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-01-0-6-11112016 (A6K0424-01)			**Matrix: Sediment**		**Batch: 6110683**			**C-07**
Aroclor 1016	ND	2.39	4.78	ug/kg dry	1	11/18/16 09:52	EPA 8082A	
Aroclor 1221	ND	2.39	4.78	"	"	"	"	
Aroclor 1232	ND	2.39	4.78	"	"	"	"	
Aroclor 1242	ND	2.39	4.78	"	"	"	"	
Aroclor 1248	ND	2.39	4.78	"	"	"	"	
Aroclor 1254	ND	2.39	4.78	"	"	"	"	
Aroclor 1260	ND	2.39	4.78	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 101 %*	*Limits: 44-120 %*	"	"	"	
CS-101-0-6-11112016 (A6K0424-02)			**Matrix: Sediment**		**Batch: 6110683**			**C-07**
Aroclor 1016	ND	2.28	4.55	ug/kg dry	1	11/18/16 11:02	EPA 8082A	
Aroclor 1221	ND	2.28	4.55	"	"	"	"	
Aroclor 1232	ND	2.28	4.55	"	"	"	"	
Aroclor 1242	ND	2.28	4.55	"	"	"	"	
Aroclor 1248	ND	2.28	4.55	"	"	"	"	
Aroclor 1254	ND	2.28	4.55	"	"	"	"	
Aroclor 1260	ND	2.28	4.55	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 95 %*	*Limits: 44-120 %*	"	"	"	
CS-02-0-6-11112016 (A6K0424-03)			**Matrix: Sediment**		**Batch: 6110683**			**C-07**
Aroclor 1016	ND	2.46	4.92	ug/kg dry	1	11/18/16 09:16	EPA 8082A	
Aroclor 1221	ND	2.46	4.92	"	"	"	"	
Aroclor 1232	ND	2.46	4.92	"	"	"	"	
Aroclor 1242	ND	2.46	4.92	"	"	"	"	
Aroclor 1248	ND	2.46	4.92	"	"	"	"	
Aroclor 1254	ND	2.46	4.92	"	"	"	"	
Aroclor 1260	ND	2.46	4.92	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 105 %*	*Limits: 44-120 %*	"	"	"	
CS-03-0-6-11112016 (A6K0424-04)			**Matrix: Sediment**		**Batch: 6110683**			**C-07**
Aroclor 1016	ND	2.30	4.59	ug/kg dry	1	11/18/16 09:52	EPA 8082A	
Aroclor 1221	ND	2.30	4.59	"	"	"	"	
Aroclor 1232	ND	2.30	4.59	"	"	"	"	
Aroclor 1242	ND	2.30	4.59	"	"	"	"	
Aroclor 1248	ND	2.30	4.59	"	"	"	"	
Aroclor 1254	ND	2.30	4.59	"	"	"	"	
Aroclor 1260	ND	2.30	4.59	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 108 %*	*Limits: 44-120 %*	"	"	"	

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Darwin Thomas, Business Development Director

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-04-0-6-11112016 (A6K0424-05)			**Matrix: Sediment**		**Batch: 6110683**			**C-07**
Aroclor 1016	ND	2.28	4.56	ug/kg dry	1	11/18/16 10:27	EPA 8082A	
Aroclor 1221	ND	2.28	4.56	"	"	"	"	
Aroclor 1232	ND	2.28	4.56	"	"	"	"	
Aroclor 1242	ND	2.28	4.56	"	"	"	"	
Aroclor 1248	ND	2.28	4.56	"	"	"	"	
Aroclor 1254	ND	2.28	4.56	"	"	"	"	
Aroclor 1260	ND	2.28	4.56	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 106 %*	*Limits: 44-120 %*	"	"	"	
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**		**Batch: 6110683**			**C-07**
Aroclor 1016	ND	2.43	4.86	ug/kg dry	1	11/18/16 11:02	EPA 8082A	
Aroclor 1221	ND	2.43	4.86	"	"	"	"	
Aroclor 1232	ND	2.43	4.86	"	"	"	"	
Aroclor 1242	ND	2.43	4.86	"	"	"	"	
Aroclor 1248	ND	2.43	4.86	"	"	"	"	
Aroclor 1254	ND	2.43	4.86	"	"	"	"	
Aroclor 1260	ND	2.43	4.86	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 110 %*	*Limits: 44-120 %*	"	"	"	

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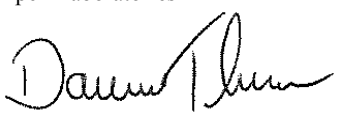
Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-01-0-6-11112016 (A6K0424-01)			**Matrix: Sediment**		**Batch: 6110704**			
Acenaphthene	ND	1.63	3.27	ug/kg dry	1	11/18/16 13:32	EPA 8270D	
Acenaphthylene	ND	1.63	3.27	"	"	"	"	
Anthracene	ND	1.63	3.27	"	"	"	"	
Benz(a)anthracene	ND	1.63	3.27	"	"	"	"	
Benzo(a)pyrene	ND	2.45	4.89	"	"	"	"	
Benzo(b)fluoranthene	ND	2.45	4.89	"	"	"	"	
Benzo(k)fluoranthene	ND	2.45	4.89	"	"	"	"	
Benzo(g,h,i)perylene	ND	1.63	3.27	"	"	"	"	
Chrysene	ND	1.63	3.27	"	"	"	"	
Dibenz(a,h)anthracene	ND	1.63	3.27	"	"	"	"	
Fluoranthene	ND	1.63	3.27	"	"	"	"	
Fluorene	ND	1.63	3.27	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	1.63	3.27	"	"	"	"	
1-Methylnaphthalene	ND	3.27	6.52	"	"	"	"	
2-Methylnaphthalene	ND	3.27	6.52	"	"	"	"	
Naphthalene	ND	3.27	6.52	"	"	"	"	
Phenanthrene	ND	1.63	3.27	"	"	"	"	
Pyrene	ND	1.63	3.27	"	"	"	"	
Carbazole	ND	2.45	4.89	"	"	"	"	
1,2-Dichlorobenzene	ND	4.07	8.16	"	"	"	"	
1,4-Dichlorobenzene	ND	4.07	8.16	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.07	8.16	"	"	"	"	
Dimethylphthalate	ND	16.3	32.7	"	"	"	"	
Diethylphthalate	ND	16.3	32.7	"	"	"	"	
Di-n-butylphthalate	ND	8.17	16.3	"	"	"	"	
Butyl benzyl phthalate	ND	16.3	32.7	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	24.5	48.9	"	"	"	"	
Di-n-octyl phthalate	ND	16.3	32.7	"	"	"	"	
Phenol	ND	3.27	6.52	"	"	"	"	
2-Methylphenol	ND	4.07	8.16	"	"	"	"	
3+4-Methylphenol(s)	ND	4.07	8.16	"	"	"	"	
2,4-Dimethylphenol	ND	8.16	16.3	"	"	"	"	
Pentachlorophenol (PCP)	ND	32.7	65.2	"	"	"	"	
Benzyl alcohol	ND	8.16	16.3	"	"	"	"	
Benzoic acid	ND	204	407	"	"	"	"	
Dibenzofuran	ND	1.63	3.27	"	"	"	"	
N-Nitrosodiphenylamine	ND	4.07	8.16	"	"	"	"	

Apex Laboratories



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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-01-0-6-11112016 (A6K0424-01)			**Matrix: Sediment**		**Batch: 6110704**			
Hexachlorobenzene	ND	1.63	3.27	ug/kg dry	1	"	EPA 8270D	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 80 %*	*Limits: 37-122 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*80 %*	*Limits: 44-115 %*	"	"	"	
Phenol-d6 (Surr)			*78 %*	*Limits: 33-122 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*96 %*	*Limits: 54-127 %*	"	"	"	
2-Fluorophenol (Surr)			*75 %*	*Limits: 35-115 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*120 %*	*Limits: 39-132 %*	"	"	"	*Q-41*
CS-101-0-6-11112016 (A6K0424-02)			**Matrix: Sediment**		**Batch: 6110704**			
Acenaphthene	ND	1.55	3.12	ug/kg dry	1	11/18/16 14:44	EPA 8270D	
Acenaphthylene	ND	1.55	3.12	"	"	"	"	
Anthracene	ND	1.55	3.12	"	"	"	"	
Benz(a)anthracene	ND	1.55	3.12	"	"	"	"	
Benzo(a)pyrene	ND	2.34	4.67	"	"	"	"	
Benzo(b)fluoranthene	ND	2.34	4.67	"	"	"	"	
Benzo(k)fluoranthene	ND	2.34	4.67	"	"	"	"	
Benzo(g,h,i)perylene	ND	1.55	3.12	"	"	"	"	
Chrysene	ND	1.55	3.12	"	"	"	"	
Dibenz(a,h)anthracene	ND	1.55	3.12	"	"	"	"	
Fluoranthene	ND	1.55	3.12	"	"	"	"	
Fluorene	ND	1.55	3.12	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	1.55	3.12	"	"	"	"	
1-Methylnaphthalene	ND	3.12	6.22	"	"	"	"	
2-Methylnaphthalene	ND	3.12	6.22	"	"	"	"	
Naphthalene	ND	3.12	6.22	"	"	"	"	
Phenanthrene	ND	1.55	3.12	"	"	"	"	
Pyrene	ND	1.55	3.12	"	"	"	"	
Carbazole	ND	2.34	4.67	"	"	"	"	
1,2-Dichlorobenzene	ND	3.89	7.79	"	"	"	"	
1,4-Dichlorobenzene	ND	3.89	7.79	"	"	"	"	
1,2,4-Trichlorobenzene	ND	3.89	7.79	"	"	"	"	
Dimethylphthalate	ND	15.5	31.2	"	"	"	"	
Diethylphthalate	ND	15.5	31.2	"	"	"	"	
Di-n-butylphthalate	ND	7.80	15.5	"	"	"	"	
Butyl benzyl phthalate	ND	15.5	31.2	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	23.4	46.7	"	"	"	"	
Di-n-octyl phthalate	ND	15.5	31.2	"	"	"	"	
Phenol	ND	3.12	6.22	"	"	"	"	

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-101-0-6-11112016 (A6K0424-02)			**Matrix: Sediment**		**Batch: 6110704**			
2-Methylphenol	ND	3.89	7.79	ug/kg dry	1	"	EPA 8270D	
3+4-Methylphenol(s)	ND	3.89	7.79	"	"	"	"	
2,4-Dimethylphenol	ND	7.79	15.5	"	"	"	"	
Pentachlorophenol (PCP)	ND	31.2	62.2	"	"	"	"	
Benzyl alcohol	ND	7.79	15.5	"	"	"	"	
Benzoic acid	ND	195	389	"	"	"	"	
Dibenzofuran	ND	1.55	3.12	"	"	"	"	
N-Nitrosodiphenylamine	ND	3.89	7.79	"	"	"	"	
Hexachlorobenzene	ND	1.55	3.12	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 81 %*	*Limits: 37-122 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*94 %*	*Limits: 44-115 %*	"	"	"	
Phenol-d6 (Surr)			*82 %*	*Limits: 33-122 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*97 %*	*Limits: 54-127 %*	"	"	"	
2-Fluorophenol (Surr)			*82 %*	*Limits: 35-115 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*132 %*	*Limits: 39-132 %*	"	"	"	*Q-41*
CS-02-0-6-11112016 (A6K0424-03)			**Matrix: Sediment**		**Batch: 6110704**			
Acenaphthene	ND	1.68	3.37	ug/kg dry	1	11/18/16 15:20	EPA 8270D	
Acenaphthylene	ND	1.68	3.37	"	"	"	"	
Anthracene	ND	1.68	3.37	"	"	"	"	
Benz(a)anthracene	**2.74**	1.68	3.37	"	"	"	"	J
Benzo(a)pyrene	**2.96**	2.53	5.05	"	"	"	"	J
Benzo(b)fluoranthene	**5.29**	2.53	5.05	"	"	"	"	M-02
Benzo(k)fluoranthene	ND	2.53	5.05	"	"	"	"	
Benzo(g,h,i)perylene	ND	1.68	3.37	"	"	"	"	
Chrysene	**5.86**	1.68	3.37	"	"	"	"	M-02
Dibenz(a,h)anthracene	ND	1.68	3.37	"	"	"	"	
Fluoranthene	**6.09**	1.68	3.37	"	"	"	"	
Fluorene	ND	1.68	3.37	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	1.68	3.37	"	"	"	"	
1-Methylnaphthalene	ND	3.37	6.73	"	"	"	"	
2-Methylnaphthalene	ND	3.37	6.73	"	"	"	"	
Naphthalene	ND	3.37	6.73	"	"	"	"	
Phenanthrene	**3.42**	1.68	3.37	"	"	"	"	
Pyrene	**5.65**	1.68	3.37	"	"	"	"	
Carbazole	ND	2.53	5.05	"	"	"	"	
1,2-Dichlorobenzene	ND	4.21	8.42	"	"	"	"	
1,4-Dichlorobenzene	ND	4.21	8.42	"	"	"	"	

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Darwin Thomas, Business Development Director

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-02-0-6-11112016 (A6K0424-03)			**Matrix: Sediment**		**Batch: 6110704**			
1,2,4-Trichlorobenzene	ND	4.21	8.42	ug/kg dry	1	"	EPA 8270D	
Dimethylphthalate	ND	16.8	33.7	"	"	"	"	
Diethylphthalate	ND	16.8	33.7	"	"	"	"	
Di-n-butylphthalate	ND	8.44	16.8	"	"	"	"	
Butyl benzyl phthalate	ND	16.8	33.7	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	25.3	50.5	"	"	"	"	
Di-n-octyl phthalate	ND	16.8	33.7	"	"	"	"	
Phenol	ND	3.37	6.73	"	"	"	"	
2-Methylphenol	ND	4.21	8.42	"	"	"	"	
3+4-Methylphenol(s)	ND	4.21	8.42	"	"	"	"	
2,4-Dimethylphenol	ND	8.42	16.8	"	"	"	"	
Pentachlorophenol (PCP)	ND	33.7	67.3	"	"	"	"	
Benzyl alcohol	ND	8.42	16.8	"	"	"	"	
Benzoic acid	ND	211	421	"	"	"	"	
Dibenzofuran	ND	1.68	3.37	"	"	"	"	
N-Nitrosodiphenylamine	ND	4.21	8.42	"	"	"	"	
Hexachlorobenzene	ND	1.68	3.37	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 80 %*	*Limits: 37-122 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*86 %*	*Limits: 44-115 %*	"	"	"	
Phenol-d6 (Surr)			*82 %*	*Limits: 33-122 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*92 %*	*Limits: 54-127 %*	"	"	"	
2-Fluorophenol (Surr)			*77 %*	*Limits: 35-115 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*129 %*	*Limits: 39-132 %*	"	"	"	*Q-41*

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-03-0-6-11112016 (A6K0424-04)			**Matrix: Sediment**		**Batch: 6110704**			
Acenaphthene	ND	1.51	3.04	ug/kg dry	1	11/18/16 15:56	EPA 8270D	
Acenaphthylene	ND	1.51	3.04	"	"	"	"	
Anthracene	ND	1.51	3.04	"	"	"	"	
Benz(a)anthracene	ND	1.51	3.04	"	"	"	"	
Benzo(a)pyrene	**2.30**	2.28	4.55	"	"	"	"	J
Benzo(b)fluoranthene	**2.47**	2.28	4.55	"	"	"	"	J
Benzo(k)fluoranthene	ND	2.28	4.55	"	"	"	"	
Benzo(g,h,i)perylene	ND	1.51	3.04	"	"	"	"	
Chrysene	ND	1.51	3.04	"	"	"	"	
Dibenz(a,h)anthracene	ND	1.51	3.04	"	"	"	"	
Fluoranthene	ND	1.51	3.04	"	"	"	"	
Fluorene	ND	1.51	3.04	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	1.51	3.04	"	"	"	"	
1-Methylnaphthalene	ND	3.04	6.07	"	"	"	"	
2-Methylnaphthalene	ND	3.04	6.07	"	"	"	"	
Naphthalene	ND	3.04	6.07	"	"	"	"	
Phenanthrene	ND	1.51	3.04	"	"	"	"	
Pyrene	ND	1.51	3.04	"	"	"	"	
Carbazole	ND	2.28	4.55	"	"	"	"	
1,2-Dichlorobenzene	ND	3.79	7.59	"	"	"	"	
1,4-Dichlorobenzene	ND	3.79	7.59	"	"	"	"	
1,2,4-Trichlorobenzene	ND	3.79	7.59	"	"	"	"	
Dimethylphthalate	ND	15.1	30.4	"	"	"	"	
Diethylphthalate	ND	15.1	30.4	"	"	"	"	
Di-n-butylphthalate	ND	7.60	15.1	"	"	"	"	
Butyl benzyl phthalate	ND	15.1	30.4	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	22.8	45.5	"	"	"	"	
Di-n-octyl phthalate	ND	15.1	30.4	"	"	"	"	
Phenol	ND	3.04	6.07	"	"	"	"	
2-Methylphenol	ND	3.79	7.59	"	"	"	"	
3+4-Methylphenol(s)	ND	3.79	7.59	"	"	"	"	
2,4-Dimethylphenol	ND	7.59	15.1	"	"	"	"	
Pentachlorophenol (PCP)	ND	30.4	60.7	"	"	"	"	
Benzyl alcohol	ND	7.59	15.1	"	"	"	"	
Benzoic acid	ND	190	379	"	"	"	"	
Dibenzofuran	ND	1.51	3.04	"	"	"	"	
N-Nitrosodiphenylamine	ND	3.79	7.59	"	"	"	"	

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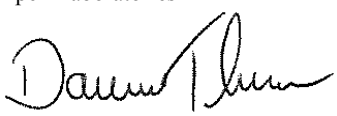

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-03-0-6-11112016 (A6K0424-04)			**Matrix: Sediment**		**Batch: 6110704**			
Hexachlorobenzene	ND	1.51	3.04	ug/kg dry	1	"	EPA 8270D	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 85 %*	*Limits: 37-122 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*99 %*	*Limits: 44-115 %*	"	"	"	
Phenol-d6 (Surr)			*84 %*	*Limits: 33-122 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*97 %*	*Limits: 54-127 %*	"	"	"	
2-Fluorophenol (Surr)			*84 %*	*Limits: 35-115 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*131 %*	*Limits: 39-132 %*	"	"	"	*Q-41*
CS-04-0-6-11112016 (A6K0424-05)			**Matrix: Sediment**		**Batch: 6110704**			
Acenaphthene	ND	1.52	3.04	ug/kg dry	1	11/18/16 16:31	EPA 8270D	
Acenaphthylene	ND	1.52	3.04	"	"	"	"	
Anthracene	ND	1.52	3.04	"	"	"	"	
Benz(a)anthracene	ND	1.52	3.04	"	"	"	"	
Benzo(a)pyrene	ND	2.28	4.56	"	"	"	"	
Benzo(b)fluoranthene	ND	2.28	4.56	"	"	"	"	
Benzo(k)fluoranthene	ND	2.28	4.56	"	"	"	"	
Benzo(g,h,i)perylene	ND	1.52	3.04	"	"	"	"	
Chrysene	ND	1.52	3.04	"	"	"	"	
Dibenz(a,h)anthracene	ND	1.52	3.04	"	"	"	"	
Fluoranthene	ND	1.52	3.04	"	"	"	"	
Fluorene	ND	1.52	3.04	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	1.52	3.04	"	"	"	"	
1-Methylnaphthalene	ND	3.04	6.07	"	"	"	"	
2-Methylnaphthalene	ND	3.04	6.07	"	"	"	"	
Naphthalene	ND	3.04	6.07	"	"	"	"	
Phenanthrene	ND	1.52	3.04	"	"	"	"	
Pyrene	ND	1.52	3.04	"	"	"	"	
Carbazole	ND	2.28	4.56	"	"	"	"	
1,2-Dichlorobenzene	ND	3.80	7.60	"	"	"	"	
1,4-Dichlorobenzene	ND	3.80	7.60	"	"	"	"	
1,2,4-Trichlorobenzene	ND	3.80	7.60	"	"	"	"	
Dimethylphthalate	ND	15.2	30.4	"	"	"	"	
Diethylphthalate	ND	15.2	30.4	"	"	"	"	
Di-n-butylphthalate	ND	7.61	15.2	"	"	"	"	
Butyl benzyl phthalate	ND	15.2	30.4	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	22.8	45.6	"	"	"	"	
Di-n-octyl phthalate	ND	15.2	30.4	"	"	"	"	
Phenol	ND	3.04	6.07	"	"	"	"	

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-04-0-6-11112016 (A6K0424-05)			**Matrix: Sediment**		**Batch: 6110704**			
2-Methylphenol	ND	3.80	7.60	ug/kg dry	1	"	EPA 8270D	
3+4-Methylphenol(s)	ND	3.80	7.60	"	"	"	"	
2,4-Dimethylphenol	ND	7.60	15.2	"	"	"	"	
Pentachlorophenol (PCP)	ND	30.4	60.7	"	"	"	"	
Benzyl alcohol	ND	7.60	15.2	"	"	"	"	
Benzoic acid	ND	190	380	"	"	"	"	
Dibenzofuran	ND	1.52	3.04	"	"	"	"	
N-Nitrosodiphenylamine	ND	3.80	7.60	"	"	"	"	
Hexachlorobenzene	ND	1.52	3.04	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 86 %*	*Limits: 37-122 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*91 %*	*Limits: 44-115 %*	"	"	"	
Phenol-d6 (Surr)			*86 %*	*Limits: 33-122 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*94 %*	*Limits: 54-127 %*	"	"	"	
2-Fluorophenol (Surr)			*86 %*	*Limits: 35-115 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*122 %*	*Limits: 39-132 %*	"	"	"	*Q-41*
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**		**Batch: 6110704**			
Acenaphthene	ND	1.60	3.22	ug/kg dry	1	11/18/16 17:07	EPA 8270D	
Acenaphthylene	ND	1.60	3.22	"	"	"	"	
Anthracene	ND	1.60	3.22	"	"	"	"	
Benz(a)anthracene	ND	1.60	3.22	"	"	"	"	
Benzo(a)pyrene	ND	2.41	4.82	"	"	"	"	
Benzo(b)fluoranthene	ND	2.41	4.82	"	"	"	"	
Benzo(k)fluoranthene	ND	2.41	4.82	"	"	"	"	
Benzo(g,h,i)perylene	ND	1.60	3.22	"	"	"	"	
Chrysene	ND	1.60	3.22	"	"	"	"	
Dibenz(a,h)anthracene	ND	1.60	3.22	"	"	"	"	
Fluoranthene	ND	1.60	3.22	"	"	"	"	
Fluorene	ND	1.60	3.22	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	1.60	3.22	"	"	"	"	
1-Methylnaphthalene	ND	3.22	6.42	"	"	"	"	
2-Methylnaphthalene	ND	3.22	6.42	"	"	"	"	
Naphthalene	ND	3.22	6.42	"	"	"	"	
Phenanthrene	ND	1.60	3.22	"	"	"	"	
Pyrene	ND	1.60	3.22	"	"	"	"	
Carbazole	ND	2.41	4.82	"	"	"	"	
1,2-Dichlorobenzene	ND	4.01	8.04	"	"	"	"	
1,4-Dichlorobenzene	ND	4.01	8.04	"	"	"	"	

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**		**Batch: 6110704**			
1,2,4-Trichlorobenzene	ND	4.01	8.04	ug/kg dry	1	"	EPA 8270D	
Dimethylphthalate	ND	16.0	32.2	"	"	"	"	
Diethylphthalate	ND	16.0	32.2	"	"	"	"	
Di-n-butylphthalate	ND	8.05	16.0	"	"	"	"	
Butyl benzyl phthalate	ND	16.0	32.2	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	24.1	48.2	"	"	"	"	
Di-n-octyl phthalate	ND	16.0	32.2	"	"	"	"	
Phenol	ND	3.22	6.42	"	"	"	"	
2-Methylphenol	ND	4.01	8.04	"	"	"	"	
3+4-Methylphenol(s)	ND	4.01	8.04	"	"	"	"	
2,4-Dimethylphenol	ND	8.04	16.0	"	"	"	"	
Pentachlorophenol (PCP)	ND	32.2	64.2	"	"	"	"	
Benzyl alcohol	ND	8.04	16.0	"	"	"	"	
Benzoic acid	ND	201	401	"	"	"	"	
Dibenzofuran	ND	1.60	3.22	"	"	"	"	
N-Nitrosodiphenylamine	ND	4.01	8.04	"	"	"	"	
Hexachlorobenzene	ND	1.60	3.22	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 72 %*	*Limits: 37-122 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*77 %*	*Limits: 44-115 %*	"	"	"	
Phenol-d6 (Surr)			*71 %*	*Limits: 33-122 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*93 %*	*Limits: 54-127 %*	"	"	"	
2-Fluorophenol (Surr)			*71 %*	*Limits: 35-115 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*117 %*	*Limits: 39-132 %*	"	"	"	*Q-41*

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-01-0-6-11112016 (A6K0424-01)			**Matrix: Sediment**					
Batch: 6110841								
Antimony	ND	0.305	0.610	mg/kg dry	5	11/30/16 14:45	EPA 6020A	
Arsenic	**1.56**	0.305	1.22	"	"	"	"	
Cadmium	ND	0.305	0.610	"	"	"	"	
Chromium	**4.77**	0.610	1.22	"	"	"	"	
Copper	**6.23**	0.610	1.22	"	"	"	"	
Lead	**2.12**	0.305	0.610	"	"	"	"	
Mercury	**0.0286**	0.0244	0.0488	"	"	"	"	J
Nickel	**6.55**	0.610	1.22	"	"	"	"	
Selenium	ND	0.610	1.22	"	"	"	"	
Silver	ND	0.305	0.610	"	"	"	"	
Zinc	**31.7**	1.22	2.44	"	"	"	"	
CS-101-0-6-11112016 (A6K0424-02)			**Matrix: Sediment**					
Batch: 6110841								
Antimony	ND	0.292	0.584	mg/kg dry	5	11/30/16 15:00	EPA 6020A	
Arsenic	**1.38**	0.292	1.17	"	"	"	"	
Cadmium	ND	0.292	0.584	"	"	"	"	
Chromium	**4.03**	0.584	1.17	"	"	"	"	
Copper	**4.90**	0.584	1.17	"	"	"	"	
Lead	**1.84**	0.292	0.584	"	"	"	"	
Mercury	ND	0.0234	0.0467	"	"	"	"	
Nickel	**5.67**	0.584	1.17	"	"	"	"	
Selenium	ND	0.584	1.17	"	"	"	"	
Silver	ND	0.292	0.584	"	"	"	"	
Zinc	**28.6**	1.17	2.34	"	"	"	"	
CS-02-0-6-11112016 (A6K0424-03)			**Matrix: Sediment**					
Batch: 6110841								
Antimony	ND	0.327	0.654	mg/kg dry	5	11/30/16 15:04	EPA 6020A	
Arsenic	**2.05**	0.327	1.31	"	"	"	"	
Cadmium	ND	0.327	0.654	"	"	"	"	
Chromium	**5.40**	0.654	1.31	"	"	"	"	
Copper	**8.07**	0.654	1.31	"	"	"	"	
Lead	**2.14**	0.327	0.654	"	"	"	"	
Mercury	ND	0.0262	0.0523	"	"	"	"	
Nickel	**7.28**	0.654	1.31	"	"	"	"	
Selenium	ND	0.654	1.31	"	"	"	"	

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-02-0-6-11112016 (A6K0424-03)			**Matrix: Sediment**					
Silver	ND	0.327	0.654	mg/kg dry	5	"	EPA 6020A	
Zinc	**31.9**	1.31	2.62	"	"	"	"	
CS-03-0-6-11112016 (A6K0424-04)			**Matrix: Sediment**					
Batch: 6110878								
Antimony	ND	0.290	0.580	mg/kg dry	5	11/29/16 12:31	EPA 6020A	
Arsenic	**1.51**	0.290	1.16	"	"	"	"	
Cadmium	ND	0.290	0.580	"	"	"	"	
Chromium	**5.38**	0.580	1.16	"	"	"	"	
Copper	**23.1**	0.580	1.16	"	"	"	"	
Lead	**2.00**	0.290	0.580	"	"	"	"	
Mercury	ND	0.0232	0.0464	"	"	"	"	
Nickel	**7.49**	0.580	1.16	"	"	"	"	
Selenium	ND	0.580	1.16	"	"	"	"	
Silver	ND	0.290	0.580	"	"	"	"	
Zinc	**31.7**	1.16	2.32	"	"	"	"	
CS-04-0-6-11112016 (A6K0424-05)			**Matrix: Sediment**					
Batch: 6110878								
Antimony	ND	0.301	0.602	mg/kg dry	5	11/29/16 12:35	EPA 6020A	
Arsenic	**1.74**	0.301	1.20	"	"	"	"	
Cadmium	ND	0.301	0.602	"	"	"	"	
Chromium	**5.95**	0.602	1.20	"	"	"	"	
Copper	**7.19**	0.602	1.20	"	"	"	"	
Lead	**2.35**	0.301	0.602	"	"	"	"	
Mercury	ND	0.0241	0.0482	"	"	"	"	
Nickel	**7.64**	0.602	1.20	"	"	"	"	
Selenium	ND	0.602	1.20	"	"	"	"	
Silver	ND	0.301	0.602	"	"	"	"	
Zinc	**32.7**	1.20	2.41	"	"	"	"	
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**					
Batch: 6110878								
Antimony	ND	0.308	0.617	mg/kg dry	5	11/29/16 12:42	EPA 6020A	
Arsenic	**1.92**	0.308	1.23	"	"	"	"	
Cadmium	ND	0.308	0.617	"	"	"	"	
Chromium	**6.00**	0.617	1.23	"	"	"	"	
Copper	**7.58**	0.617	1.23	"	"	"	"	
Lead	**2.44**	0.308	0.617	"	"	"	"	

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**					
Mercury	ND	0.0247	0.0493	mg/kg dry	5	"	EPA 6020A	
Nickel	**9.66**	0.617	1.23	"	"	"	"	
Selenium	ND	0.617	1.23	"	"	"	"	
Silver	ND	0.308	0.617	"	"	"	"	
Zinc	**38.1**	1.23	2.47	"	"	"	"	

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-01-0-6-11112016 (A6K0424-01)			**Matrix: Sediment**					
Batch: 6110623								
Total Organic Carbon	**0.071**	0.010	0.020	% by Weight	1	11/17/16 13:30	PSEP/SM 5310B MOD	
Batch: 6110628								
Total Solids	**79.4**	0.100	0.100	"	"	11/17/16 08:10	PSEP 1986	
CS-101-0-6-11112016 (A6K0424-02)			**Matrix: Sediment**					
Batch: 6110623								
Total Organic Carbon	**0.099**	0.010	0.020	% by Weight	1	11/17/16 13:30	PSEP/SM 5310B MOD	
Batch: 6110628								
Total Solids	**82.5**	0.100	0.100	"	"	11/17/16 08:10	PSEP 1986	
CS-02-0-6-11112016 (A6K0424-03)			**Matrix: Sediment**					
Batch: 6110623								
Total Organic Carbon	**0.032**	0.010	0.020	% by Weight	1	11/17/16 13:30	PSEP/SM 5310B MOD	
Batch: 6110628								
Total Solids	**75.5**	0.100	0.100	"	"	11/17/16 08:10	PSEP 1986	
CS-03-0-6-11112016 (A6K0424-04)			**Matrix: Sediment**					
Batch: 6110623								
Total Organic Carbon	**0.033**	0.010	0.020	% by Weight	1	11/17/16 13:30	PSEP/SM 5310B MOD	
Batch: 6110628								
Total Solids	**84.9**	0.100	0.100	"	"	11/17/16 08:10	PSEP 1986	
CS-04-0-6-11112016 (A6K0424-05)			**Matrix: Sediment**					
Batch: 6110623								
Total Organic Carbon	**0.032**	0.010	0.020	% by Weight	1	11/17/16 13:30	PSEP/SM 5310B MOD	
Batch: 6110628								
Total Solids	**83.0**	0.100	0.100	"	"	11/17/16 08:10	PSEP 1986	
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**					
Batch: 6110623								
Total Organic Carbon	**0.10**	0.010	0.020	% by Weight	1	11/17/16 13:30	PSEP/SM 5310B MOD	
Batch: 6110628								
Total Solids	**78.0**	0.100	0.100	"	"	11/17/16 08:10	PSEP 1986	

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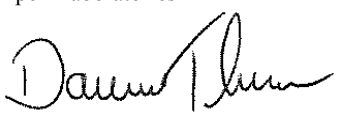

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Grain Size by ASTM D 422m/PSET Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-01-0-6-11112016 (A6K0424-01)			**Matrix: Sediment**		**Batch: 6120183**			
Gravel (>2.00mm)	**8.85**			% of Total	1	12/02/16 15:12	ASTM D 422m	GS-01
Percent Retained 4.75 mm sieve (#4)	**4.54**			"	"	"	"	GS-01
Percent Retained 2.00 mm sieve (#10)	**4.31**			"	"	"	"	GS-01
Sand (0.063mm - 2.00mm)	**89.1**			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	**8.24**			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	**19.6**			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	**40.6**			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	**18.4**			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	**1.42**			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	**0.63**			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	**0.18**			"	"	"	"	GS-01
Silt (0.005mm < 0.063mm)	**1.70**			"	"	"	"	GS-01
Clay (< 0.005 mm)	**0.30**			"	"	"	"	GS-01
CS-101-0-6-11112016 (A6K0424-02)			**Matrix: Sediment**		**Batch: 6120183**			
Gravel (>2.00mm)	**11.6**			% of Total	1	12/02/16 15:12	ASTM D 422m	GS-01
Percent Retained 4.75 mm sieve (#4)	**8.78**			"	"	"	"	GS-01
Percent Retained 2.00 mm sieve (#10)	**2.86**			"	"	"	"	GS-01
Sand (0.063mm - 2.00mm)	**86.7**			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	**6.82**			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	**18.7**			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	**41.9**			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	**17.2**			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	**1.37**			"	"	"	"	GS-01

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Grain Size by ASTM D 422m/PSET Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-101-0-6-11112016 (A6K0424-02)			**Matrix: Sediment**		**Batch: 6120183**			
Percent Retained 0.075 mm sieve (#200)	**0.58**			% of Total	1	"	ASTM D 422m	GS-01
Percent Retained 0.063 mm sieve (#230)	**0.14**			"	"	"	"	GS-01
Silt (0.005mm < 0.063mm)	**1.30**			"	"	"	"	GS-01
Clay (< 0.005 mm)	**0.60**			"	"	"	"	GS-01
CS-02-0-6-11112016 (A6K0424-03)			**Matrix: Sediment**		**Batch: 6120183**			
Gravel (>2.00mm)	**1.66**			% of Total	1	12/02/16 15:12	ASTM D 422m	GS-01
Percent Retained 4.75 mm sieve (#4)	**0.29**			"	"	"	"	GS-01
Percent Retained 2.00 mm sieve (#10)	**1.37**			"	"	"	"	GS-01
Sand (0.063mm - 2.00mm)	**97.1**			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	**5.24**			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	**23.0**			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	**50.6**			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	**16.8**			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	**0.98**			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	**0.35**			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	**0.08**			"	"	"	"	GS-01
Silt (0.005mm < 0.063mm)	**0.80**			"	"	"	"	GS-01
Clay (< 0.005 mm)	**0.40**			"	"	"	"	GS-01
CS-03-0-6-11112016 (A6K0424-04)			**Matrix: Sediment**		**Batch: 6120183**			
Gravel (>2.00mm)	**29.6**			% of Total	1	12/02/16 15:12	ASTM D 422m	GS-01
Percent Retained 4.75 mm sieve (#4)	**12.0**			"	"	"	"	GS-01
Percent Retained 2.00 mm sieve (#10)	**17.6**			"	"	"	"	GS-01
Sand (0.063mm - 2.00mm)	**66.9**			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	**13.4**			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	**20.5**			"	"	"	"	GS-01

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Grain Size by ASTM D 422m/PSET Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-03-0-6-11112016 (A6K0424-04)			**Matrix: Sediment**		**Batch: 6120183**			
Percent Retained 0.250 mm sieve (#60)	**22.7**			% of Total	1	"	ASTM D 422m	GS-01
Percent Retained 0.150 mm sieve (#100)	**8.42**			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	**1.08**			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	**0.62**			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	**0.18**			"	"	"	"	GS-01
Silt (0.005mm < 0.063mm)	**2.70**			"	"	"	"	GS-01
Clay (< 0.005 mm)	**0.80**			"	"	"	"	GS-01
CS-04-0-6-11112016 (A6K0424-05)			**Matrix: Sediment**		**Batch: 6120183**			
Gravel (>2.00mm)	**15.5**			% of Total	1	12/02/16 15:12	ASTM D 422m	GS-01
Percent Retained 4.75 mm sieve (#4)	**9.59**			"	"	"	"	GS-01
Percent Retained 2.00 mm sieve (#10)	**5.89**			"	"	"	"	GS-01
Sand (0.063mm - 2.00mm)	**81.7**			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	**6.77**			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	**19.7**			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	**36.0**			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	**16.7**			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	**1.57**			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	**0.76**			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	**0.19**			"	"	"	"	GS-01
Silt (0.005mm < 0.063mm)	**2.40**			"	"	"	"	GS-01
Clay (< 0.005 mm)	**0.40**			"	"	"	"	GS-01
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**		**Batch: 6120183**			
Gravel (>2.00mm)	**1.40**			% of Total	1	12/02/16 15:12	ASTM D 422m	GS-01
Percent Retained 4.75 mm sieve (#4)	**0.96**			"	"	"	"	GS-01

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Grain Size by ASTM D 422m/PSET Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**		**Batch: 6120183**			
Percent Retained 2.00 mm sieve (#10)	**0.44**			% of Total	1	"	ASTM D 422m	GS-01
Sand (0.063mm - 2.00mm)	**97.6**			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	**1.87**			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	**11.7**			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	**50.6**			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	**29.4**			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	**2.91**			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	**0.95**			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	**0.16**			"	"	"	"	GS-01
Silt (0.005mm < 0.063mm)	**1.00**			"	"	"	"	GS-01
Clay (< 0.005 mm)	**0.20**			"	"	"	"	GS-01

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-01-0-6-11112016 (A6K0424-01)			**Matrix: Sediment**		**Batch: 6110628**			
% Solids	**79.4**	1.00	1.00	% by Weight	1	11/17/16 08:10	EPA 8000C	
CS-101-0-6-11112016 (A6K0424-02)			**Matrix: Sediment**		**Batch: 6110628**			
% Solids	**82.5**	1.00	1.00	% by Weight	1	11/17/16 08:10	EPA 8000C	
CS-02-0-6-11112016 (A6K0424-03)			**Matrix: Sediment**		**Batch: 6110628**			
% Solids	**75.5**	1.00	1.00	% by Weight	1	11/17/16 08:10	EPA 8000C	
CS-03-0-6-11112016 (A6K0424-04)			**Matrix: Sediment**		**Batch: 6110628**			
% Solids	**84.9**	1.00	1.00	% by Weight	1	11/17/16 08:10	EPA 8000C	
CS-04-0-6-11112016 (A6K0424-05)			**Matrix: Sediment**		**Batch: 6110628**			
% Solids	**83.0**	1.00	1.00	% by Weight	1	11/17/16 08:10	EPA 8000C	
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**		**Batch: 6110628**			
% Solids	**78.0**	1.00	1.00	% by Weight	1	11/17/16 08:10	EPA 8000C	

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

Analytical Resources, Inc.

ANALYTICAL SAMPLE RESULTS (Subcontracted)

Wet Chemistry

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-01-0-6-11112016 (A6K0424-01)			**Matrix: Sediment**		**Batch: BEK0477**			
Batch: BEK0477								
Sulfide	ND	---	1.23	mg/kg dry	1	11/18/16 10:52	SM 4500-S2 D-00	U
Batch: BEK0506								
Ammonia-N	ND	---	0.49	mg/kg NH3-N dry	"	11/18/16 13:53	SM 4500-NH3 H-97	U
CS-101-0-6-11112016 (A6K0424-02)			**Matrix: Sediment**		**Batch: BEK0477**			
Batch: BEK0477								
Sulfide	ND	---	1.25	mg/kg dry	1	11/18/16 10:53	SM 4500-S2 D-00	U
Batch: BEK0506								
Ammonia-N	ND	---	0.47	mg/kg NH3-N dry	"	11/18/16 13:56	SM 4500-NH3 H-97	U
CS-02-0-6-11112016 (A6K0424-03)			**Matrix: Sediment**		**Batch: BEK0477**			
Batch: BEK0477								
Sulfide	ND	---	1.22	mg/kg dry	1	11/18/16 10:53	SM 4500-S2 D-00	U
Batch: BEK0506								
Ammonia-N	ND	---	0.47	mg/kg NH3-N dry	"	11/18/16 13:57	SM 4500-NH3 H-97	U
CS-03-0-6-11112016 (A6K0424-04)			**Matrix: Sediment**		**Batch: BEK0477**			
Batch: BEK0477								
Sulfide	ND	---	1.32	mg/kg dry	1	11/18/16 10:54	SM 4500-S2 D-00	U
Batch: BEK0506								
Ammonia-N	ND	---	0.50	mg/kg NH3-N dry	"	11/18/16 13:59	SM 4500-NH3 H-97	U
CS-04-0-6-11112016 (A6K0424-05)			**Matrix: Sediment**		**Batch: BEK0477**			
Batch: BEK0477								
Sulfide	ND	---	1.24	mg/kg dry	1	11/18/16 10:54	SM 4500-S2 D-00	U
Batch: BEK0506								
Ammonia-N	ND	---	0.45	mg/kg NH3-N dry	"	11/18/16 14:00	SM 4500-NH3 H-97	U
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**		**Batch: BEK0477**			
Batch: BEK0477								
Sulfide	ND	---	1.30	mg/kg dry	1	11/18/16 10:54	SM 4500-S2 D-00	U
Batch: BEK0506								

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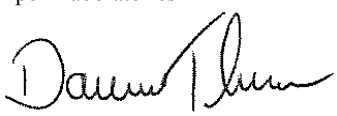

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503-718-2323 Phone
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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

Analytical Resources, Inc.

ANALYTICAL SAMPLE RESULTS (Subcontracted)

Wet Chemistry

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CS-05-0-6-11112016 (A6K0424-06)			**Matrix: Sediment**		**Batch: BEK0506**			
Ammonia-N	ND	---	0.49	mg/kg NH3-N dry	1	11/18/16 14:12	SM 4500-NH3 H-97	U

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110593 - EPA 3546 (Fuels) w/Silica Gel+Acid (NWTPH)									**Sediment**			
Blank (6110593-BLK1)					Prepared: 11/15/16 16:10		Analyzed: 11/16/16 22:22					
NWTPH-Dx/SG												
Diesel	ND	11.4	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	22.7	50.0	"	"	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 104 %*	*Limits: 50-150 %*			*Dilution: 1x*					
LCS (6110593-BS1)					Prepared: 11/15/16 16:10		Analyzed: 11/16/16 22:43					
NWTPH-Dx/SG												
Diesel	112	12.5	25.0	mg/kg wet	1	125	---	90	76-115%	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 103 %*	*Limits: 50-150 %*			*Dilution: 1x*					
Duplicate (6110593-DUP1)					Prepared: 11/15/16 16:10		Analyzed: 11/16/16 23:24					
QC Source Sample: CS-01-0-6-11112016 (A6K0424-01)												
NWTPH-Dx/SG												
Diesel	ND	15.1	30.2	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	30.2	60.4	"	"	---	ND	---	---	---	30%	
Surr: o-Terphenyl (Surr)			*Recovery: 101 %*	*Limits: 50-150 %*			*Dilution: 1x*					

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110683 - EPA 3546								**Sediment**				
Blank (6110683-BLK1)					Prepared: 11/17/16 13:41		Analyzed: 11/18/16 09:16					C-07
EPA 8082A												
Aroclor 1016	ND	1.82	3.64	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 98 %*	*Limits: 44-120 %*			*Dilution: 1x*					
LCS (6110683-BS1)					Prepared: 11/17/16 13:41		Analyzed: 11/18/16 09:34					C-07
EPA 8082A												
Aroclor 1016	173	2.00	4.00	ug/kg wet	1	250	---	69	47-134%	---	---	
Aroclor 1260	203	2.00	4.00	"	"	"	---	81	53-140%	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 99 %*	*Limits: 44-120 %*			*Dilution: 1x*					
Duplicate (6110683-DUP1)					Prepared: 11/17/16 13:41		Analyzed: 11/18/16 10:27					C-07
QC Source Sample: CS-01-0-6-11112016 (A6K0424-01)												
EPA 8082A												
Aroclor 1016	ND	2.35	4.69	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1221	ND	2.35	4.69	"	"	---	ND	---	---	---	30%	
Aroclor 1232	ND	2.35	4.69	"	"	---	ND	---	---	---	30%	
Aroclor 1242	ND	2.35	4.69	"	"	---	ND	---	---	---	30%	
Aroclor 1248	ND	2.35	4.69	"	"	---	ND	---	---	---	30%	
Aroclor 1254	ND	2.35	4.69	"	"	---	ND	---	---	---	30%	
Aroclor 1260	ND	2.35	4.69	"	"	---	ND	---	---	---	30%	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 101 %*	*Limits: 44-120 %*			*Dilution: 1x*					
Matrix Spike (6110683-MS1)					Prepared: 11/17/16 13:41		Analyzed: 11/18/16 11:38					C-07
QC Source Sample: CS-05-0-6-11112016 (A6K0424-06)												
EPA 8082A												
Aroclor 1016	203	2.41	4.81	ug/kg dry	1	301	ND	68	47-134%	---	---	
Aroclor 1260	238	2.41	4.81	"	"	"	ND	79	53-140%	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 107 %*	*Limits: 44-120 %*			*Dilution: 1x*					

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110704 - EPA 3546							**Sediment**					
Blank (6110704-BLK1)					Prepared: 11/18/16 07:09 Analyzed: 11/18/16 12:20							
EPA 8270D												
Acenaphthene	ND	1.25	2.50	ug/kg wet	1	---	---	---	---	---	---	
Acenaphthylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	1.87	3.75	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Chrysene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Fluoranthene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Fluorene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Naphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Phenanthrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Carbazole	ND	1.87	3.75	"	"	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	3.12	6.25	"	"	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	3.12	6.25	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	3.12	6.25	"	"	---	---	---	---	---	---	
Dimethylphthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	
Diethylphthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	6.26	12.5	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	18.7	37.5	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	
Phenol	ND	2.50	5.00	"	"	---	---	---	---	---	---	
2-Methylphenol	ND	3.12	6.25	"	"	---	---	---	---	---	---	
3+4-Methylphenol(s)	ND	3.12	6.25	"	"	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	25.0	50.0	"	"	---	---	---	---	---	---	
Benzyl alcohol	ND	6.25	12.5	"	"	---	---	---	---	---	---	

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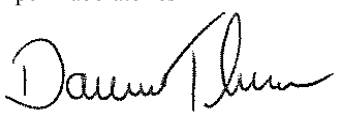

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110704 - EPA 3546							**Sediment**					
Blank (6110704-BLK1)					Prepared: 11/18/16 07:09 Analyzed: 11/18/16 12:20							
EPA 8270D												
Benzoic acid	ND	157	312	ug/kg wet	"	---	---	---	---	---	---	
Dibenzofuran	ND	1.25	2.50	"	"	---	---	---	---	---	---	
N-Nitrosodiphenylamine	ND	3.12	6.25	"	"	---	---	---	---	---	---	
Hexachlorobenzene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 84 %*	*Limits: 37-122 %*			*Dilution: 1x*					
2-Fluorobiphenyl (Surr)			*96 %*	*44-115 %*			*"*					
Phenol-d6 (Surr)			*83 %*	*33-122 %*			*"*					
p-Terphenyl-d14 (Surr)			*99 %*	*54-127 %*			*"*					
2-Fluorophenol (Surr)			*87 %*	*35-115 %*			*"*					
2,4,6-Tribromophenol (Surr)			*120 %*	*39-132 %*			*"*					*Q-41*
LCS (6110704-BS1)					Prepared: 11/18/16 07:09 Analyzed: 11/18/16 12:56							
EPA 8270D												
Acenaphthene	481	1.33	2.67	ug/kg wet	1	533	---	90	40-122%	---	---	
Acenaphthylene	462	1.33	2.67	"	"	"	---	87	32-132%	---	---	
Anthracene	500	1.33	2.67	"	"	"	---	94	47-123%	---	---	
Benz(a)anthracene	544	1.33	2.67	"	"	"	---	102	49-126%	---	---	
Benzo(a)pyrene	539	2.00	4.00	"	"	"	---	101	45-129%	---	---	
Benzo(b)fluoranthene	553	2.00	4.00	"	"	"	---	104	45-132%	---	---	
Benzo(k)fluoranthene	561	2.00	4.00	"	"	"	---	105	47-132%	---	---	
Benzo(g,h,i)perylene	579	1.33	2.67	"	"	"	---	109	43-134%	---	---	
Chrysene	543	1.33	2.67	"	"	"	---	102	50-124%	---	---	
Dibenz(a,h)anthracene	566	1.33	2.67	"	"	"	---	106	45-134%	---	---	
Fluoranthene	538	1.33	2.67	"	"	"	---	101	50-127%	---	---	
Fluorene	460	1.33	2.67	"	"	"	---	86	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	544	1.33	2.67	"	"	"	---	102	45-133%	---	---	
1-Methylnaphthalene	455	2.67	5.33	"	"	"	---	85	40-120%	---	---	
2-Methylnaphthalene	459	2.67	5.33	"	"	"	---	86	38-122%	---	---	
Naphthalene	442	2.67	5.33	"	"	"	---	83	35-123%	---	---	
Phenanthrene	477	1.33	2.67	"	"	"	---	89	50-121%	---	---	
Pyrene	514	1.33	2.67	"	"	"	---	96	47-127%	---	---	
Carbazole	537	2.00	4.00	"	"	"	---	101	50-122%	---	---	
1,2-Dichlorobenzene	442	3.33	6.67	"	"	"	---	83	33-120%	---	---	
1,4-Dichlorobenzene	450	3.33	6.67	"	"	"	---	84	31-120%	---	---	
1,2,4-Trichlorobenzene	480	3.33	6.67	"	"	"	---	90	34-120%	---	---	

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110704 - EPA 3546							**Sediment**					
LCS (6110704-BS1)					Prepared: 11/18/16 07:09 Analyzed: 11/18/16 12:56							
EPA 8270D												
Dimethylphthalate	514	13.3	26.7	ug/kg wet	"	"	---	96	48-124%	---	---	
Diethylphthalate	504	13.3	26.7	"	"	"	---	95	50-124%	---	---	
Di-n-butylphthalate	540	6.68	13.3	"	"	"	---	101	51-128%	---	---	
Butyl benzyl phthalate	570	13.3	26.7	"	"	"	---	107	48-132%	---	---	
Bis(2-ethylhexyl)phthalate	551	20.0	40.0	"	"	"	---	103	51-133%	---	---	
Di-n-octyl phthalate	548	13.3	26.7	"	"	"	---	103	44-140%	---	---	
Phenol	543	2.67	5.33	"	"	"	---	102	34-120%	---	---	
2-Methylphenol	507	3.33	6.67	"	"	"	---	95	32-122%	---	---	
3+4-Methylphenol(s)	511	3.33	6.67	"	"	"	---	96	34-120%	---	---	
2,4-Dimethylphenol	513	6.67	13.3	"	"	"	---	96	30-127%	---	---	
Pentachlorophenol (PCP)	565	26.7	53.3	"	"	"	---	106	25-133%	---	---	
Benzyl alcohol	497	6.67	13.3	"	"	"	---	93	29-122%	---	---	
Benzoic acid	366	167	333	"	"	1070	---	34	5-140%	---	---	
Dibenzofuran	474	1.33	2.67	"	"	533	---	89	44-120%	---	---	
N-Nitrosodiphenylamine	503	3.33	6.67	"	"	"	---	94	38-127%	---	---	
Hexachlorobenzene	523	1.33	2.67	"	"	"	---	98	44-122%	---	---	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 86 %*	*Limits: 37-122 %*		*Dilution: 1x*						
2-Fluorobiphenyl (Surr)			*91 %*	*44-115 %*		*"*						
Phenol-d6 (Surr)			*106 %*	*33-122 %*		*"*						
p-Terphenyl-d14 (Surr)			*115 %*	*54-127 %*		*"*						
2-Fluorophenol (Surr)			*95 %*	*35-115 %*		*"*						
2,4,6-Tribromophenol (Surr)			*125 %*	*39-132 %*		*"*						*Q-41*
Duplicate (6110704-DUP1)					Prepared: 11/18/16 07:09 Analyzed: 11/18/16 14:08							
QC Source Sample: CS-01-0-6-11112016 (A6K0424-01)												
EPA 8270D												
Acenaphthene	ND	1.63	3.27	ug/kg dry	1	---	ND	---	---	---	30%	
Acenaphthylene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	
Anthracene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	
Benz(a)anthracene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	
Benzo(a)pyrene	**2.78**	2.45	4.90	"	"	---	ND	---	---	---	30%	J
Benzo(b)fluoranthene	**3.01**	2.45	4.90	"	"	---	ND	---	---	---	30%	J
Benzo(k)fluoranthene	ND	2.45	4.90	"	"	---	ND	---	---	---	30%	
Benzo(g,h,i)perylene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	
Chrysene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	

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Darwin Thomas, Business Development Director

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110704 - EPA 3546							**Sediment**					
Duplicate (6110704-DUP1)					Prepared: 11/18/16 07:09 Analyzed: 11/18/16 14:08							
QC Source Sample: CS-01-0-6-11112016 (A6K0424-01)												
EPA 8270D												
Dibenz(a,h)anthracene	ND	1.63	3.27	ug/kg dry	"	---	ND	---	---	---	30%	
Fluoranthene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	
Fluorene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	
1-Methylnaphthalene	ND	3.27	6.53	"	"	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	3.27	6.53	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	3.27	6.53	"	"	---	ND	---	---	---	30%	
Phenanthrene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	
Pyrene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	
Carbazole	ND	2.45	4.90	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	4.08	8.17	"	"	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	4.08	8.17	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	4.08	8.17	"	"	---	ND	---	---	---	30%	
Dimethylphthalate	ND	16.3	32.7	"	"	---	ND	---	---	---	30%	
Diethylphthalate	ND	16.3	32.7	"	"	---	ND	---	---	---	30%	
Di-n-butylphthalate	ND	8.18	16.3	"	"	---	ND	---	---	---	30%	
Butyl benzyl phthalate	ND	16.3	32.7	"	"	---	ND	---	---	---	30%	
Bis(2-ethylhexyl)phthalate	ND	24.5	49.0	"	"	---	ND	---	---	---	30%	
Di-n-octyl phthalate	ND	16.3	32.7	"	"	---	ND	---	---	---	30%	
Phenol	ND	3.27	6.53	"	"	---	ND	---	---	---	30%	
2-Methylphenol	ND	4.08	8.17	"	"	---	ND	---	---	---	30%	
3+4-Methylphenol(s)	ND	4.08	8.17	"	"	---	ND	---	---	---	30%	
2,4-Dimethylphenol	ND	8.17	16.3	"	"	---	ND	---	---	---	30%	
Pentachlorophenol (PCP)	ND	32.7	65.3	"	"	---	ND	---	---	---	30%	
Benzyl alcohol	ND	8.17	16.3	"	"	---	ND	---	---	---	30%	
Benzoic acid	ND	205	408	"	"	---	ND	---	---	---	30%	
Dibenzofuran	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	
N-Nitrosodiphenylamine	ND	4.08	8.17	"	"	---	ND	---	---	---	30%	
Hexachlorobenzene	ND	1.63	3.27	"	"	---	ND	---	---	---	30%	

Surr: Nitrobenzene-d5 (Surr)	*Recovery: 78 %*	*Limits: 37-122 %*	*Dilution: 1x*
2-Fluorobiphenyl (Surr)	*87 %*	*44-115 %*	*"*
Phenol-d6 (Surr)	*79 %*	*33-122 %*	*"*
p-Terphenyl-d14 (Surr)	*91 %*	*54-127 %*	*"*

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110704 - EPA 3546							**Sediment**					
Duplicate (6110704-DUP1)					Prepared: 11/18/16 07:09 Analyzed: 11/18/16 14:08							
QC Source Sample: CS-01-0-6-11112016 (A6K0424-01)												
EPA 8270D												
Surr: 2-Fluorophenol (Surr)			*Recovery: 78 %*	*Limits: 35-115 %*								
2,4,6-Tribromophenol (Surr)			*122 %*	*39-132 %*								*Q-41*
Matrix Spike (6110704-MS1)					Prepared: 11/18/16 07:09 Analyzed: 11/18/16 17:43							
QC Source Sample: CS-05-0-6-11112016 (A6K0424-06)												
EPA 8270D												
Acenaphthene	558	1.60	3.22	ug/kg dry	1	643	ND	87	40-122%	---	---	
Acenaphthylene	541	1.60	3.22	"	"	"	ND	84	32-132%	---	---	
Anthracene	588	1.60	3.22	"	"	"	ND	91	47-123%	---	---	
Benz(a)anthracene	658	1.60	3.22	"	"	"	ND	102	49-126%	---	---	
Benzo(a)pyrene	653	2.41	4.82	"	"	"	ND	102	45-129%	---	---	
Benzo(b)fluoranthene	682	2.41	4.82	"	"	"	ND	106	45-132%	---	---	
Benzo(k)fluoranthene	667	2.41	4.82	"	"	"	ND	104	47-132%	---	---	
Benzo(g,h,i)perylene	712	1.60	3.22	"	"	"	ND	111	43-134%	---	---	
Chrysene	661	1.60	3.22	"	"	"	ND	103	50-124%	---	---	
Dibenz(a,h)anthracene	699	1.60	3.22	"	"	"	ND	109	45-134%	---	---	
Fluoranthene	645	1.60	3.22	"	"	"	ND	100	50-127%	---	---	
Fluorene	550	1.60	3.22	"	"	"	ND	86	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	664	1.60	3.22	"	"	"	ND	103	45-133%	---	---	
1-Methylnaphthalene	530	3.22	6.42	"	"	"	ND	82	40-120%	---	---	
2-Methylnaphthalene	544	3.22	6.42	"	"	"	ND	85	38-122%	---	---	
Naphthalene	506	3.22	6.42	"	"	"	ND	79	35-123%	---	---	
Phenanthrene	540	1.60	3.22	"	"	"	ND	84	50-121%	---	---	
Pyrene	627	1.60	3.22	"	"	"	ND	98	47-127%	---	---	
Carbazole	653	2.41	4.82	"	"	"	ND	102	50-122%	---	---	
1,2-Dichlorobenzene	495	4.01	8.04	"	"	"	ND	77	33-120%	---	---	
1,4-Dichlorobenzene	502	4.01	8.04	"	"	"	ND	78	31-120%	---	---	
1,2,4-Trichlorobenzene	539	4.01	8.04	"	"	"	ND	84	34-120%	---	---	
Dimethylphthalate	604	16.0	32.2	"	"	"	ND	94	48-124%	---	---	
Diethylphthalate	598	16.0	32.2	"	"	"	ND	93	50-124%	---	---	
Di-n-butylphthalate	648	8.05	16.0	"	"	"	ND	101	51-128%	---	---	
Butyl benzyl phthalate	688	16.0	32.2	"	"	"	ND	107	48-132%	---	---	
Bis(2-ethylhexyl)phthalate	673	24.1	48.2	"	"	"	ND	105	51-133%	---	---	

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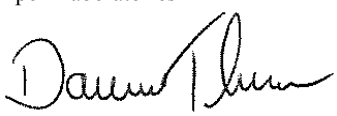

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110704 - EPA 3546							**Sediment**					
Matrix Spike (6110704-MS1)					Prepared: 11/18/16 07:09 Analyzed: 11/18/16 17:43							
QC Source Sample: CS-05-0-6-11112016 (A6K0424-06)												
EPA 8270D												
Di-n-octyl phthalate	673	16.0	32.2	ug/kg dry	"	"	ND	105	44-140%	---	---	
Phenol	610	3.22	6.42	"	"	"	ND	95	34-120%	---	---	
2-Methylphenol	578	4.01	8.04	"	"	"	ND	90	32-122%	---	---	
3+4-Methylphenol(s)	586	4.01	8.04	"	"	"	ND	91	34-120%	---	---	
2,4-Dimethylphenol	595	8.04	16.0	"	"	"	ND	92	30-127%	---	---	
Pentachlorophenol (PCP)	710	32.2	64.2	"	"	"	ND	110	25-133%	---	---	
Benzyl alcohol	575	8.04	16.0	"	"	"	ND	89	29-122%	---	---	
Benzoic acid	843	201	401	"	"	1290	ND	66	5-140%	---	---	
Dibenzofuran	557	1.60	3.22	"	"	643	ND	87	44-120%	---	---	
N-Nitrosodiphenylamine	600	4.01	8.04	"	"	"	ND	93	38-127%	---	---	
Hexachlorobenzene	628	1.60	3.22	"	"	"	ND	98	44-122%	---	---	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 80 %*	*Limits: 37-122 %*			*Dilution: 1x*					
2-Fluorobiphenyl (Surr)			*84 %*	*44-115 %*			*"*					
Phenol-d6 (Surr)			*97 %*	*33-122 %*			*"*					
p-Terphenyl-d14 (Surr)			*111 %*	*54-127 %*			*"*					
2-Fluorophenol (Surr)			*87 %*	*35-115 %*			*"*					
2,4,6-Tribromophenol (Surr)			*123 %*	*39-132 %*			*"*					*Q-41*

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110841 - EPA 3051A							**Sediment**					
Blank (6110841-BLK2)					Prepared: 11/23/16 13:08		Analyzed: 11/30/16 15:12					
EPA 6020A												
Antimony	ND	0.250	0.500	mg/kg wet	5	---	---	---	---	---	---	Q-16
Arsenic	ND	0.250	1.00	"	"	---	---	---	---	---	---	Q-16
Cadmium	ND	0.250	0.500	"	"	---	---	---	---	---	---	Q-16
Chromium	ND	0.500	1.00	"	"	---	---	---	---	---	---	Q-16
Copper	ND	0.500	1.00	"	"	---	---	---	---	---	---	Q-16
Lead	ND	0.250	0.500	"	"	---	---	---	---	---	---	Q-16
Mercury	ND	0.0200	0.0400	"	"	---	---	---	---	---	---	Q-16
Nickel	ND	0.500	1.00	"	"	---	---	---	---	---	---	Q-16
Selenium	ND	0.500	1.00	"	"	---	---	---	---	---	---	Q-16
Silver	ND	0.250	0.500	"	"	---	---	---	---	---	---	Q-16
Zinc	ND	1.00	2.00	"	"	---	---	---	---	---	---	Q-16
LCS (6110841-BS2)					Prepared: 11/23/16 13:08		Analyzed: 11/30/16 15:16					
EPA 6020A												
Antimony	12.7	0.250	0.500	mg/kg wet	5	12.5	---	101	80-120%	---	---	Q-16
Arsenic	24.5	0.250	1.00	"	"	25.0	---	98	"	---	---	Q-16
Cadmium	24.3	0.250	0.500	"	"	"	---	97	"	---	---	Q-16
Chromium	24.2	0.500	1.00	"	"	"	---	97	"	---	---	Q-16
Copper	24.4	0.500	1.00	"	"	"	---	98	"	---	---	Q-16
Lead	24.3	0.250	0.500	"	"	"	---	97	"	---	---	Q-16
Mercury	0.499	0.0200	0.0400	"	"	0.500	---	100	"	---	---	Q-16
Nickel	24.5	0.500	1.00	"	"	25.0	---	98	"	---	---	Q-16
Selenium	13.6	0.500	1.00	"	"	12.5	---	109	"	---	---	Q-16
Silver	12.2	0.250	0.500	"	"	"	---	98	"	---	---	Q-16
Zinc	24.7	1.00	2.00	"	"	25.0	---	99	"	---	---	Q-16
Duplicate (6110841-DUP1)					Prepared: 11/23/16 13:08		Analyzed: 11/30/16 22:20					
QC Source Sample: Other (A6K0405-04)												
EPA 6020A												
Antimony	**1.44**	0.302	0.604	mg/kg dry	5	---	1.27	---	---	13	40%	
Arsenic	**8.21**	0.302	1.21	"	"	---	8.96	---	---	9	40%	
Cadmium	**3.26**	0.302	0.604	"	"	---	3.74	---	---	14	40%	
Chromium	**57.6**	0.604	1.21	"	"	---	52.4	---	---	9	40%	
Copper	**99.3**	0.604	1.21	"	"	---	104	---	---	5	40%	
Nickel	**77.3**	0.604	1.21	"	"	---	107	---	---	32	40%	

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110841 - EPA 3051A							**Sediment**					
Duplicate (6110841-DUP1)					Prepared: 11/23/16 13:08		Analyzed: 11/30/16 22:20					
QC Source Sample: Other (A6K0405-04)												
EPA 6020A												
Selenium	**0.646**	0.604	1.21	mg/kg dry	"	---	0.739	---	---	13	40%	J
Silver	ND	0.302	0.604	"	"	---	ND	---	---	---	40%	
Duplicate (6110841-DUP2)					Prepared: 11/23/16 13:08		Analyzed: 11/30/16 15:27					
QC Source Sample: Other (A6K0405-04RE1)												
EPA 6020A												
Lead	**23.1**	6.04	12.1	mg/kg dry	100	---	25.7	---	---	11	40%	Q-16
Mercury	ND	0.484	0.967	"	"	---	ND	---	---	---	40%	Q-16
Zinc	**563**	24.2	48.4	"	"	---	646	---	---	14	40%	Q-16
Matrix Spike (6110841-MS1)					Prepared: 11/23/16 13:08		Analyzed: 11/30/16 22:35					
QC Source Sample: Other (A6K0405-04)												
EPA 6020A												
Antimony	14.2	0.303	0.606	mg/kg dry	5	15.1	1.27	86	75-125%	---	---	
Arsenic	33.7	0.303	1.21	"	"	30.3	8.96	82	"	---	---	
Cadmium	32.6	0.303	0.606	"	"	"	3.74	95	"	---	---	
Chromium	77.4	0.606	1.21	"	"	"	52.4	82	"	---	---	
Copper	125	0.606	1.21	"	"	"	104	66	"	---	---	Q-03
Nickel	94.7	0.606	1.21	"	"	"	107	-41	"	---	---	Q-03
Selenium	14.5	0.606	1.21	"	"	15.1	0.739	91	"	---	---	
Silver	14.6	0.303	0.606	"	"	"	ND	97	"	---	---	
Matrix Spike (6110841-MS2)					Prepared: 11/23/16 13:08		Analyzed: 11/30/16 15:08					
QC Source Sample: CS-02-0-6-11112016 (A6K0424-03)												
EPA 6020A												
Antimony	14.5	0.328	0.657	mg/kg dry	5	16.4	ND	88	75-125%	---	---	
Arsenic	33.4	0.328	1.31	"	"	32.8	2.05	96	"	---	---	
Cadmium	31.1	0.328	0.657	"	"	"	ND	95	"	---	---	
Chromium	36.9	0.657	1.31	"	"	"	5.40	96	"	---	---	
Copper	40.4	0.657	1.31	"	"	"	8.07	98	"	---	---	
Lead	33.2	0.328	0.657	"	"	"	2.14	95	"	---	---	
Mercury	0.642	0.0263	0.0525	"	"	0.657	ND	98	"	---	---	
Nickel	39.7	0.657	1.31	"	"	32.8	7.28	99	"	---	---	

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110841 - EPA 3051A							**Sediment**					
Matrix Spike (6110841-MS2)					Prepared: 11/23/16 13:08		Analyzed: 11/30/16 15:08					
QC Source Sample: CS-02-0-6-11112016 (A6K0424-03)												
EPA 6020A												
Selenium	17.7	0.657	1.31	mg/kg dry	"	16.4	ND	108	"	---	---	
Silver	15.7	0.328	0.657	"	"	"	ND	96	"	---	---	
Zinc	62.9	1.31	2.63	"	"	32.8	31.9	95	"	---	---	
Matrix Spike (6110841-MS3)					Prepared: 11/23/16 13:08		Analyzed: 11/30/16 15:31					
QC Source Sample: Other (A6K0405-04RE1)												
EPA 6020A												
Lead	51.0	6.06	12.1	mg/kg dry	100	30.3	25.7	84	75-125%	---	---	Q-16
Mercury	0.613	0.485	0.969	"	"	0.606	ND	101	"	---	---	Q-16, J
Zinc	628	24.2	48.5	"	"	30.3	646	-59	"	---	---	Q-03, Q-16

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110878 - EPA 3051A							**Sediment**					
Blank (6110878-BLK1)					Prepared: 11/28/16 12:07 Analyzed: 11/29/16 12:23							
EPA 6020A												
Antimony	ND	0.250	0.500	mg/kg wet	5	---	---	---	---	---	---	
Arsenic	ND	0.250	1.00	"	"	---	---	---	---	---	---	
Cadmium	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Chromium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Copper	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Lead	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Mercury	ND	0.0200	0.0400	"	"	---	---	---	---	---	---	
Nickel	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Selenium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Silver	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Zinc	ND	1.00	2.00	"	"	---	---	---	---	---	---	
LCS (6110878-BS2)					Prepared: 11/28/16 12:07 Analyzed: 11/29/16 12:38							
EPA 6020A												
Antimony	13.2	0.250	0.500	mg/kg wet	5	12.5	---	106	80-120%	---	---	Q-16
Arsenic	25.1	0.250	1.00	"	"	25.0	---	100	"	---	---	Q-16
Cadmium	25.4	0.250	0.500	"	"	"	---	101	"	---	---	Q-16
Chromium	25.7	0.500	1.00	"	"	"	---	103	"	---	---	Q-16
Copper	26.6	0.500	1.00	"	"	"	---	106	"	---	---	Q-16
Lead	25.9	0.250	0.500	"	"	"	---	103	"	---	---	Q-16
Mercury	0.521	0.0200	0.0400	"	"	0.500	---	104	"	---	---	Q-16
Nickel	26.4	0.500	1.00	"	"	25.0	---	106	"	---	---	Q-16
Selenium	13.6	0.500	1.00	"	"	12.5	---	109	"	---	---	Q-16
Silver	12.8	0.250	0.500	"	"	"	---	102	"	---	---	Q-16
Zinc	25.8	1.00	2.00	"	"	25.0	---	103	"	---	---	Q-16
Duplicate (6110878-DUP1)					Prepared: 11/28/16 12:07 Analyzed: 11/29/16 12:46							
QC Source Sample: CS-05-0-6-11112016 (A6K0424-06)												
EPA 6020A												
Antimony	ND	0.318	0.636	mg/kg dry	5	---	ND	---	---	---	40%	
Arsenic	**1.71**	0.318	1.27	"	"	---	1.92	---	---	12	40%	
Cadmium	ND	0.318	0.636	"	"	---	ND	---	---	---	40%	
Chromium	**5.84**	0.636	1.27	"	"	---	6.00	---	---	3	40%	
Copper	**6.93**	0.636	1.27	"	"	---	7.58	---	---	9	40%	
Lead	**2.31**	0.318	0.636	"	"	---	2.44	---	---	6	40%	

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110878 - EPA 3051A							**Sediment**					
Duplicate (6110878-DUP1)					Prepared: 11/28/16 12:07		Analyzed: 11/29/16 12:46					
QC Source Sample: CS-05-0-6-11112016 (A6K0424-06)												
EPA 6020A												
Mercury	ND	0.0254	0.0509	mg/kg dry	"	---	ND	---	---	---	40%	
Nickel	**8.47**	0.636	1.27	"	"	---	9.66	---	---	13	40%	
Selenium	ND	0.636	1.27	"	"	---	ND	---	---	---	40%	
Silver	ND	0.318	0.636	"	"	---	ND	---	---	---	40%	
Zinc	**35.3**	1.27	2.54	"	"	---	38.1	---	---	8	40%	
Matrix Spike (6110878-MS1)					Prepared: 11/28/16 12:07		Analyzed: 11/29/16 12:50					
QC Source Sample: CS-05-0-6-11112016 (A6K0424-06)												
EPA 6020A												
Antimony	15.2	0.317	0.634	mg/kg dry	5	15.8	ND	96	75-125%	---	---	
Arsenic	33.7	0.317	1.27	"	"	31.7	1.92	100	"	---	---	
Cadmium	31.3	0.317	0.634	"	"	"	ND	99	"	---	---	
Chromium	38.8	0.634	1.27	"	"	"	6.00	104	"	---	---	
Copper	38.7	0.634	1.27	"	"	"	7.58	98	"	---	---	
Lead	34.0	0.317	0.634	"	"	"	2.44	100	"	---	---	
Mercury	0.637	0.0253	0.0507	"	"	0.634	ND	101	"	---	---	
Nickel	40.9	0.634	1.27	"	"	31.7	9.66	98	"	---	---	
Selenium	17.2	0.634	1.27	"	"	15.8	ND	109	"	---	---	
Silver	15.5	0.317	0.634	"	"	"	ND	98	"	---	---	
Zinc	66.6	1.27	2.53	"	"	31.7	38.1	90	"	---	---	

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110623 - PSEP TOC							**Sediment**					
Blank (6110623-BLK1)					Prepared: 11/16/16 11:50		Analyzed: 11/17/16 13:30					
PSEP/SM 5310B MOD												
Total Organic Carbon	ND	0.010	0.020	% by Weight	1	---	---	---	---	---	---	
LCS (6110623-BS1)					Prepared: 11/16/16 11:50		Analyzed: 11/17/16 13:30					
PSEP/SM 5310B MOD												
Total Organic Carbon	9400			mg/kg	1	10000	---	94	85-115%	---	---	
Duplicate (6110623-DUP1)					Prepared: 11/16/16 11:50		Analyzed: 11/17/16 13:30					
QC Source Sample: CS-01-0-6-11112016 (A6K0424-01)												
PSEP/SM 5310B MOD												
Total Organic Carbon	**0.031**	0.010	0.020	% by Weight	1	---	0.071	---	---	79	20%	Q-04

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110628 - PSEP Solids in Soil/Sediment											**Sediment**	
Duplicate (6110628-DUP1)					Prepared: 11/16/16 11:53 Analyzed: 11/17/16 08:10							
QC Source Sample: CS-01-0-6-11112016 (A6K0424-01)												
PSEP 1986												
Total Solids	**79.1**	0.100	0.100	% by Weight	1	---	79.4	---	---	0.3	20%	

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6110628 - PSEP Solids in Soil/Sediment											**Sediment**	
Duplicate (6110628-DUP1)					Prepared: 11/16/16 11:53 Analyzed: 11/17/16 08:10							
QC Source Sample: CS-01-0-6-11112016 (A6K0424-01)												
EPA 8000C												
% Solids	**79.1**	1.00	1.00	% by Weight	"	---	79.4	---	---	0.3	10%	

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

Analytical Resources, Inc.

QUALITY CONTROL (QC) SAMPLE RESULTS

Wet Chemistry

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEK0477 - No Prep Wet Chem							**Solid**					
Blank (BEK0477-BLK1)					Prepared: 11/17/16 10:42 Analyzed: 11/18/16 10:50							
SM 4500-S2 D-00												
Sulfide	ND	---	1.00	mg/kg wet	1	---	---	---	---	---	---	U
LCS (BEK0477-BS1)					Prepared: 11/17/16 10:42 Analyzed: 11/18/16 10:51							
SM 4500-S2 D-00												
Sulfide	8.38	---	0.250	mg/kg wet	10	8.2781	---	101	90-110%	---	---	D
Duplicate (BEK0477-DUP1)					Prepared: 11/17/16 10:42 Analyzed: 11/18/16 10:52							
QC Source Sample: A6K0424-01 (A6K0424-01)												
SM 4500-S2 D-00												
Sulfide	ND	---	1.24	mg/kg dry	1	---	ND	---	---	---	20%	U
Matrix Spike (BEK0477-MS1)					Prepared: 11/17/16 10:42 Analyzed: 11/18/16 10:52							
QC Source Sample: A6K0424-01 (A6K0424-01)												
SM 4500-S2 D-00												
Sulfide	362	---	12.4	mg/kg dry	10	410.32	ND	88.2	75-125%	---	---	D

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

Analytical Resources, Inc.

QUALITY CONTROL (QC) SAMPLE RESULTS

Wet Chemistry

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEK0506 - No Prep Wet Chem							**Solid**					
Blank (BEK0506-BLK1)					Prepared: 11/18/16 09:33		Analyzed: 11/18/16 13:50					
SM 4500-NH3 H-97												
Ammonia-N	ND	---	0.40	mg/kg NH3-N wet	1	---	---	---	---	---	---	U
LCS (BEK0506-BS1)					Prepared: 11/18/16 09:33		Analyzed: 11/18/16 13:51					
SM 4500-NH3 H-97												
Ammonia-N	101	---	8.00	mg/kg NH3-N wet	20	100.00	---	101	90-110%	---	---	D
Duplicate (BEK0506-DUP1)					Prepared: 11/18/16 09:33		Analyzed: 11/18/16 13:54					
QC Source Sample: A6K0424-01 (A6K0424-01)												
SM 4500-NH3 H-97												
Ammonia-N	ND	---	0.49	mg/kg NH3-N dry	1	---	ND	---	---	---	20%	U
Matrix Spike (BEK0506-MS1)					Prepared: 11/18/16 09:33		Analyzed: 11/18/16 13:55					
QC Source Sample: A6K0424-01 (A6K0424-01)												
SM 4500-NH3 H-97												
Ammonia-N	118	---	9.78	mg/kg NH3-N dry	20	122.27	ND	96.7	75-125%	---	---	D

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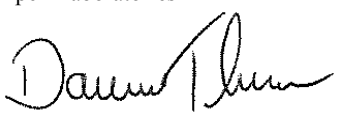

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup

Prep: EPA 3546 (Fuels) w/Silica Gel+Acid (NWTPH)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 6110593							
A6K0424-01	Sediment	NWTPH-Dx/SG	11/11/16 17:10	11/15/16 16:10	10.41g/5mL	10g/5mL	0.96
A6K0424-02	Sediment	NWTPH-Dx/SG	11/11/16 17:15	11/15/16 16:10	10.4g/5mL	10g/5mL	0.96
A6K0424-03	Sediment	NWTPH-Dx/SG	11/11/16 17:40	11/15/16 16:10	10.25g/5mL	10g/5mL	0.98
A6K0424-04	Sediment	NWTPH-Dx/SG	11/11/16 18:05	11/15/16 16:10	10.35g/5mL	10g/5mL	0.97
A6K0424-05	Sediment	NWTPH-Dx/SG	11/11/16 18:30	11/15/16 16:10	10.57g/5mL	10g/5mL	0.95
A6K0424-06	Sediment	NWTPH-Dx/SG	11/11/16 19:00	11/15/16 16:10	10.21g/5mL	10g/5mL	0.98

Polychlorinated Biphenyls -- EPA 8082A

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 6110683							
A6K0424-01	Sediment	EPA 8082A	11/11/16 17:10	11/17/16 13:41	10.55g/2mL	10g/2mL	0.95
A6K0424-02	Sediment	EPA 8082A	11/11/16 17:15	11/17/16 13:41	10.65g/2mL	10g/2mL	0.94
A6K0424-03	Sediment	EPA 8082A	11/11/16 17:40	11/17/16 13:41	10.76g/2mL	10g/2mL	0.93
A6K0424-04	Sediment	EPA 8082A	11/11/16 18:05	11/17/16 13:41	10.26g/2mL	10g/2mL	0.98
A6K0424-05	Sediment	EPA 8082A	11/11/16 18:30	11/17/16 13:41	10.56g/2mL	10g/2mL	0.95
A6K0424-06	Sediment	EPA 8082A	11/11/16 19:00	11/17/16 13:41	10.56g/2mL	10g/2mL	0.95

Semivolatile Organic Compounds by EPA 8270D

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 6110704							
A6K0424-01	Sediment	EPA 8270D	11/11/16 17:10	11/18/16 07:09	15.44g/2mL	15g/2mL	0.97
A6K0424-02	Sediment	EPA 8270D	11/11/16 17:15	11/18/16 07:09	15.57g/2mL	15g/2mL	0.96
A6K0424-03	Sediment	EPA 8270D	11/11/16 17:40	11/18/16 07:09	15.73g/2mL	15g/2mL	0.95
A6K0424-04	Sediment	EPA 8270D	11/11/16 18:05	11/18/16 07:09	15.53g/2mL	15g/2mL	0.97
A6K0424-05	Sediment	EPA 8270D	11/11/16 18:30	11/18/16 07:09	15.85g/2mL	15g/2mL	0.95
A6K0424-06	Sediment	EPA 8270D	11/11/16 19:00	11/18/16 07:09	15.96g/2mL	15g/2mL	0.94

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 6110841							

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A6K0424-01	Sediment	EPA 6020A	11/11/16 17:10	11/23/16 13:08	0.516g/50mL	0.5g/50mL	0.97
A6K0424-02	Sediment	EPA 6020A	11/11/16 17:15	11/23/16 13:08	0.519g/50mL	0.5g/50mL	0.96
A6K0424-03	Sediment	EPA 6020A	11/11/16 17:40	11/23/16 13:08	0.506g/50mL	0.5g/50mL	0.99
Batch: 6110878							
A6K0424-04	Sediment	EPA 6020A	11/11/16 18:05	11/28/16 12:07	0.508g/50mL	0.5g/50mL	0.98
A6K0424-05	Sediment	EPA 6020A	11/11/16 18:30	11/28/16 12:07	0.5g/50mL	0.5g/50mL	1.00
A6K0424-06	Sediment	EPA 6020A	11/11/16 19:00	11/28/16 12:07	0.52g/50mL	0.5g/50mL	0.96

Conventional Chemistry Parameters

Prep: PSEP Solids in Soil/Sediment

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 6110628							
A6K0424-01	Sediment	PSEP 1986	11/11/16 17:10	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-02	Sediment	PSEP 1986	11/11/16 17:15	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-03	Sediment	PSEP 1986	11/11/16 17:40	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-04	Sediment	PSEP 1986	11/11/16 18:05	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-05	Sediment	PSEP 1986	11/11/16 18:30	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-06	Sediment	PSEP 1986	11/11/16 19:00	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA

Prep: PSEP TOC

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 6110623							
A6K0424-01	Sediment	PSEP/SM 5310B MOD	11/11/16 17:10	11/16/16 11:50	5g/5g	5g/5g	NA
A6K0424-02	Sediment	PSEP/SM 5310B MOD	11/11/16 17:15	11/16/16 11:50	5g/5g	5g/5g	NA
A6K0424-03	Sediment	PSEP/SM 5310B MOD	11/11/16 17:40	11/16/16 11:50	5g/5g	5g/5g	NA
A6K0424-04	Sediment	PSEP/SM 5310B MOD	11/11/16 18:05	11/16/16 11:50	5g/5g	5g/5g	NA
A6K0424-05	Sediment	PSEP/SM 5310B MOD	11/11/16 18:30	11/16/16 11:50	5g/5g	5g/5g	NA
A6K0424-06	Sediment	PSEP/SM 5310B MOD	11/11/16 19:00	11/16/16 11:50	5g/5g	5g/5g	NA

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

SAMPLE PREPARATION INFORMATION

Grain Size by ASTM D 422m/PSET Parameters

Prep: ASTM D 421

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 6120183							
A6K0424-01	Sediment	ASTM D 422m	11/11/16 17:10	11/22/16 09:28	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-02	Sediment	ASTM D 422m	11/11/16 17:15	11/22/16 09:38	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-03	Sediment	ASTM D 422m	11/11/16 17:40	11/22/16 09:49	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-04	Sediment	ASTM D 422m	11/11/16 18:05	11/22/16 10:10	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-05	Sediment	ASTM D 422m	11/11/16 18:30	11/22/16 10:20	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-06	Sediment	ASTM D 422m	11/11/16 19:00	11/22/16 10:36	1N/A/1N/A	1N/A/1N/A	NA

Percent Dry Weight

Prep: PSEP Solids in Soil/Sediment

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 6110628							
A6K0424-01	Sediment	EPA 8000C	11/11/16 17:10	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-02	Sediment	EPA 8000C	11/11/16 17:15	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-03	Sediment	EPA 8000C	11/11/16 17:40	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-04	Sediment	EPA 8000C	11/11/16 18:05	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-05	Sediment	EPA 8000C	11/11/16 18:30	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA
A6K0424-06	Sediment	EPA 8000C	11/11/16 19:00	11/16/16 11:53	1N/A/1N/A	1N/A/1N/A	NA

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Darwin Thomas, Business Development Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

Analytical Resources, Inc.

SAMPLE PREPARATION INFORMATION

Wet Chemistry

Prep: No Prep Wet Chem

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: BEK0477							
A6K0424-01	Sediment	SM 4500-S2 D-00	11/11/16 17:10	11/17/16 10:44	2.564g/100mL	5g/100mL	1.95
A6K0424-02	Sediment	SM 4500-S2 D-00	11/11/16 17:15	11/17/16 10:44	2.513g/100mL	5g/100mL	1.99
A6K0424-03	Sediment	SM 4500-S2 D-00	11/11/16 17:40	11/17/16 10:44	2.546g/100mL	5g/100mL	1.96
A6K0424-04	Sediment	SM 4500-S2 D-00	11/11/16 18:05	11/17/16 10:44	2.527g/100mL	5g/100mL	1.98
A6K0424-05	Sediment	SM 4500-S2 D-00	11/11/16 18:30	11/17/16 10:44	2.513g/100mL	5g/100mL	1.99
A6K0424-06	Sediment	SM 4500-S2 D-00	11/11/16 19:00	11/17/16 10:44	2.532g/100mL	5g/100mL	1.97
Batch: BEK0506							
A6K0424-01	Sediment	SM 4500-NH3 H-97	11/11/16 17:10	11/18/16 09:33	4.04g/40mL	4g/40mL	0.99
A6K0424-02	Sediment	SM 4500-NH3 H-97	11/11/16 17:15	11/18/16 09:33	4.29g/40mL	4g/40mL	0.93
A6K0424-03	Sediment	SM 4500-NH3 H-97	11/11/16 17:40	11/18/16 09:33	4.19g/40mL	4g/40mL	0.96
A6K0424-04	Sediment	SM 4500-NH3 H-97	11/11/16 18:05	11/18/16 09:33	4.08g/40mL	4g/40mL	0.98
A6K0424-05	Sediment	SM 4500-NH3 H-97	11/11/16 18:30	11/18/16 09:33	4.3g/40mL	4g/40mL	0.93
A6K0424-06	Sediment	SM 4500-NH3 H-97	11/11/16 19:00	11/18/16 08:33	4.18g/40mL	4g/40mL	0.96

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

Notes and Definitions

Qualifiers:

C-07	Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
D	The reported value is from a dilution
GS-01	See detailed Particle Size Analysis results, accumulation curves, and Case Narratives at the end of this report.
J	Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
M-02	Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
Q-03	Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
Q-04	Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
Q-16	Reanalysis of an original Batch QC sample.
Q-41	Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
U	This analyte is not detected above the applicable reporting or detection limit.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

Apex Laboratories

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6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

*** Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

APEX LABS **CHAIN OF CUSTODY** Lab # AGK0424 COC 1 of 1

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

PO#

Company: ANCHOR QEA, LLC Project Mgr: Project Name: *** MBT-L MTCA INT Act. Project # 160730-01.02

Address: 6650 SW REDWOOD LN, STE 333, PORTLAND 97219 Phone: 503-475-9150 Fax: Email:

Sampled by:

Site Location: OR (WA circled) Other:

ANALYSIS REQUEST

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOCs Full List	8260 RBDM VOCs	8260 HVOCs	8260 BTEX VOCs	8270 SVOC + PAHs	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	TOC	TOTAL SOLIDS	GRAIN SIZE	AMMONIA TOTAL SULFIDES	ARCHIVE **
CS-01-0-6-11112016		11/11/16	1710	S	10		X						X		X				X	X	X	X	X	X
CS-101-0-6-11112016		↓	1115	↓	↓		X						X		X				X	X	X	X	X	X
CS-02-0-6-11112016		↓	1740	↓	↓		X						X		X				X	X	X	X	X	X
CS-03-0-6-11112016		↓	1805	↓	↓		X						X		X				X	X	X	X	X	X
CS-04-0-6-11112016		↓	1830	↓	↓		X						X		X				X	X	X	X	X	X
CS-05-0-6-11112016		↓	1900	↓	↓		X						X		X				X	X	X	X	X	X

Normal Turn Around Time (TAT) = 10 Business Days (YES circled) NO

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: STD.

SPECIAL INSTRUCTIONS:
* BILL to MBT-L direct.
** CONTACT CINDY FIELDS to ARRANGE TRANSFER OF ARCHIVE to APPROPRIATE LAB.
*** MTCA INTERIM ACTION (SEDIMENTS)

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Timothy J. Stone Date: 11/14/16	Signature: [signature] Date: 11/14/16	Signature: Date:	Signature: Date:
Printed Name: TIMOTHY J. STONE Time: 1317	Printed Name: Chris Hoffman Time: 1317	Printed Name: Time:	Printed Name: Time:
Company: ANCHOR QEA, LLC	Company: APEX LABS	Company:	Company:

Apex Laboratories

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Darwin Thomas, Business Development Director

Apex Labs

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Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Anchor QEA, LLC Tigard	Project: **MBT-L MTCA INT. Act**	
6650 SW Redwood Lane Ste. 333	Project Number: 160730-01.02	**Reported:**
Portland, OR 97224	Project Manager: Cindy Fields	02/07/17 15:06

APEX LABS COOLER RECEIPT FORM

Client: Anchor Element WO#: A6 K0424

Project/Project #: MBT-L MTCA INT. ACT. 160730-01.02

Delivery info:

Date/Time Received: 11/14/16 @ 1317 By: CFH

Delivered by: Apex___ Client X ESS___ FedEx___ UPS___ Swift___ Senvoy___ SDS___ Other_____

Cooler Inspection Inspected by: CFH : 11/14/16 @ 1326

Chain of Custody Included? Yes X No___ Custody Seals? Yes_____ No —

Signed/Dated by Client? Yes X No___

Signed/Dated by Apex? Yes X No___

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	3.7	2.1	4.1				
Received on Ice? (Y/N)							
Temp. Blanks? (Y/N)							
Ice Type: (Gel/Real/Other)							
Condition:	Good						

Cooler out of temp? (Y/N) Possible reason why:

If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA

Samples Inspection: Inspected by: CFH : 11/14/16 @ 1440

All Samples Intact? Yes X No___ Comments:

Bottle Labels/COCs agree? Yes X No___ Comments:

Containers/Volumes Received Appropriate for Analysis? Yes X No___ Comments:

Do VOA Vials have Visible Headspace? Yes___ No___ NA X

Comments

Water Samples: pH Checked and Appropriate (except VOAs): Yes___ No___ NA X

Comments:

Additional Information:

Labeled by: CFH Witness: JS Cooler Inspected by: CFH See Project Contact Form: Y

Apex Laboratories

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Darwin Thomas, Business Development Director

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A6K0424-01		Client Sample ID:	CS-01-0-6-11112016		Batch Number:	6120183
Data Entered by:	JSJ	Date:	12/02/16	Data Reviewed by:	JW	Date:	12/05/16
Sample Description:	SAND with trace Gravel and Silt			Max Particle Size:	Gravel		
Particle Shape:	Sub-angular to Rounded			Hardness	Hard and Durable		

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	5.723	249.177	243.45	0.53	242.2

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	1.283	12.288	11.01	11.01	4.5	95.5
10	2.00	1.188	11.623	10.44	21.44	4.3	91.1
Pan		6.730	227.534	221.80	243.24	91.1	

Hygroscopic Moisture Correction

	Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
	0.9948		K42401	1.195	21.464	21.358	0.53

Hydrometer Analysis

Start Date/Time	11/22/2016	9:28	Dispersing Agent	$NaPO_3$
Air Dry Sample Wt. for Hydrometer Test (g)	101.900		G_s Correction Factor (α)	1.000
Percent Passing No.10 Sieve	91.1		Specific Gravity (G_s)	2.65
Dry Weight of Soil Tested (g)	101.37		Corrected Dry Weight of Soil Tested (g) (W)	111.21

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	7	18.8	0.38	0.3	15	0.01382	0.054	0.31
2	7	18.8	0.38	0.3	15	0.01382	0.038	0.31
4	7	18.8	0.38	0.3	15	0.01382	0.027	0.31
8	7	18.8	0.38	0.3	15	0.01382	0.019	0.31
15	7	18.8	0.38	0.3	15	0.01382	0.014	0.31
30	6.5	19		0.0	15	0.01382	0.010	0.00
60	6.5	19		0.0	15	0.01382	0.007	0.00
90	6	19.1		0.0	15.2	0.01382	0.006	0.00
120	6	19.2		0.0	15.2	0.01382	0.005	0.00
240	6	19.9		0.0	15.2	0.01365	0.003	0.00
360	5.5	20.4		0.0	15.2	0.01365	0.003	0.00
1440	6	18.9		0.0	15.2	0.01382	0.001	0.00

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.206	10.368	9.16	41.38	8.2	82.9
40	0.425	1.211	22.961	21.75	88.73	19.6	63.4
60	0.250	1.218	46.399	45.18	187.07	40.6	22.7
100	0.150	1.196	21.703	20.51	231.71	18.4	4.3
140	0.105	1.215	2.796	1.58	235.15	1.4	2.9
200	0.075	1.211	1.911	0.70	236.67	0.6	2.2
230	0.063	1.231	1.433	0.20	237.11	0.2	2.1
			Sum	99.08	230 Minus	2.28	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: CS-01-0-6-11112016 (A6K0424-01)

Grain Size Analysis Summary from Sieving and Hydrometer Testing		Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel				*8.85*
Retained on No. 4 sieve		4.75	95.46	4.54
Gravel, passing No. 4 sieve and retained on No. 10 sieve		2.00	91.15	4.31
Sand				*89.09*
Coarse sand, passing No.10 sieve and retained on No. 20 sieve		0.8500	82.91	8.24
Medium sand, passing No.20 sieve and retained on No. 40 sieve		0.4250	63.35	19.56
Medium sand, passing No.40 sieve and retained on No. 60 sieve		0.2500	22.73	40.63
Medium sand, passing No. 60 sieve and retained on No.100 sieve		0.1500	4.29	18.44
Fine sand, passing No. 100 sieve and retained on No.140 sieve		0.1060	2.86	1.42
Fine sand passing No. 140 sieve and retained on No. 200 sieve		0.0750	2.24	0.63
Fine sand, passing No. 200 sieve and retained on No. 230 sieve		0.0630	2.05	0.18
Silt and Clay (Measurements in the Clay fraction are noted)				*2.05*
Hydrometer Test		0.0535	0.31	1.74
Hydrometer Test		0.0378	0.31	0
Hydrometer Test		0.0268	0.31	0
Hydrometer Test		0.0189	0.31	0
Hydrometer Test		0.0138	0.31	0
Hydrometer Test		0.0098	0.31	0
Hydrometer Test		0.0069	0.31	0
Hydrometer Test		0.0057	0.31	0
Hydrometer Test	Clay	0.0049	0.31	0
Hydrometer Test	Clay	0.0034	0.31	0
Hydrometer Test	Clay	0.0028	0.31	0
Hydrometer Test	Clay	0.0014	0.31	0

Grain Size Summary	Percent of Total Sample
Gravel	8.9
Sand	89.1
Coarse sand	8.2
Medium sand	78.6
Fine sand	2.2
Silt	1.7
Clay	0.3

Case Narrative for Sample ID: CS-01-0-6-11112016 (A6K0424-01)

This data is not to be used for engineering purposes.

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

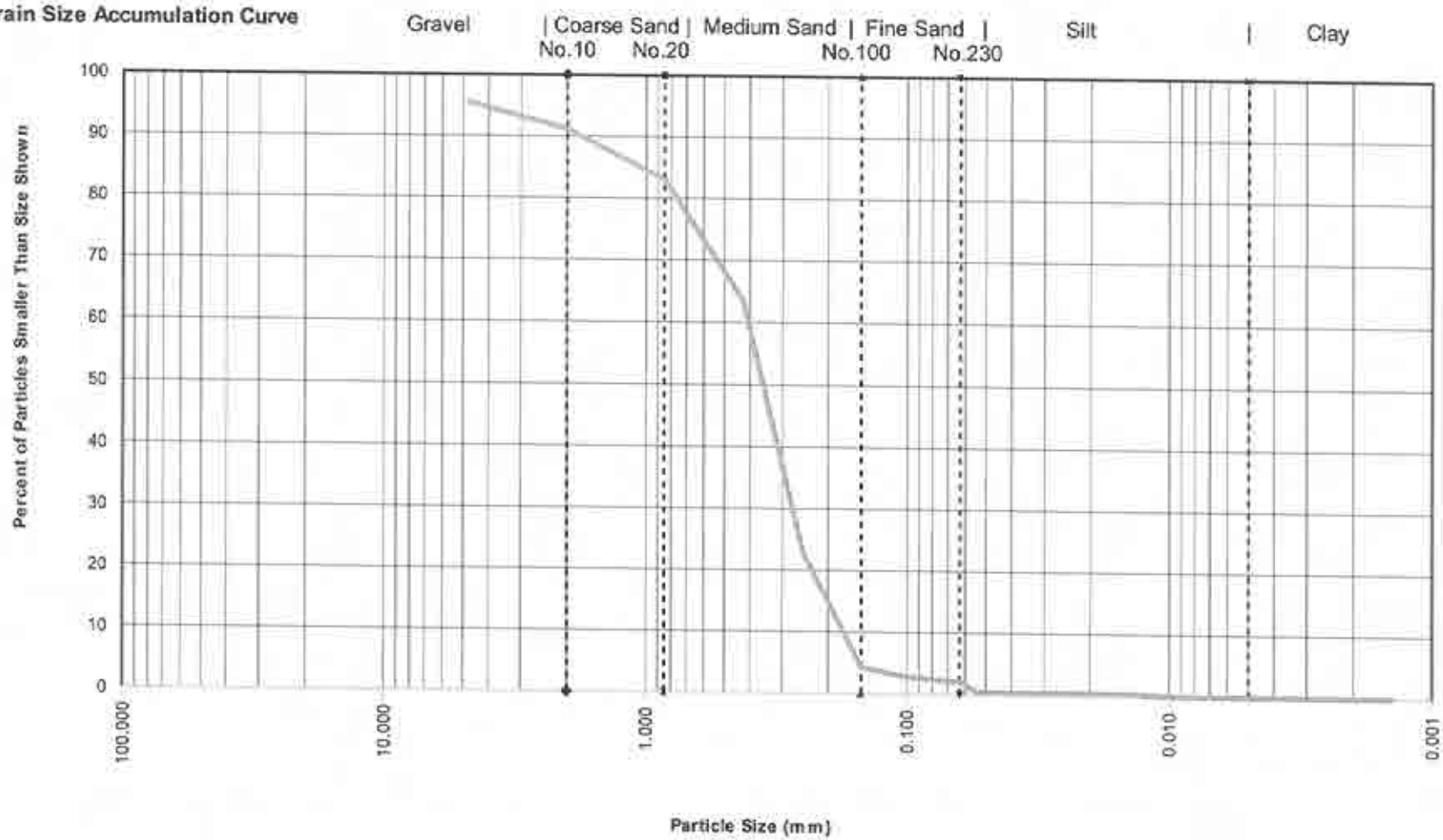
The assumed specific gravity used in the calculations was 2.65.

Jar was sampled prior to use for grain size.

Expires 1/1/18

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Grain Size Accumulation Curve



Sample ID:	CS-01-0-6-11112016 (A6K0424-01)			
Specific Gravity	MAXIMUM PARTICLE SIZE	GRAVEL & SAND		SOIL DESCRIPTION
		PARTICLE SHAPE	HARDNESS	
2.65	Gravel	Sub-angular to Rounded	Hard and Durable	SAND with trace Gravel and Silt

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A6K0424-02		Client Sample ID:	CS-101-0-6-11112016		Batch Number:	6120183
Data Entered by:	JSJ	Date:	12/02/16	Data Reviewed by:	JW	Date:	12/05/16
Sample Description:	SAND with trace Gravel, Silt, and Clay			Max Particle Size:	Gravel		
Particle Shape:	Sub-angular to Rounded			Hardness	Hard and Durable		

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	5.682	291.587	285.91	0.53	284.4

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	1.200	26.163	24.96	24.96	8.8	91.2
10	2.00	1.187	9.334	8.15	33.11	2.9	88.4
Pan		5.694	258.140	252.45	285.56	88.3	

Hygroscopic Moisture Correction

	Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
	0.9948		K42402	1.202	26.847	26.713	0.53

Hydrometer Analysis

Start Date/Time	11/22/2016	9:38	Dispersing Agent	$NaPO_3$
Air Dry Sample Wt. for Hydrometer Test (g)	106.193		G_s Correction Factor (α)	1.000
Percent Passing No.10 Sieve	88.4		Specific Gravity (G_s)	2.65
Dry Weight of Soil Tested (g)	105.64		Corrected Dry Weight of Soil Tested (g) (W)	119.56

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	6	18.9	0.93	0.8	15.2	0.01382	0.054	0.69
2	6	18.9	0.93	0.8	15.2	0.01382	0.038	0.69
4	6	18.9	0.93	0.8	15.2	0.01382	0.027	0.69
8	6	18.9	0.93	0.8	15.2	0.01382	0.019	0.69
15	6	18.9	0.93	0.8	15.2	0.01382	0.014	0.69
30	6	18.9	0.93	0.8	15.2	0.01382	0.010	0.69
60	6	19.1	0.98	0.8	15.2	0.01382	0.007	0.72
90	5.5	19.2	0.5	0.4	15.2	0.01382	0.006	0.37
120	5	19.4	0.05	0.0	15.3	0.01382	0.005	0.04
240	5	20	0.21	0.2	15.3	0.01365	0.003	0.15
360	5	20.4	0.31	0.3	15.3	0.01365	0.003	0.23
1440	5.5	18.8	0.4	0.3	15.2	0.01382	0.001	0.30

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.210	9.363	8.15	52.49	6.8	81.5
40	0.425	1.190	23.497	22.31	105.52	18.7	62.9
60	0.250	1.201	51.292	50.09	224.60	41.9	21.0
100	0.150	1.208	21.800	20.59	273.55	17.2	3.8
140	0.105	1.214	2.849	1.64	277.44	1.4	2.4
200	0.075	1.193	1.881	0.69	279.07	0.6	1.8
230	0.063	1.193	1.361	0.17	279.47	0.1	1.7
			Sum	103.63	230 Minus	2.00	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: CS-101-0-6-11112016 (A6K0424-02)

Grain Size Analysis Summary from Sieving and Hydrometer Testing		Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel				*11.64*
Retained on No. 4 sieve		4.75	91.22	8.78
Gravel, passing No. 4 sieve and retained on No. 10 sieve		2.00	88.36	2.86
Sand				*86.68*
Coarse sand, passing No.10 sieve and retained on No. 20 sieve		0.8500	81.54	6.82
Medium sand, passing No.20 sieve and retained on No. 40 sieve		0.4250	62.88	18.66
Medium sand, passing No.40 sieve and retained on No. 60 sieve		0.2500	20.98	41.9
Medium sand, passing No. 60 sieve and retained on No.100 sieve		0.1500	3.76	17.22
Fine sand, passing No. 100 sieve and retained on No.140 sieve		0.1060	2.39	1.37
Fine sand passing No. 140 sieve and retained on No. 200 sieve		0.0750	1.82	0.58
Fine sand, passing No. 200 sieve and retained on No. 230 sieve		0.0630	1.68	0.14
Silt and Clay (Measurements in the Clay fraction are noted)				*1.93*
Hydrometer Test		0.0539	0.69	0.99
Hydrometer Test		0.0381	0.69	0
Hydrometer Test		0.0269	0.69	0
Hydrometer Test		0.0190	0.69	0
Hydrometer Test		0.0139	0.69	0
Hydrometer Test		0.0098	0.69	0
Hydrometer Test		0.0070	0.72	0
Hydrometer Test		0.0057	0.37	0.31
Hydrometer Test	Clay	0.0049	0.04	0.33
Hydrometer Test	Clay	0.0034	0.15	0
Hydrometer Test	Clay	0.0028	0.23	0
Hydrometer Test	Clay	0.0014	0.3	0

Grain Size Summary	Percent of Total Sample
Gravel	11.6
Sand	86.7
Coarse sand	6.8
Medium sand	77.8
Fine sand	2.1
Silt	1.3
Clay	0.6

Case Narrative for Sample ID: CS-101-0-6-11112016 (A6K0424-02)

This data is not to be used for engineering purposes.

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

The assumed specific gravity used in the calculations was 2.65.

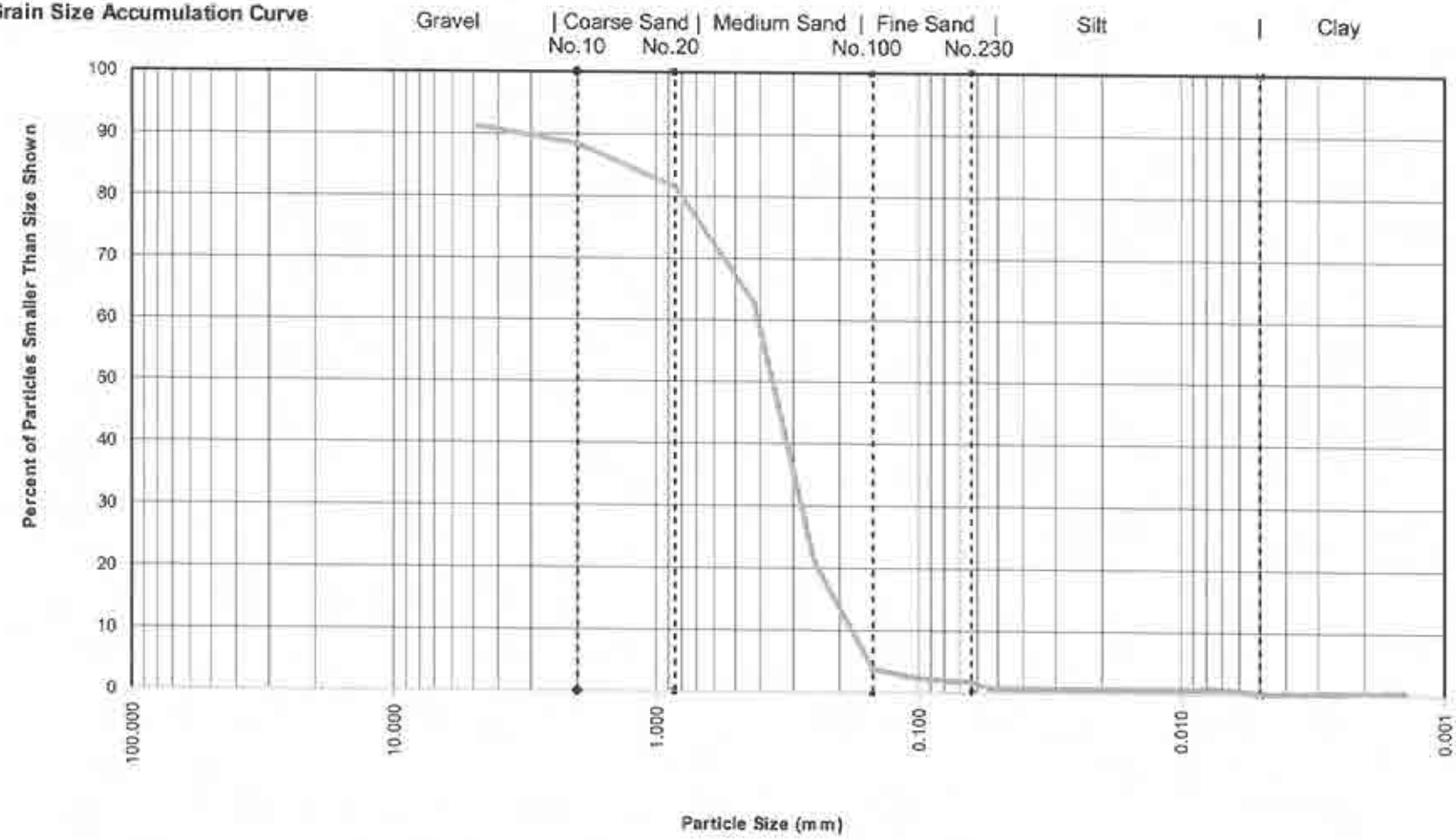
Jar was sampled prior to use for grain size.

Organic material (shell fragment) present in +10 fraction.

Expires 1/1/18

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Grain Size Accumulation Curve



Sample ID:	CS-101-0-6-11112016 (A6K0424-02)			
Specific Gravity	MAXIMUM PARTICLE SIZE	GRAVEL & SAND		SOIL DESCRIPTION
		PARTICLE SHAPE	HARDNESS	
2.65	Gravel	Sub-angular to Rounded	Hard and Durable	SAND with trace Gravel, Silt, and Clay

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A6K0424-03		Client Sample ID:	CS-02-0-6-11112016		Batch Number:	6120183
Data Entered by:	JSJ	Date:	12/02/16	Data Reviewed by:	JW	Date:	12/05/16
Sample Description:	SAND with trace Silt			Max Particle Size:	Gravel		
Particle Shape:	Sub-angular to Sub-rounded			Hardness	Hard and Durable		

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	5.907	255.227	249.32	0.48	248.1

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	1.213	1.922	0.71	0.71	0.3	99.7
10	2.00	1.259	4.666	3.41	4.12	1.4	98.3
Pan		5.912	251.053	245.14	249.26	98.3	

Hygroscopic Moisture Correction

	Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
	0.9952		K42403	1.206	22.675	22.573	0.48

Hydrometer Analysis

Start Date/Time	11/22/2016	9:49	Dispersing Agent	$NaPO_3$
Air Dry Sample Wt. for Hydrometer Test (g)	109.149		G_s Correction Factor (α)	1.000
Percent Passing No.10 Sieve	98.3		Specific Gravity (G_s)	2.65
Dry Weight of Soil Tested (g)	108.63		Corrected Dry Weight of Soil Tested (g) (W)	110.46

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	7	19.1	0.48	0.4	15	0.01382	0.054	0.43
2	7	19.1	0.48	0.4	15	0.01382	0.038	0.43
4	6.5	19.1		0.0	15	0.01382	0.027	0.00
8	6	19.1		0.0	15.2	0.01382	0.019	0.00
15	6	19.2		0.0	15.2	0.01382	0.014	0.00
30	6	19.2		0.0	15.2	0.01382	0.010	0.00
60	6	19.2		0.0	15.2	0.01382	0.007	0.00
90	6	19.3		0.0	15.2	0.01382	0.006	0.00
120	6	19.4		0.0	15.2	0.01382	0.005	0.00
240	6	20.1		0.0	15.2	0.01365	0.003	0.00
360	5	20.4		0.0	15.3	0.01365	0.003	0.00
1440	6	18.8		0.0	15.2	0.01382	0.001	0.00

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.206	6.995	5.79	17.12	5.2	93.1
40	0.425	1.204	26.664	25.46	74.30	23.0	70.1
60	0.250	2.424	58.304	55.88	199.80	50.6	19.5
100	0.150	1.209	19.748	18.54	241.44	16.8	2.7
140	0.105	1.212	2.296	1.08	243.87	1.0	1.7
200	0.075	1.209	1.598	0.39	244.75	0.4	1.3
230	0.063	1.219	1.308	0.09	244.95	0.1	1.3
			Sum	107.23	230 Minus	1.40	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: CS-02-0-6-11112016 (A6K0424-03)

Grain Size Analysis Summary from Sieving and Hydrometer Testing		Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel				1.66
Retained on No. 4 sieve		4.75	99.71	0.29
Gravel, passing No. 4 sieve and retained on No. 10 sieve		2.00	98.34	1.37
Sand				97.07
Coarse sand, passing No.10 sieve and retained on No. 20 sieve		0.8500	93.1	5.24
Medium sand, passing No.20 sieve and retained on No. 40 sieve		0.4250	70.05	23.05
Medium sand, passing No.40 sieve and retained on No. 60 sieve		0.2500	19.46	50.59
Medium sand, passing No. 60 sieve and retained on No.100 sieve		0.1500	2.68	16.78
Fine sand, passing No. 100 sieve and retained on No.140 sieve		0.1060	1.7	0.98
Fine sand passing No. 140 sieve and retained on No. 200 sieve		0.0750	1.35	0.35
Fine sand, passing No. 200 sieve and retained on No. 230 sieve		0.0630	1.27	0.08
Silt and Clay (Measurements in the Clay fraction are noted)				1.27
Hydrometer Test		0.0535	0.43	0.84
Hydrometer Test		0.0378	0.43	0
Hydrometer Test		0.0268	0.43	0
Hydrometer Test		0.0190	0.43	0
Hydrometer Test		0.0139	0.43	0
Hydrometer Test		0.0098	0.43	0
Hydrometer Test		0.0070	0.43	0
Hydrometer Test		0.0057	0.43	0
Hydrometer Test	Clay	0.0049	0.43	0
Hydrometer Test	Clay	0.0034	0.43	0
Hydrometer Test	Clay	0.0028	0.43	0
Hydrometer Test	Clay	0.0014	0.43	0

Grain Size Summary	Percent of Total Sample
Gravel	1.7
Sand	97.1
Coarse sand	5.2
Medium sand	90.4
Fine sand	1.4
Silt	0.8
Clay	0.4

Case Narrative for Sample ID: CS-02-0-6-11112016 (A6K0424-03)

This data is not to be used for engineering purposes.

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

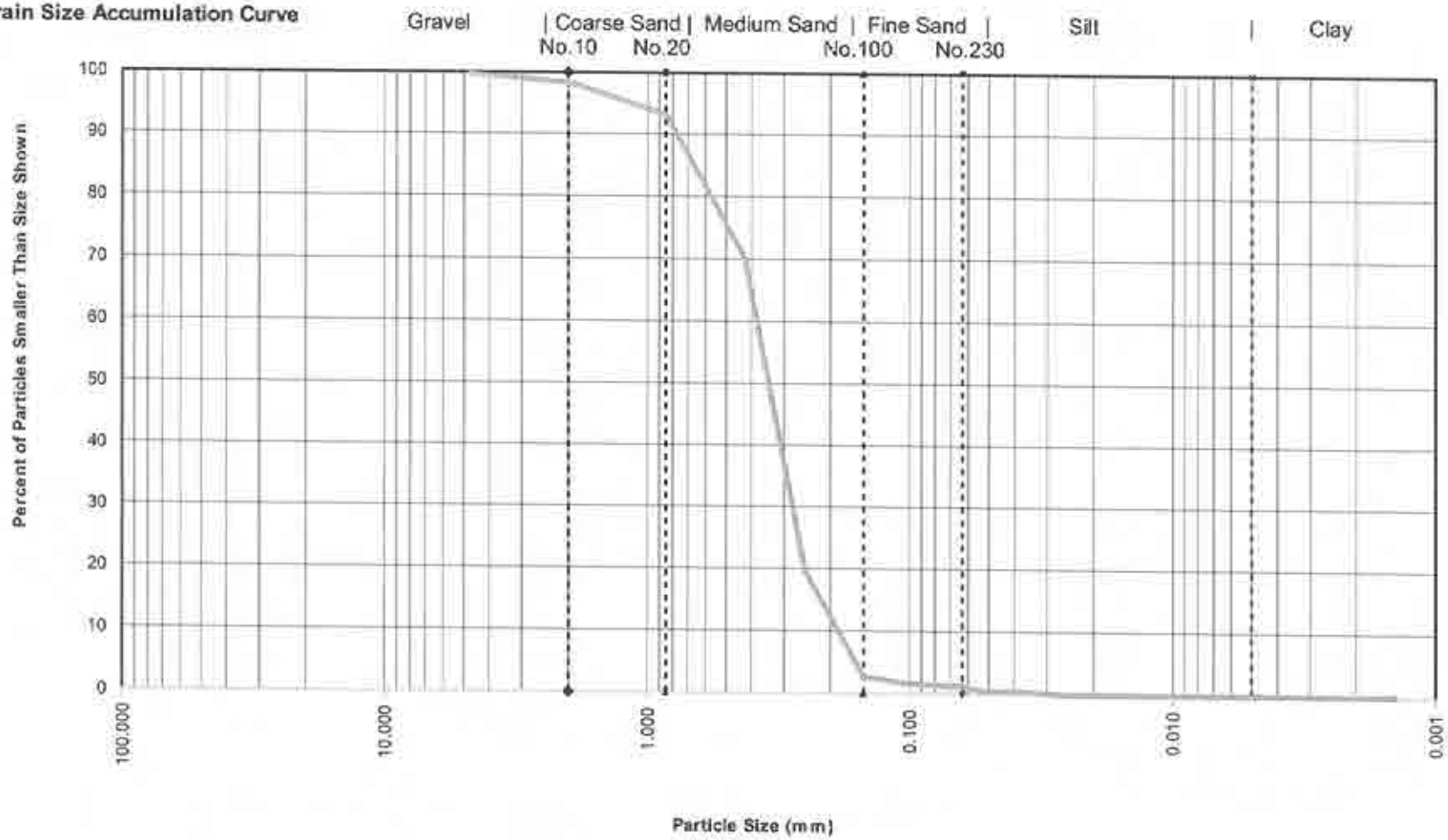
The assumed specific gravity used in the calculations was 2.65.

Jar was sampled prior to use for grain size.

Expires 1/1/18

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Grain Size Accumulation Curve



Sample ID:	CS-02-0-6-11112016 (A6K0424-03)			
Specific Gravity	MAXIMUM PARTICLE SIZE	GRAVEL & SAND		SOIL DESCRIPTION
		PARTICLE SHAPE	HARDNESS	
2.65	Gravel	Sub-angular to Sub-rounded	Hard and Durable	SAND with trace Silt

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A6K0424-04		Client Sample ID:	CS-03-0-6-11112016		Batch Number:	6120183
Data Entered by:	JSJ	Date:	12/02/16	Data Reviewed by:	JW	Date:	12/05/16
Sample Description:	SAND with some Gravel and trace Silt and Clay			Max Particle Size:	Gravel		
Particle Shape:	Sub-angular to Sub-rounded			Hardness	Hard and Durable		

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	5.806	277.822	272.02	0.64	270.3

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	1.218	33.672	32.45	32.45	12.0	88.0
10	2.00	1.207	48.859	47.65	80.11	17.6	70.4
Pan		6.817	196.474	190.66	270.76	70.1	

Hygroscopic Moisture Correction

	Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
	0.9936		K42404	1.192	21.935	21.803	0.64

Hydrometer Analysis

Start Date/Time	11/22/2016	10:10	Dispersing Agent	$NaPO_3$
Air Dry Sample Wt. for Hydrometer Test (g)	101.477		G_s Correction Factor (α)	1.000
Percent Passing No.10 Sieve	70.4		Specific Gravity (G_s)	2.65
Dry Weight of Soil Tested (g)	100.83		Corrected Dry Weight of Soil Tested (g) (W)	143.30

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	8	19.2	3	2.1	14.8	0.01382	0.053	1.48
2	8	19.2	3	2.1	14.8	0.01382	0.038	1.48
4	7.5	19.2	2.5	1.7	14.8	0.01382	0.027	1.23
8	7.5	19.2	2.5	1.7	14.8	0.01382	0.019	1.23
15	7	19.2	2	1.4	15	0.01382	0.014	0.98
30	7	19.2	2	1.4	15	0.01382	0.010	0.98
60	7	19.3	2.03	1.4	15	0.01382	0.007	1.00
90	6.5	19.4	1.55	1.1	15	0.01382	0.006	0.76
120	6	19.5	1.08	0.8	15.2	0.01365	0.005	0.53
240	6	20.1	1.23	0.9	15.2	0.01365	0.003	0.60
360	5	20.5	0.33	0.2	15.3	0.01348	0.003	0.16
1440	5	18.9		0.0	15.3	0.01382	0.001	0.00

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.222	20.457	19.24	116.25	13.4	56.9
40	0.425	1.210	30.560	29.35	171.39	20.5	36.5
60	0.250	1.195	33.679	32.48	232.42	22.7	13.8
100	0.150	1.210	13.275	12.07	255.09	8.4	5.4
140	0.105	1.200	2.742	1.54	257.99	1.1	4.3
200	0.075	1.205	2.092	0.89	259.65	0.6	3.7
230	0.063	1.204	1.456	0.25	260.13	0.2	3.5
			Sum	95.82	230 Minus	5.02	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: CS-03-0-6-11112016 (A6K0424-04)

Grain Size Analysis Summary from Sieving and Hydrometer Testing		Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel				*29.64*
Retained on No. 4 sieve		4.75	87.99	12.01
Gravel, passing No. 4 sieve and retained on No. 10 sieve		2.00	70.36	17.63
Sand				*66.86*
Coarse sand, passing No.10 sieve and retained on No. 20 sieve		0.8500	56.94	13.42
Medium sand, passing No.20 sieve and retained on No. 40 sieve		0.4250	36.46	20.48
Medium sand, passing No.40 sieve and retained on No. 60 sieve		0.2500	13.79	22.67
Medium sand, passing No. 60 sieve and retained on No.100 sieve		0.1500	5.37	8.42
Fine sand, passing No. 100 sieve and retained on No.140 sieve		0.1060	4.3	1.06
Fine sand passing No. 140 sieve and retained on No. 200 sieve		0.0750	3.68	0.62
Fine sand, passing No. 200 sieve and retained on No. 230 sieve		0.0630	3.5	0.18
Silt and Clay (Measurements in the Clay fraction are noted)				*3.5*
Hydrometer Test		0.0532	1.48	2.03
Hydrometer Test		0.0376	1.48	0
Hydrometer Test		0.0266	1.23	0.25
Hydrometer Test		0.0188	1.23	0
Hydrometer Test		0.0138	0.98	0.25
Hydrometer Test		0.0098	0.98	0
Hydrometer Test		0.0069	1	0
Hydrometer Test		0.0056	0.76	0.22
Hydrometer Test	Clay	0.0049	0.53	0.23
Hydrometer Test	Clay	0.0034	0.6	0
Hydrometer Test	Clay	0.0028	0.16	0.37
Hydrometer Test	Clay	0.0014	0.16	0

Grain Size Summary		Percent of Total Sample
Gravel		29.6
Sand		66.9
Coarse sand		13.4
Medium sand		51.6
Fine sand		1.9
Silt		2.7
Clay		0.8

Case Narrative for Sample ID: CS-03-0-6-11112016 (A6K0424-04)

This data is not to be used for engineering purposes.

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

The assumed specific gravity used in the calculations was 2.65.

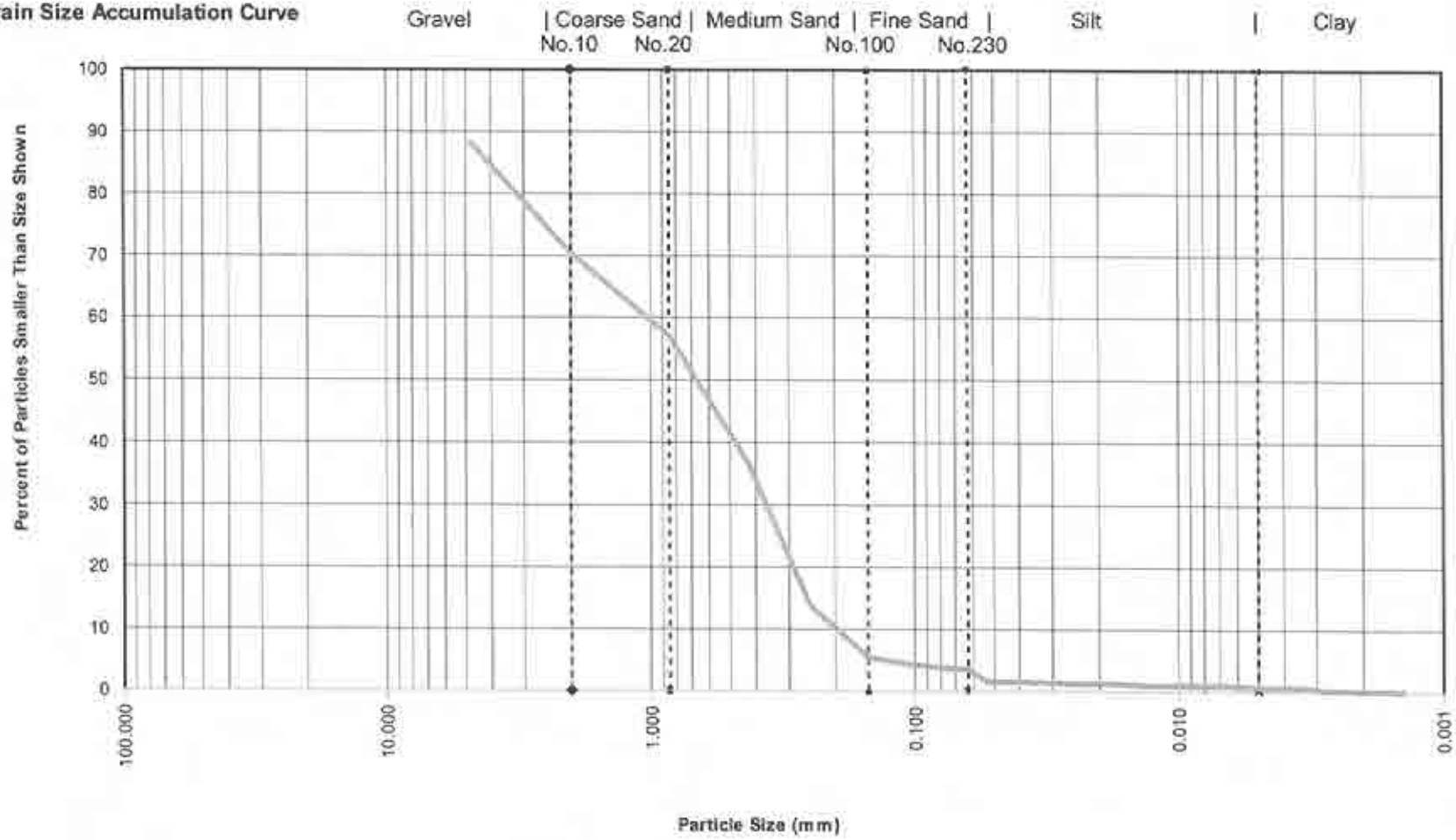
Jar was sampled prior to use for grain size.

REGISTERED OREGON JASON B. WOODCOCK G2218 GEOLOGIST

Expires 1/1/18

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Grain Size Accumulation Curve



Sample ID:	CS-03-0-6-11112016 (A6K0424-04)			
Specific Gravity	MAXIMUM PARTICLE SIZE	GRAVEL & SAND		SOIL DESCRIPTION
		PARTICLE SHAPE	HARDNESS	
2.65	Gravel	Sub-angular to Sub-rounded	Hard and Durable	SAND with some Gravel and trace Silt and Clay

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A6K0424-05		Client Sample ID:	CS-04-0-6-11112016		Batch Number:	6120183
Data Entered by:	JSJ	Date:	12/02/16	Data Reviewed by:	JW	Date:	12/05/16
Sample Description:	SAND with some Gravel and trace Silt			Max Particle Size:	Gravel		
Particle Shape:	Sub-angular to Rounded			Hardness	Hard and Durable		

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	5.818	241.916	236.10	0.55	234.8

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	1.205	23.728	22.52	22.52	9.6	90.4
10	2.00	1.191	15.028	13.84	36.36	5.9	84.5
Pan		5.827	205.156	199.33	235.69	84.4	

Hygroscopic Moisture Correction

	Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
	0.9945		K42405	1.221	23.938	23.814	0.55

Hydrometer Analysis

Start Date/Time	11/22/2016 10:20	Dispersing Agent	$NaPO_3$
Air Dry Sample Wt. for Hydrometer Test (g)	111.946	G_s Correction Factor (α)	1.000
Percent Passing No.10 Sieve	84.5	Specific Gravity (G_s)	2.65
Dry Weight of Soil Tested (g)	111.33	Corrected Dry Weight of Soil Tested (g) (W)	131.73

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	8	19.4	1.58	1.2	14.8	0.01382	0.053	1.01
2	8	19.4	1.58	1.2	14.8	0.01382	0.038	1.01
4	8	19.4	1.58	1.2	14.8	0.01382	0.027	1.01
8	8	19.3	1.55	1.2	14.8	0.01382	0.019	0.99
15	7.5	19.3	1.05	0.8	14.8	0.01382	0.014	0.67
30	7	19.3	0.55	0.4	15	0.01382	0.010	0.35
60	7	19.4	0.58	0.4	15	0.01382	0.007	0.37
90	7	19.5	0.61	0.5	15	0.01365	0.006	0.39
120	6	19.8		0.0	15.2	0.01365	0.005	0.00
240	6	20.1		0.0	15.2	0.01365	0.003	0.00
360	6	20.6		0.0	15.2	0.01348	0.003	0.00
1440	6	18.9		0.0	15.2	0.01382	0.001	0.00

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.195	10.113	8.92	52.24	6.8	77.7
40	0.425	1.191	27.120	25.93	98.41	19.7	58.1
60	0.250	1.221	48.659	47.44	182.88	36.0	22.1
100	0.150	1.212	23.266	22.05	222.14	16.7	5.3
140	0.105	1.246	3.309	2.06	225.82	1.6	3.7
200	0.075	1.208	2.204	1.00	227.59	0.8	3.0
230	0.063	1.211	1.463	0.25	228.04	0.2	2.8
			Sum	107.65	230 Minus	3.68	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: CS-04-0-6-11112016 (A6K0424-05)

Grain Size Analysis Summary from Sieving and Hydrometer Testing		Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel				*15.48*
Retained on No. 4 sieve		4.75	90.41	9.59
Gravel, passing No. 4 sieve and retained on No. 10 sieve		2.00	84.52	5.89
Sand				*81.72*
Coarse sand, passing No.10 sieve and retained on No. 20 sieve		0.8500	77.75	6.77
Medium sand, passing No.20 sieve and retained on No. 40 sieve		0.4250	58.06	19.68
Medium sand, passing No.40 sieve and retained on No. 60 sieve		0.2500	22.05	36.01
Medium sand, passing No. 60 sieve and retained on No.100 sieve		0.1500	5.31	16.74
Fine sand, passing No. 100 sieve and retained on No.140 sieve		0.1060	3.74	1.57
Fine sand passing No. 140 sieve and retained on No. 200 sieve		0.0750	2.99	0.76
Fine sand, passing No. 200 sieve and retained on No. 230 sieve		0.0630	2.8	0.19
Silt and Clay (Measurements in the Clay fraction are noted)				*2.84*
Hydrometer Test		0.0532	1.01	1.78
Hydrometer Test		0.0376	1.01	0
Hydrometer Test		0.0266	1.01	0
Hydrometer Test		0.0188	0.99	0.02
Hydrometer Test		0.0137	0.67	0.32
Hydrometer Test		0.0098	0.35	0.32
Hydrometer Test		0.0069	0.37	0
Hydrometer Test		0.0056	0.39	0
Hydrometer Test	Clay	0.0049	0.39	0
Hydrometer Test	Clay	0.0034	0.39	0
Hydrometer Test	Clay	0.0028	0.39	0
Hydrometer Test	Clay	0.0014	0.39	0

Grain Size Summary	Percent of Total Sample
Gravel	15.5
Sand	81.7
Coarse sand	6.8
Medium sand	72.4
Fine sand	2.5
Silt	2.4
Clay	0.4

Case Narrative for Sample ID: CS-04-0-6-11112016 (A6K0424-05)

This data is not to be used for engineering purposes.

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

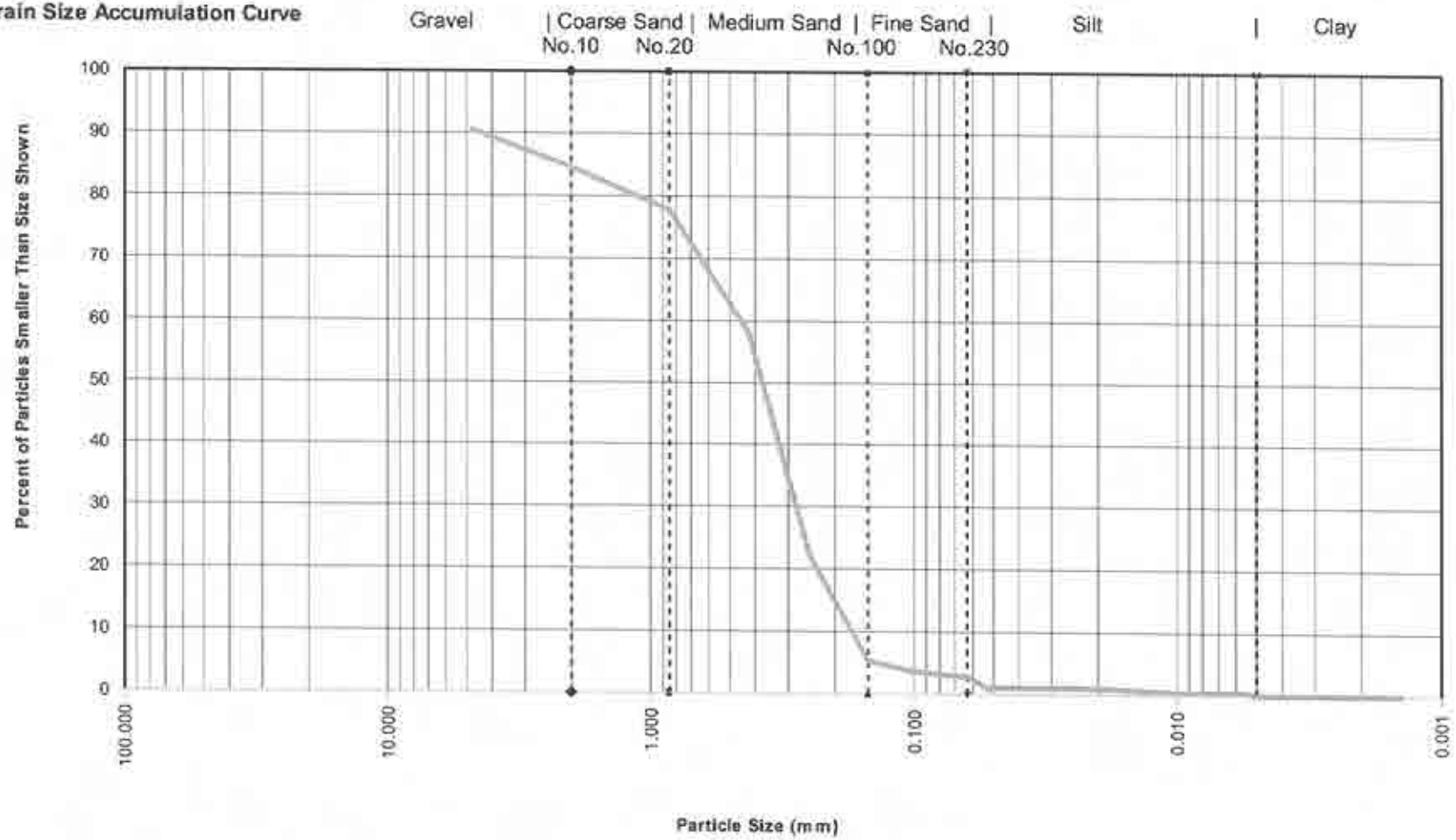
The assumed specific gravity used in the calculations was 2.65.

Jar was sampled prior to use for grain size.

Expires 1/1/18

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Grain Size Accumulation Curve



Sample ID:	CS-04-0-6-11112016 (A6K0424-05)			
Specific Gravity	MAXIMUM PARTICLE SIZE	GRAVEL & SAND		SOIL DESCRIPTION
		PARTICLE SHAPE	HARDNESS	
2.65	Gravel	Sub-angular to Rounded	Hard and Durable	SAND with some Gravel and trace Silt

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A6K0424-06		Client Sample ID:	CS-05-0-6-11112016		Batch Number:	6120183
Data Entered by:	JSJ	Date:	12/02/16	Data Reviewed by:	JW	Date:	12/05/16
Sample Description:	SAND with trace Silt			Max Particle Size:	Gravel		
Particle Shape:	Sub-angular to Sub-rounded			Hardness	Hard and Durable		

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt
	5.672	252.198	246.53	0.57	245.1

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	1.188	3.536	2.35	2.35	1.0	99.0
10	2.00	1.208	2.287	1.08	3.43	0.4	98.6
Pan		5.674	248.558	242.88	246.31	98.5	

Hygroscopic Moisture Correction

	Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
	0.9943		K42406	1.208	32.190	32.013	0.57

Hydrometer Analysis

Start Date/Time	11/22/2016	10:36	Dispersing Agent	$NaPO_3$
Air Dry Sample Wt. for Hydrometer Test (g)	104.828		G_s Correction Factor (α)	1.000
Percent Passing No.10 Sieve	98.6		Specific Gravity (G_s)	2.65
Dry Weight of Soil Tested (g)	104.23		Corrected Dry Weight of Soil Tested (g) (W)	105.71

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	5	19.3	0.03	0.0	15.3	0.01382	0.054	0.03
2	5	19.3	0.03	0.0	15.3	0.01382	0.038	0.03
4	5	19.3	0.03	0.0	15.3	0.01382	0.027	0.03
8	5	19.2	0	0.0	15.3	0.01382	0.019	0.00
15	5	19.3	0.03	0.0	15.3	0.01382	0.014	0.03
30	5	19.3	0.03	0.0	15.3	0.01382	0.010	0.03
60	5	19.4	0.05	0.1	15.3	0.01382	0.007	0.05
90	5	19.5	0.08	0.1	15.3	0.01365	0.006	0.07
120	5	19.7	0.13	0.1	15.3	0.01365	0.005	0.12
240	5	20	0.21	0.2	15.3	0.01365	0.003	0.19
360	4.5	20.5		0.0	15.3	0.01348	0.003	0.00
1440	5	18.9		0.0	15.3	0.01382	0.001	0.00

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.204	3.177	1.97	8.00	1.9	96.7
40	0.425	1.192	13.591	12.40	36.73	11.7	85.0
60	0.250	1.221	54.704	53.48	160.65	50.6	34.4
100	0.150	1.216	32.277	31.06	232.61	29.4	5.0
140	0.105	1.207	4.286	3.08	239.75	2.9	2.1
200	0.075	1.189	2.192	1.00	242.07	0.9	1.2
230	0.063	1.220	1.390	0.17	242.46	0.2	1.0
			Sum	103.17	230 Minus	1.06	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: CS-05-0-6-11112016 (A6K0424-06)

Grain Size Analysis Summary from Sieving and Hydrometer Testing		Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel				*1.4*
Retained on No. 4 sieve		4.75	99.04	0.96
Gravel, passing No. 4 sieve and retained on No. 10 sieve		2.00	98.6	0.44
Sand				*97.6*
Coarse sand, passing No.10 sieve and retained on No. 20 sieve		0.8500	96.74	1.87
Medium sand, passing No.20 sieve and retained on No. 40 sieve		0.4250	85.01	11.73
Medium sand, passing No.40 sieve and retained on No. 60 sieve		0.2500	34.41	50.6
Medium sand, passing No. 60 sieve and retained on No.100 sieve		0.1500	5.03	29.38
Fine sand, passing No. 100 sieve and retained on No.140 sieve		0.1060	2.11	2.91
Fine sand passing No. 140 sieve and retained on No. 200 sieve		0.0750	1.16	0.95
Fine sand, passing No. 200 sieve and retained on No. 230 sieve		0.0630	1	0.16
Silt and Clay (Measurements in the Clay fraction are noted)				*1.19*
Hydrometer Test		0.0541	0.03	0.98
Hydrometer Test		0.0382	0.03	0
Hydrometer Test		0.0270	0.03	0
Hydrometer Test		0.0191	0	0.02
Hydrometer Test		0.0140	0.03	0
Hydrometer Test		0.0099	0.03	0
Hydrometer Test		0.0070	0.05	0
Hydrometer Test		0.0056	0.07	0
Hydrometer Test	Clay	0.0049	0.12	0
Hydrometer Test	Clay	0.0034	0.19	0
Hydrometer Test	Clay	0.0028	0.19	0
Hydrometer Test	Clay	0.0014	0.19	0

Grain Size Summary		Percent of Total Sample
Gravel		1.4
Sand		97.6
Coarse sand		1.9
Medium sand		91.7
Fine sand		4.0
Silt		1.0
Clay		0.2

Case Narrative for Sample ID: CS-05-0-6-11112016 (A6K0424-06)

This data is not to be used for engineering purposes.

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

The assumed specific gravity used in the calculations was 2.65.

Jar was sampled prior to use for grain size.

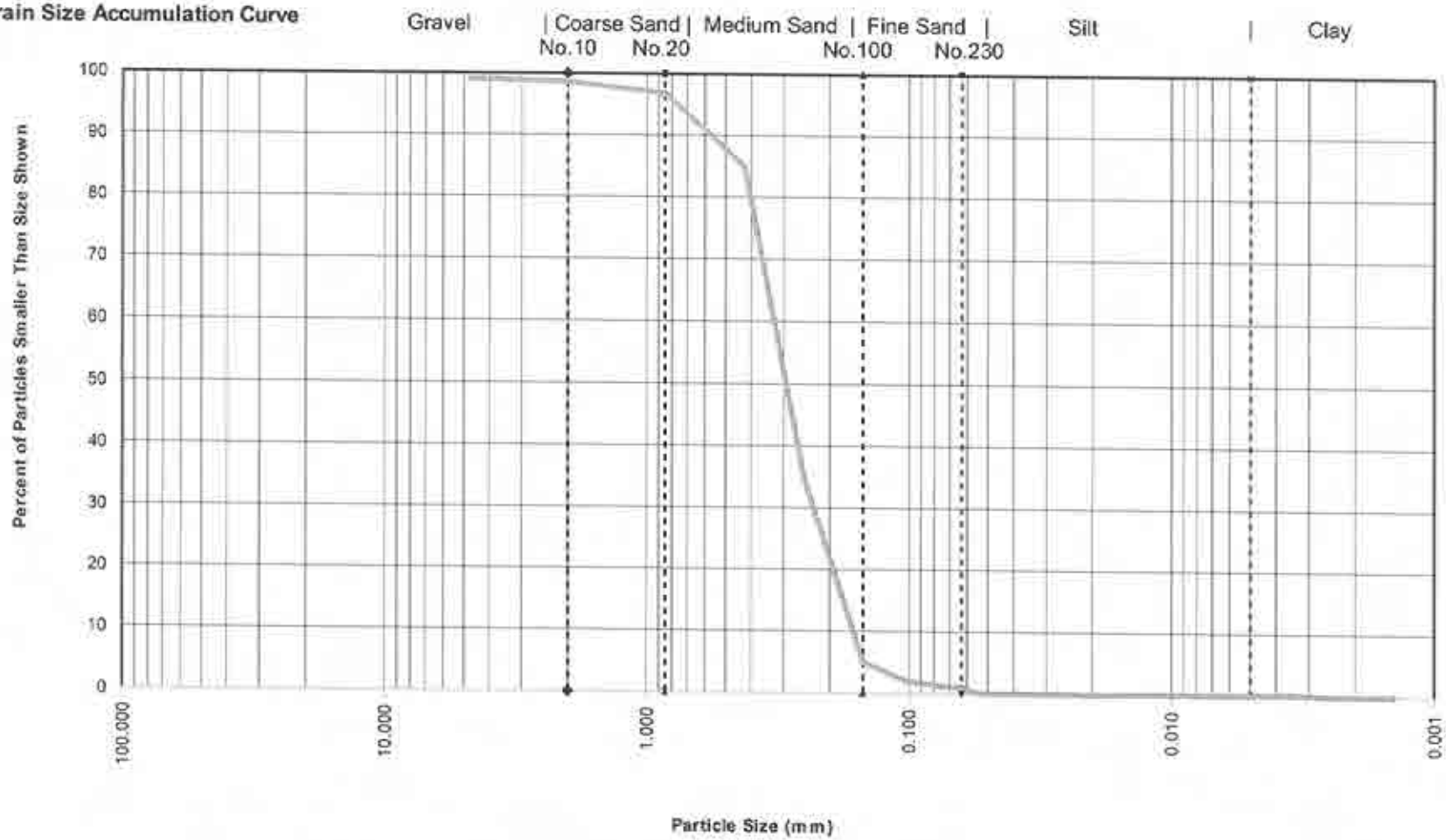
Organic material (wood fragment) present in +4 fraction.

Expires 1/1/19

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422 Modified

Grain Size Accumulation Curve



Sample ID:	CS-05-0-6-11112016 (A6K0424-06)			
Specific Gravity	MAXIMUM PARTICLE SIZE	GRAVEL & SAND		SOIL DESCRIPTION
		PARTICLE SHAPE	HARDNESS	
2.65	Gravel	Sub-angular to Sub-rounded	Hard and Durable	SAND with trace Silt