

DRAFT

November 2024
Middle Blair Navigation Safety Improvement Project



Sediment Characterization Report

Prepared for the Port of Tacoma

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ABBREVIATIONS

BT	bioaccumulation trigger
D/F	dioxins/furans
DMMP	Dredged Material Management Program
DMMU	Dredged Material Management Unit
FNC	Federal Navigation Channel
MLLW	mean lower low water
PCB	polychlorinated biphenyl
Port	Port of Tacoma
Project	Middle Blair Navigation Safety Improvement Project
QA/QC	quality assurance/quality control
SCR	Sediment Characterization Report
SL	screening level
SMS	Sediment Management Standards
SQAPP	Sampling and Quality Assurance Project Plan
TEQ	toxic equivalency
WUT	Washington United Terminals

1 Introduction

This Sediment Characterization Report (SCR) presents the results of this sediment investigation performed pursuant to the Middle Blair Navigation Safety Improvement Project *Sampling and Quality Assurance Project Plan* (SQAPP; Anchor QEA 2024) for the Middle Blair Navigation Safety Improvement Project (Project), located on the northeastern side of the Blair Waterway (Figures 1, 2a, and 2b) in Tacoma, Washington. The data from this testing program will be used to support dredge design and dredge material management and disposal.

The Port of Tacoma (Port) and Northwest Seaport Alliance are proposing maintenance dredging in the Blair Waterway in an approximately 2,000-foot-long area where shoaling has occurred adjacent to the existing federal navigation channel (FNC). The area is immediately across from Washington United Terminals (WUT) and in front of marine industrial property owned by the Puyallup Tribe of Indians. The dredge area includes the outer portion of the Middle Blair Knuckle, which is an area of shallower water that protrudes toward the FNC, and a bench of shoaled sediment that extends from the Knuckle to an area approximately even with Lincoln Avenue (referred to herein as the Bench).

This SCR details the results of the sediment characterization investigation conducted in August 2024 to obtain an antidegradation determination from the Dredged Material Management Program (DMMP) for the newly exposed surface following removal of material from the Project area. Dredge material was also characterized to support a determination for dredge material open-water disposal, but due to abbreviated project timelines, only chemistry testing was conducted. Based on chemistry testing results, the Port is planning to take sediment to a suitable upland disposal location, which may be a permitted landfill or an upland Port property for beneficial use placement.

The SCR is organized into the following sections:

- Section 1: Introduction (this section)
- Section 2: Project Objectives
- Section 3: Sediment Testing Results
- Section 4: Quality Assurance/Quality Control
- Section 5: Conclusions
- Section 6: References

2 Project Objectives

The dredging is being conducted ahead of and separate from deepening of the FNC because, in preparation for the deepened channel and WUT berth, WUT has purchased larger cranes that extend farther out into the waterway to accommodate larger ships. Sediment mounds and high spots produced by propeller wash and tidal shoaling have accumulated at critical locations in the Knuckle and Bench areas. The mounds pose navigation hazards to vessels transiting that reach of the waterway, requiring one terminal operator to “light-load” vessels or wait for WUT to boom up container cranes. This has resulted in one operator losing one of its two lines of service and is exacerbating nationwide supply chain issues. The critical impairment to operations is causing safety hazards, risk of vessel damage, and economic losses for the Port and its tenants; therefore, routine maintenance dredging is required to restore waterway and terminal operations to full capacity. The Blair Waterway is historically authorized to -51 feet mean lower low water (MLLW), and this area was previously dredged to a depth of -47 feet (MLLW) between 1993 and 1995 as part of the Blair/Sitcum Waterway Remediation Project (Floyd Snider 2008). The required post-Project elevation within the Project area is -47 feet MLLW in a 61-foot-wide area adjacent to the FNC boundary. The sampling and testing program was designed to characterize dredge material to -47 feet MLLW plus 2 feet overdredge (final elevation to -49 feet MLLW), along with additional Z-layers to -52 feet MLLW, as described in the SQAPP (Anchor QEA 2024).

The dredged material management units (DMMUs), sampling locations, target boring depths, and chemical testing methods were selected in accordance with the most recent DMMP guidance (DMMP 2021) and *Sediment Cleanup User's Manual II* (Ecology 2021).

3 Sediment Testing Results

This section summarizes the results of subsurface sediment collection, processing, and analyses. The investigation methodology is detailed in the SQAPP (Anchor QEA 2024). This section also provides a summary of field activities. No deviations from the SQAPP occurred during sample collection and analyses.

3.1 Sediment Core Sample Collection and Processing

Sample locations are presented in Figures 2a and 2b, and sample coordinates, mudlines, penetrations, recoveries, and depths are listed in Table 1. Sediment core logs, photographs, and field forms are included in Appendix A. Subsurface sediment cores were collected as required per the SQAPP (Anchor QEA 2024). Dredge areas were divided into three DMMUs, and one core was collected from each DMMU. Sediment cores met acceptance criteria, and all three cores achieved the required MLLW depth to meet Project objectives. Cores collected from locations MB-SC01 and MB-SC02 met acceptance criteria on the first attempt. Six attempts were made at location MB-SC03, and the sixth attempt resulted in an acceptable core that was collected and processed.

Material encountered was primarily silt from the surface to approximately 3 to 4 feet below mudline and poorly graded sand to the bottom of the cores. A clay layer from 4.3 to 5.5 feet below mudline was also encountered between the silt and sand layer in core MB-SC03 from DMMU3.

Cores were processed into dredge material ("A") intervals from the mudline to -47 feet MLLW plus 2 feet of overdredge to -49 feet MLLW; a 1-foot Z-layer sample (Z1) from -49 to -50 feet MLLW; and a 2-foot Z-layer sample (Z2) from -50 feet MLLW to -52 feet MLLW. All samples were submitted for all analyses, as outlined in the SQAPP.

3.2 Analytical Results

Analytical results are screened against DMMP criteria in Table 2, and Z-layer samples are screened against Sediment Management Standards (SMS) criteria in Table 3. The laboratory analytical report and data validation report are included in Appendix B and Appendix C, respectively.

All samples collected were submitted for all analytical parameters as specified in the SQAPP, and results were below DMMP screening levels (SLs), except for dioxin/furan (D/F) toxic equivalent values (TEQs). D/F TEQ values were above the SL (4 nanogram per kilogram ng/kg TEQ) but below the DMMP bioaccumulation trigger (BT; 10 ng/kg TEQ) in the dredge material samples collected from DMMUs 1 and 2 and in the Z1 sample collected from DMMU1. D/F TEQ values exceeded the DMMP BT in the dredge material sample collected from DMMU3 and in the Z1 interval from DMMU2. D/F TEQ values were below the DMMP SL in both Z2 samples from DMMUs 1 and 2 and in Z1 and Z2 samples from DMMU3.

All Z-sample results were below SMS criteria (Table 3).

4 Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) include both field and analytical quality control. Both QA/QC procedures were consistent with the guidelines described in the SQAPP (Anchor QEA 2024), and no deviations were noted.

4.1 Field Quality Assurance/Quality Control

Anchor QEA personnel labeled samples in a consistent manner to ensure that field samples were traceable. Chain-of-custody forms were appropriately populated to provide all information necessary for the laboratory to conduct required analyses properly. Samples were placed in coolers with ice and received at the laboratory within the recommended temperature range.

4.2 Laboratory Quality Assurance/Quality Control

Analytical data were validated at a Stage 2B (EPA 2009) level following procedures and requirements listed in the SQAPP. The laboratory followed the specified analytical methods, all requested sample analyses were completed, and QA/QC samples and procedures were analyzed at required frequencies. A summary of key findings includes the following:

- One total organic carbon result, five mercury results, and all nine diethyl phthalate results were qualified as non-detects due to detections in associated method or calibration blanks.
- Some metals, semivolatile organic compound, polychlorinated biphenyl (PCB), tributyltin, and D/F results were qualified as estimated due to calibration or laboratory QC results outside of method, laboratory, or Project-specified control limits.
- Some D/F congener results were qualified because they were reported as estimated maximum potential concentration results by the laboratory.

No data were rejected, and all results are usable as reported or as qualified.

5 Conclusions

Due to the elevated D/F TEQ values in the dredge material present in the A intervals, and following discussion with DMMP, the required dredging depth will be -48 feet MLLW plus 2 feet overdredge (to -50 feet MLLW) in DMMUs 1, 2, and 3. All dredged material will be placed in an appropriate upland location, either at a permitted disposal facility or as beneficial use on a suitable upland Port property. In addition, to meet antidegradation goals, a minimum 6-inch sand layer will be placed in DMMUs 1 and 2 after dredging to provide a clean cover above sediment from Z1 intervals with elevated D/F TEQ values. No sand layer will be placed in DMMU3 because both Z1 and Z2 results were below the DMMP SL and met antidegradation criteria.

6 References

- Anchor QEA, 2024. *Sampling and Quality Assurance Project Plan*. Middle Blair Navigation Safety Improvement Project. Prepared for Port of Tacoma. August 2024.
- DMMP (Dredged Material Management Program), 2021. *Dredged Material Evaluation and Disposal Procedures User Manual*. Dredged Material Management Program: U.S. Army Corps of Engineers, Seattle District; Environmental Protection Agency, Region 10; Washington State Department of Natural Resources; and Washington State Department of Ecology. Accessed October 23, 2024. July 2021. Available at: <https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll11/id/5397>.
- Ecology (Washington State Department of Ecology), 2021. *Sediment Cleanup User's Manual (SCUM): Guidance for Implementing the Cleanup Provisions of the Sediment Management Standards, Chapter 173–204 WAC*. Third Revision. Toxics Cleanup Program Publication No. 12-09-057. December 2021.
- EPA (U.S. Environmental Protection Agency), 2009. *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*. EPA Office of Solid Waste and Emergency Response. USEPA 540-R-08-005. January 2009.
- Floyd Snider, 2008. *Puyallup Tribal Terminal Shoreline Cutback Characterization*. Project No. SSA-RHOLD.6300. October 2008.

Tables

Table 1
Sample Coordinates, Mudlines, Penetrations, and Depths

DMMU	Location ID	Washington SP NAD 83 South Zone		Mudline Elevation (feet MLLW)	Core Penetration (feet below mudline)	Core Recovery Length (feet)	Core Recovery (%)	Sample Depths (feet below mudline)	Sample Elevations (feet MLLW)	Sample ID
		Easting (feet)	Northing (feet)							
01	MB-SC01	1171123	710033	-46.0	9.0	8.9	98.9%	0.0 to 3.0	-46.0 to -49.0	MB-SC01-A-2024-08-13
								3.0 to 4.0	-49.0 to -50.0	MB-SC01-Z1-2024-08-13
								4.0 to 6.0	-50.0 to -52.0	MB-SC01-Z2-2024-08-13
02	MB-SC02	1171499	709668	-46.6	8.0	6.6	82.5%	0.0 to 2.4	-46.6 to -49.0	MB-SC02-A-2024-08-13
								2.4 to 3.4	-49.0 to -50.0	MB-SC02-Z1-2024-08-13
								3.4 to 5.4	-50.0 to -52.0	MB-SC02-Z2-2024-08-13
03	MB-SC03	1171903	709298	-42.3	13.0	11.3	86.9%	0.0 to 6.7	-42.3 to -49.0	MB-SC03-A-2024-08-13
								6.7 to 7.7	-49.0 to -50.0	MB-SC03-Z1-2024-08-13
								7.7 to 9.7	-50.0 to -52.0	MB-SC03-Z2-2024-08-13

Notes:

DMMU: Dredge Material Management Unit

ID: identification

MLLW: mean lower low water

Washington SP NAD 83: Washington State Plan North American Datum 1983

Table 2
Sediment Core Sample Analytical Results Compared to DMMP Criteria

Chemical	Method	DMMP SL	DMMP BT	Location ID	MB-SC01		
				Sample ID	MB-SC01-A-2024-08-13	MB-SC01-Z1-2024-08-13	MB-SC01-Z2-2024-08-13
				Sample Date	8/13/2024	8/13/2024	8/13/2024
				Depth Below Mudline	0 to 3 ft	3 to 4 ft	4 to 6 ft
Elevation Depth	-46.0 to -49.0 ft MLLW	-49.0 to -50.0 ft MLLW	-50.0 to -52.0 ft MLLW				
DMMP ML							
Conventional Parameters (pct)							
Total organic carbon	SW9060AM	--	--	--	0.49	0.32	0.090 U
Total solids	D2216	--	--	--	68.68	75.96	82.41
Total solids	SM2540G	--	--	--	71.16	75.65	79.37
Total volatile solids	PSEP-TVS	--	--	--	2.55	1.81	1.53
Atterberg Limits							
Atterberg classification	ASTM D4318	--	--	--	Non-Plastic	--	--
Liquid limit (%)	ASTM D4318	--	--	--	--	--	--
Plastic limit (%)	ASTM D4318	--	--	--	--	--	--
Plasticity index (%)	ASTM D4318	--	--	--	--	--	--
Grain Size (pct)							
Clay, coarse	D422	--	--	--	4.3	--	--
Clay, fine	D422	--	--	--	6.3	--	--
Clay, medium	D422	--	--	--	2.2	--	--
Gravel, coarse	D422	--	--	--	0.10 U	--	--
Gravel, medium	D422	--	--	--	0.2	--	--
Gravel, very coarse	D422	--	--	--	0.10 U	--	--
Sand, coarse	D422	--	--	--	1.1	--	--
Sand, fine	D422	--	--	--	15.9	--	--
Sand, medium	D422	--	--	--	12	--	--
Sand, very coarse	D422	--	--	--	0.1	--	--
Sand, very fine	D422	--	--	--	14.3	--	--
Silt, coarse	D422	--	--	--	16.5	--	--
Silt, fine	D422	--	--	--	8.2	--	--
Silt, medium	D422	--	--	--	10.5	--	--
Silt, very fine	D422	--	--	--	8.2	--	--
Metals (mg/kg)							
Antimony	SW6020	150		200	0.28 UJ	0.26 UJ	0.25 UJ
Arsenic	SW6020	57	507.1	700	7.32	4.01	3.17
Cadmium	SW6020	5.1	--	14	0.11 J	0.06 J	0.07 J
Chromium	SW6020	260	--		17	14.7	12
Copper	SW6020	390	--	1300	29.1	18.9	13.7
Lead	SW6020	450	975	1200	5.96	4.04	1.48
Mercury	SW7471B	0.41	1.5	2.3	0.0421	0.0301 U	0.0266 U
Selenium	SW6020		3		0.54 J	0.61 J	0.57 J
Silver	SW6020	6.1	--	8.4	0.11 J	0.06 J	0.04 J
Zinc	SW6020	410	--	3800	39.7	29.6	21.7
Organometals (µg/kg)							

Table 2
Sediment Core Sample Analytical Results Compared to DMMP Criteria

Chemical	Method	DMMP SL	DMMP BT	Location ID Sample ID Sample Date Depth Below Mudline Elevation Depth DMMP ML	MB-SC01		
					MB-SC01-A-2024-08-13 8/13/2024 0 to 3 ft -46.0 to -49.0 ft MLLW	MB-SC01-Z1-2024-08-13 8/13/2024 3 to 4 ft -49.0 to -50.0 ft MLLW	MB-SC01-Z2-2024-08-13 8/13/2024 4 to 6 ft -50.0 to -52.0 ft MLLW
Tributyltin (ion)	SW8270ESIM	--	73	--	4.40 J	2.23 J	3.86 U
Semivolatile Organics (µg/kg)							
1,2,4-Trichlorobenzene	SW8270ESIM	31	--	64	5.0 UJ	5.0 UJ	5.0 UJ
1,2-Dichlorobenzene	SW8270ESIM	35	--	110	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	SW8270ESIM	110	--	120	5.0 U	5.0 U	5.0 U
2,4-Dimethylphenol	SW8270ESIM	29	--	210	20.0 UJ	20.0 UJ	19.9 UJ
2-Methylphenol (o-Cresol)	SW8270ESIM	63	--	77	5.0 U	5.0 U	5.0 U
4-Methylphenol (p-Cresol)	SW8270ESIM	670	--	3600	5.0 U	5.0 U	5.0 U
Benzoic acid	SW8270ESIM	650	--	760	51.4 J	99.9 UJ	99.7 UJ
Benzyl alcohol	SW8270ESIM	57	--	870	10.5 J	20.0 U	19.9 U
Bis(2-ethylhexyl)phthalate	SW8270E	1300	--	8300	49.9 U	50.0 U	49.8 U
Butylbenzyl phthalate	SW8270ESIM	63	--	970	5.7	5.0 U	5.0 U
Di-n-butyl phthalate	SW8270E	1400	--	5100	20.0 U	20.0 U	19.9 U
Di-n-octyl phthalate	SW8270E	6200	--	6200	20.0 U	20.0 U	19.9 U
Diethyl phthalate	SW8270ESIM	200	--	1200	20 U	20.8 U	20 U
Dimethyl phthalate	SW8270ESIM	71	--	1400	5.0 U	5.0 U	5.0 U
Hexachlorobenzene	SW8270ESIM	22	168	230	5.0 U	5.0 U	5.0 U
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	SW8270ESIM	11	--	270	5.0 U	5.0 U	5.0 U
n-Nitrosodiphenylamine	SW8270ESIM	28	--	130	5.0 U	5.0 U	5.0 U
Pentachlorophenol	SW8270ESIM	400	504	690	49.9 UJ	50.0 UJ	49.8 UJ
Phenol	SW8270ESIM	420	--	1200	7.5	4.0 J	2.9 J
Polycyclic Aromatic Hydrocarbons (µg/kg)							
1-Methylnaphthalene	SW8270E	--	--	--	20.0 U	20.0 U	19.9 U
2-Methylnaphthalene	SW8270E	670	--	1900	10.0 J	20.0 U	19.9 U
Acenaphthene	SW8270E	500	--	2000	20.0 U	20.0 U	19.9 U
Acenaphthylene	SW8270E	560	--	1300	20.0 UJ	20.0 UJ	19.9 UJ
Anthracene	SW8270E	960	--	13000	20.0 U	20.0 U	19.9 U
Benzo(a)anthracene	SW8270E	1300	--	5100	19.3 J	20.0 U	19.9 U
Benzo(a)pyrene	SW8270E	1600	--	3600	25.9	20.0 U	19.9 U
Benzo(b,j,k)fluoranthenes	SW8270E	--	--		75.6	40.0 U	39.9 U
Benzo(g,h,i)perylene	SW8270E	670	--	3200	20.0 UJ	20.0 UJ	19.9 UJ
Carbazole	SW8270E	--	--		20.0 U	20.0 U	19.9 U
Chrysene	SW8270E	1400	--	21000	26.1	20.0 U	19.9 U
Dibenzo(a,h)anthracene	SW8270ESIM	230	--	1900	5.5 J	5.0 U	5.0 U
Dibenzofuran	SW8270E	540	--	1700	20.0 U	20.0 U	19.9 U
Fluoranthene	SW8270E	1700	4600	30000	32.8	20.0 U	19.9 U
Fluorene	SW8270E	540	--	3600	20.0 U	20.0 U	19.9 U
Indeno(1,2,3-c,d)pyrene	SW8270E	600	--	4400	20.0 UJ	20.0 UJ	19.9 UJ

Table 2
Sediment Core Sample Analytical Results Compared to DMMP Criteria

Chemical	Method	DMMP SL	DMMP BT	Location ID Sample ID Sample Date Depth Below Mudline Elevation Depth DMMP ML	MB-SC01		
					MB-SC01-A-2024-08-13 8/13/2024 0 to 3 ft -46.0 to -49.0 ft MLLW	MB-SC01-Z1-2024-08-13 8/13/2024 3 to 4 ft -49.0 to -50.0 ft MLLW	MB-SC01-Z2-2024-08-13 8/13/2024 4 to 6 ft -50.0 to -52.0 ft MLLW
Naphthalene	SW8270E	2100	--	2400	20.0 U	20.0 U	19.9 U
Phenanthrene	SW8270E	1500	--	21000	24.6	20.0 U	19.9 U
Pyrene	SW8270E	2600	11980	16000	48.8	13.5 J	19.9 U
Total Benzofluoranthenes (b,j,k) (U = 0 max limit)	Calculated	3200	--	9900	75.6	40.0 U	39.9 U
Total Benzofluoranthenes (b,j,k) (U = 1/2 max limit)	Calculated	--	--	--	75.6	40.0 U	39.9 U
Total HPAH (DMMP) (U = 0 max limit)	Calculated	12000	--	69000	230 J	13.5 J	39.9 UJ
Total HPAH (DMMP) (U = 1/2 max limit)	Calculated	--	--	--	250 J	96.0 J	39.9 UJ
Total LPAH (DMMP) (U = 0 max limit)	Calculated	5200	--	29000	24.6 J	20.0 UJ	19.9 UJ
Total LPAH (DMMP) (U = 1/2 max limit)	Calculated	--	--	--	74.6 J	20.0 UJ	19.9 UJ
Pesticides (µg/kg)							
2,4'-DDD (o,p'-DDD)	SW8081B	--	--	--	1.00 U	0.99 U	1.00 U
2,4'-DDE (o,p'-DDE)	SW8081B	--	--	--	1.00 U	0.99 U	1.00 U
2,4'-DDT (o,p'-DDT)	SW8081B	--	--	--	1.00 U	0.99 U	1.00 U
4,4'-DDD (p,p'-DDD)	SW8081B	16	--	--	1.00 U	0.99 U	1.00 U
4,4'-DDE (p,p'-DDE)	SW8081B	9	--	--	1.00 U	0.99 U	1.00 U
4,4'-DDT (p,p'-DDT)	SW8081B	12	--	--	1.00 U	0.99 U	1.00 U
Aldrin	SW8081B	9.5	--	--	0.50 U	0.50 U	0.50 U
Chlordane, alpha- (Chlordane, cis-)	SW8081B	--	--	--	0.50 U	0.50 U	0.50 U
Chlordane, beta- (Chlordane, trans-)	SW8081B	--	--	--	0.50 U	0.50 U	0.50 U
Dieldrin	SW8081B	1.9	--	1700	1.00 U	0.99 U	1.00 U
Endrin ketone	SW8081B	--	--	--	1.00 U	0.99 U	1.00 U
Heptachlor	SW8081B	1.5		270	0.50 U	0.50 U	0.50 U
Hexachlorocyclohexane (BHC), beta-	SW8081B	--	--	--	0.50 U	0.50 U	0.50 U
Nonachlor, cis-	SW8081B	--	--	--	1.00 U	0.99 U	1.00 U
Nonachlor, trans-	SW8081B	--	--	--	1.00 U	0.99 U	1.00 U
Oxychlordane	SW8081B	--	--	--	1.00 U	0.99 U	1.00 U
Dioxin Furans (ng/kg)							
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	E1613B	--	--	--	0.511 U	0.797 U	0.427 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	E1613B	--	--	--	1.92 J	1.08 J	0.772 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	E1613B	--	--	--	2.08	1.73 J	1.14 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	E1613B	--	--	--	7.21	13.1	1.08 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	E1613B	--	--	--	4.05	5.99 J	1.20 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	E1613B	--	--	--	175	307	2.66 J
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	E1613B	--	--	--	2110	3980	40.2
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	E1613B	--	--	--	2.65 J	1.99	0.527 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	E1613B	--	--	--	3.21	1.46 J	0.531 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	E1613B	--	--	--	1.57	1.37 J	0.560 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	E1613B	--	--	--	8.51	6.34	0.748 U

Table 2
Sediment Core Sample Analytical Results Compared to DMMP Criteria

Chemical	Method	DMMP SL	DMMP BT	Location ID Sample ID Sample Date Depth Below Mudline Elevation Depth DMMP ML	MB-SC01		
					MB-SC01-A-2024-08-13 8/13/2024 0 to 3 ft -46.0 to -49.0 ft MLLW	MB-SC01-Z1-2024-08-13 8/13/2024 3 to 4 ft -49.0 to -50.0 ft MLLW	MB-SC01-Z2-2024-08-13 8/13/2024 4 to 6 ft -50.0 to -52.0 ft MLLW
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	E1613B	--	--	--	2.31	2.08	0.710 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	E1613B	--	--	--	1.7	2.83	1.25 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	E1613B	--	--	--	1.59 J	2.93	0.750 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	E1613B	--	--	--	30.6	45.2	0.869 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	E1613B	--	--	--	3.08	3.84	1.77 U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	E1613B	--	--	--	67.1	62	2.17 U
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0 max limit)	Calculated	4.0	10	--	8.24 J	10.0 J	0.0387 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2 max limit)	Calculated	4.0	10	--	8.49 J	10.4 J	1.11 J
PCB Aroclors (µg/kg)							
Aroclor 1016	SW8082A	--	--	--	4.0 U	4.0 U	4.0 U
Aroclor 1221	SW8082A	--	--	--	4.0 U	4.0 U	4.0 U
Aroclor 1232	SW8082A	--	--	--	4.0 U	4.0 U	4.0 U
Aroclor 1242	SW8082A	--	--	--	4.0 U	4.0 U	4.0 U
Aroclor 1248	SW8082A	--	--	--	6.1 J	9.9 J	4.0 U
Aroclor 1254	SW8082A	--	--	--	4.9 J	4.7 J	4.0 U
Aroclor 1260	SW8082A	--	--	--	4.0 UJ	4.0 UJ	4.0 UJ
Total DMMP PCB Aroclors (U = 0 max limit)	Calculated	130	--	3100	11 J	15 J	4.0 UJ
Total DMMP PCB Aroclors (U = 1/2 max limit)	Calculated	--	--	--	21 J	25 J	4.0 UJ
PCB Aroclors (mg/kg-OC)							
Aroclor 1016	SW8082A	--	--	--	0.82 U	1.3 U	4.4 U
Aroclor 1221	SW8082A	--	--	--	0.82 U	1.3 U	4.4 U
Aroclor 1232	SW8082A	--	--	--	0.82 U	1.3 U	4.4 U
Aroclor 1242	SW8082A	--	--	--	0.82 U	1.3 U	4.4 U
Aroclor 1248	SW8082A	--	--	--	1.2 J	3.1 J	4.4 U
Aroclor 1254	SW8082A	--	--	--	1.0 J	1.5 J	4.4 U
Aroclor 1260	SW8082A	--	--	--	0.82 UJ	1.3 UJ	4.4 UJ
Total DMMP PCB Aroclors (U = 0 max limit)	Calculated		38		2.2 J	4.6 J	4.4 UJ
Total DMMP PCB Aroclors (U = 1/2 max limit)	Calculated	--	--	--	4.3 J	7.7 J	4.4 UJ

Table 2
Sediment Core Sample Analytical Results Compared to DMMP Criteria

Chemical	MB-SC02			MB-SC03		
	MB-SC02-A-2024-08-13	MB-SC02-Z1-2024-08-13	MB-SC02-Z2-2024-08-13	MB-SC03-A-2024-08-13	MB-SC03-Z1-2024-08-13	MB-SC03-Z2-2024-08-13
	8/13/2024 0 to 2.4 ft -46.6 to -49.0 ft MLLW	8/13/2024 2.4 to 3.4 ft -49.0 to -50.0 ft MLLW	8/13/2024 3.4 to 5.4 ft -50.0 to -52.0 ft MLLW	8/13/2024 0 to 6.7 ft -42.3 to -49.0	8/13/2024 6.7 to 7.7 ft -49.0 to -50.0 ft MLLW	8/13/2024 7.7 to 9.7 ft -50.0 to -52.0 ft MLLW
Conventional Parameters (pct)						
Total organic carbon	0.57	0.5	0.36	0.8	0.16	0.48
Total solids	70.71	70.54	79.03	69.04	82.8	82.1
Total solids	71.7	71.98	82.46	66.72	81.43	81.62
Total volatile solids	2.56	2.59	1.45	2.95	1.72	2.23
Atterberg Limits						
Atterberg classification	Non-Plastic	--	--	ML	--	--
Liquid limit (%)	--	--	--	34	--	--
Plastic limit (%)	--	--	--	26	--	--
Plasticity index (%)	--	--	--	8	--	--
Grain Size (pct)						
Clay, coarse	4.1	--	--	4.8	--	--
Clay, fine	7.2	--	--	8.2	--	--
Clay, medium	2.1	--	--	2.6	--	--
Gravel, coarse	0.1	--	--	0.1	--	--
Gravel, medium	0.1	--	--	0.3	--	--
Gravel, very coarse	0.10 U	--	--	0.1	--	--
Sand, coarse	1.4	--	--	1	--	--
Sand, fine	10.9	--	--	6.6	--	--
Sand, medium	19.9	--	--	6.4	--	--
Sand, very coarse	0.2	--	--	0.1	--	--
Sand, very fine	13.2	--	--	11.7	--	--
Silt, coarse	13.8	--	--	12.7	--	--
Silt, fine	8.1	--	--	15.6	--	--
Silt, medium	9.9	--	--	20.7	--	--
Silt, very fine	9	--	--	8.9	--	--
Metals (mg/kg)						
Antimony	0.28 UJ	0.28 UJ	0.23 UJ	0.31 UJ	0.23 UJ	0.22 UJ
Arsenic	7.38	5.84	3.19	12.9	2.36	2.69
Cadmium	0.10 J	0.08 J	0.11 U	0.16	0.12 U	0.04 J
Chromium	16.5	14.2	9.51	19.7	12	10.5
Copper	29	23.7	10.4	43.4	13.3	13.5
Lead	6.13	5.31	1.25	17.4	1.52	3.89
Mercury	0.0544	0.0384	0.0222 U	0.0864	0.0293 U	0.0225 U
Selenium	0.56 J	0.61 J	0.30 J	0.76 J	0.47 J	0.36 J
Silver	0.10 J	0.09 J	0.03 J	0.20 J	0.03 J	0.04 J
Zinc	41.6	32.8	16.7	55.8	21.1	20.5
Organometals (µg/kg)						

Table 2
Sediment Core Sample Analytical Results Compared to DMMP Criteria

Chemical	MB-SC02			MB-SC03		
	MB-SC02-A-2024-08-13 8/13/2024 0 to 2.4 ft -46.6 to -49.0 ft MLLW	MB-SC02-Z1-2024-08-13 8/13/2024 2.4 to 3.4 ft -49.0 to -50.0 ft MLLW	MB-SC02-Z2-2024-08-13 8/13/2024 3.4 to 5.4 ft -50.0 to -52.0 ft MLLW	MB-SC03-A-2024-08-13 8/13/2024 0 to 6.7 ft -42.3 to -49.0	MB-SC03-Z1-2024-08-13 8/13/2024 6.7 to 7.7 ft -49.0 to -50.0 ft MLLW	MB-SC03-Z2-2024-08-13 8/13/2024 7.7 to 9.7 ft -50.0 to -52.0 ft MLLW
Tributyltin (ion)	3.85 U	7.13	3.85 U	2.80 J	3.85 U	3.85 U
Semivolatile Organics (µg/kg)						
1,2,4-Trichlorobenzene	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,2-Dichlorobenzene	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2,4-Dimethylphenol	20.0 UJ	19.9 UJ	20.0 UJ	20.0 UJ	20.0 UJ	19.9 UJ
2-Methylphenol (o-Cresol)	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methylphenol (p-Cresol)	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzoic acid	99.9 UJ	99.7 UJ	99.8 UJ	99.8 UJ	99.8 UJ	99.4 UJ
Benzyl alcohol	10.7 J	19.9 U	20.0 U	20.0 U	20.0 U	12.1 J
Bis(2-ethylhexyl)phthalate	49.9 U	49.9 U	49.9 U	49.9 U	49.9 U	155
Butylbenzyl phthalate	2.6 J	3.9 J	5.0 U	5.0 U	5.0 U	14.9
Di-n-butyl phthalate	20.0 U	19.9 U	20.0 U	20.0 U	20.0 U	19.9 U
Di-n-octyl phthalate	20.0 U	19.9 U	20.0 U	20.0 U	20.0 U	19.9 U
Diethyl phthalate	19.9 U	20 U	19.9 U	20 U	19.9 U	20 U
Dimethyl phthalate	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Hexachlorobenzene	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
n-Nitrosodiphenylamine	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Pentachlorophenol	49.9 UJ	49.9 UJ	49.9 UJ	49.9 UJ	49.9 UJ	49.7 UJ
Phenol	7.1	4.1 J	5.0 U	2.5 J	3.7 J	7.5
Polycyclic Aromatic Hydrocarbons (µg/kg)						
1-Methylnaphthalene	20.0 U	19.9 U	20.0 U	20.0 U	20.0 U	19.9 U
2-Methylnaphthalene	20.0 U	19.9 U	20.0 U	20.0 U	20.0 U	19.9 U
Acenaphthene	20.0 U	19.9 U	20.0 U	20.0 U	20.0 U	19.9 U
Acenaphthylene	20.0 UJ	19.9 UJ	20.0 UJ	20.0 UJ	20.0 UJ	19.9 UJ
Anthracene	20.0 U	19.9 U	20.0 U	20.0 U	20.0 U	21.8
Benzo(a)anthracene	22.7	11.1 J	20.0 U	20.0 U	20.0 U	40.5
Benzo(a)pyrene	30.3	15.8 J	20.0 U	20.0 U	20.0 U	89.4
Benzo(b,j,k)fluoranthenes	88.5	52.1	39.9 U	39.9 U	39.9 U	264
Benzo(g,h,i)perylene	20.0 UJ	19.9 UJ	20.0 UJ	20.0 UJ	20.0 UJ	20.2 J
Carbazole	20.0 U	19.9 U	20.0 U	20.0 U	20.0 U	19.9 U
Chrysene	39	17.2 J	20.0 U	20.0 U	20.0 U	67.3
Dibenzo(a,h)anthracene	5.4 J	3.1 J	5.0 U	5.0 U	5.0 U	12.6 J
Dibenzofuran	20.0 U	19.9 U	20.0 U	20.0 U	20.0 U	19.9 U
Fluoranthene	46.9	20.3	20.0 U	20.0 U	20.0 U	58.5
Fluorene	20.0 U	19.9 U	20.0 U	20.0 U	20.0 U	19.9 U
Indeno(1,2,3-c,d)pyrene	20.0 UJ	19.9 UJ	20.0 UJ	20.0 UJ	20.0 UJ	21.3 J

Table 2
Sediment Core Sample Analytical Results Compared to DMMP Criteria

Chemical	MB-SC02			MB-SC03		
	MB-SC02-A-2024-08-13 8/13/2024 0 to 2.4 ft -46.6 to -49.0 ft MLLW	MB-SC02-Z1-2024-08-13 8/13/2024 2.4 to 3.4 ft -49.0 to -50.0 ft MLLW	MB-SC02-Z2-2024-08-13 8/13/2024 3.4 to 5.4 ft -50.0 to -52.0 ft MLLW	MB-SC03-A-2024-08-13 8/13/2024 0 to 6.7 ft -42.3 to -49.0	MB-SC03-Z1-2024-08-13 8/13/2024 6.7 to 7.7 ft -49.0 to -50.0 ft MLLW	MB-SC03-Z2-2024-08-13 8/13/2024 7.7 to 9.7 ft -50.0 to -52.0 ft MLLW
Naphthalene	20.0 U	19.9 U	20.0 U	20.0 U	20.0 U	19.9 U
Phenanthrene	24.8	15.3 J	20.0 U	20.0 U	20.0 U	39.4
Pyrene	67.4	26.2	20.0 U	20.0 U	20.0 U	272
Total Benzofluoranthenes (b,j,k) (U = 0 max limit)	88.5	52.1	39.9 U	39.9 U	39.9 U	264
Total Benzofluoranthenes (b,j,k) (U = 1/2 max limit)	88.5	52.1	39.9 U	39.9 U	39.9 U	264
Total HPAH (DMMP) (U = 0 max limit)	300 J	150 J	39.9 UJ	39.9 UJ	39.9 UJ	846 J
Total HPAH (DMMP) (U = 1/2 max limit)	320 J	170 J	39.9 UJ	39.9 UJ	39.9 UJ	846 J
Total LPAH (DMMP) (U = 0 max limit)	24.8 J	15.3 J	20.0 UJ	20.0 UJ	20.0 UJ	61.2 J
Total LPAH (DMMP) (U = 1/2 max limit)	74.8 J	65.1 J	20.0 UJ	20.0 UJ	20.0 UJ	101 J
Pesticides (µg/kg)						
2,4'-DDD (o,p'-DDD)	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
2,4'-DDE (o,p'-DDE)	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
2,4'-DDT (o,p'-DDT)	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
4,4'-DDD (p,p'-DDD)	1.00 U	0.82 J	1.00 U	1.00 U	1.00 U	1.00 U
4,4'-DDE (p,p'-DDE)	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
4,4'-DDT (p,p'-DDT)	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Aldrin	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlordane, alpha- (Chlordane, cis-)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlordane, beta- (Chlordane, trans-)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dieldrin	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Endrin ketone	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Heptachlor	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Hexachlorocyclohexane (BHC), beta-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Nonachlor, cis-	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Nonachlor, trans-	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Oxychlordane	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Dioxin Furans (ng/kg)						
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.558 U	0.630 U	0.732 U	1.43	0.669 U	0.973 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.953 J	1.64 J	0.890 U	12.2	1.01 U	1.04 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1.15 U	2.26	0.898 U	13.5	1.40 U	1.31 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	5.37 J	10.6 J	0.931 U	89.1	1.49	2.18
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	2.29 J	7.26	0.995 U	40.3	1.51 U	1.36 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	145	268	11.7 J	1530	41.9	71.5
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	1560	3570	112	14900	506	921
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	2.23	2.79	0.754 U	6.94	1.02 U	1.24 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	2.38 J	5.7	0.511 U	8.04	0.752 U	0.862 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	1.19 J	2.54	0.526 U	7.92	0.752 U	0.907 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	7.8	11.6	0.633 U	27	1.9	2.07

Table 2
Sediment Core Sample Analytical Results Compared to DMMP Criteria

Chemical	MB-SC02			MB-SC03		
	MB-SC02-A-2024-08-13 8/13/2024 0 to 2.4 ft -46.6 to -49.0 ft MLLW	MB-SC02-Z1-2024-08-13 8/13/2024 2.4 to 3.4 ft -49.0 to -50.0 ft MLLW	MB-SC02-Z2-2024-08-13 8/13/2024 3.4 to 5.4 ft -50.0 to -52.0 ft MLLW	MB-SC03-A-2024-08-13 8/13/2024 0 to 6.7 ft -42.3 to -49.0	MB-SC03-Z1-2024-08-13 8/13/2024 6.7 to 7.7 ft -49.0 to -50.0 ft MLLW	MB-SC03-Z2-2024-08-13 8/13/2024 7.7 to 9.7 ft -50.0 to -52.0 ft MLLW
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	2.70 J	4.19	0.558 U	11.9	0.775 U	0.981 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	1.77	2.42	1.02 U	11.9	1.01 U	1.69 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	1.65	2.63	0.668 U	14.4	0.718 U	1.05 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	23.6	42.4	1.02 J	176	7	10.2
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	2.85 J	3.23 J	1.05 U	12.9	1.74 U	2.14 U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	54.8	67.6	0.925 J	237	15	10.5 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0 max limit)	5.96 J	11.2 J	0.161 J	59.5	0.984	1.52 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2 max limit)	6.30 J	11.5 J	1.39 J	59.5	2.28	3.07 J
PCB Aroclors (µg/kg)						
Aroclor 1016	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1221	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1232	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1242	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1248	5.5 J	8.5 J	7.9	16.9 J	4.5	4.0 U
Aroclor 1254	6.4 J	9.2 J	9.5	13.0 J	4.3	4.0 U
Aroclor 1260	4.0 UJ	6.0 J	7.4 J	10.0 J	3.8 J	4.0 UJ
Total DMMP PCB Aroclors (U = 0 max limit)	12 J	24 J	25 J	39.9 J	13 J	4.0 UJ
Total DMMP PCB Aroclors (U = 1/2 max limit)	22 J	32 J	33 J	47.9 J	21 J	4.0 UJ
PCB Aroclors (mg/kg-OC)						
Aroclor 1016	0.70 U	0.80 U	1.1 U	0.50 U	2.5 U	0.83 U
Aroclor 1221	0.70 U	0.80 U	1.1 U	0.50 U	2.5 U	0.83 U
Aroclor 1232	0.70 U	0.80 U	1.1 U	0.50 U	2.5 U	0.83 U
Aroclor 1242	0.70 U	0.80 U	1.1 U	0.50 U	2.5 U	0.83 U
Aroclor 1248	0.96 J	1.7 J	2.2	2.11 J	2.8	0.83 U
Aroclor 1254	1.1 J	1.8 J	2.6	1.63 J	2.7	0.83 U
Aroclor 1260	0.70 UJ	1.2 J	2.1 J	1.25 J	2.4 J	0.83 UJ
Total DMMP PCB Aroclors (U = 0 max limit)	2.1 J	4.7 J	6.9 J	4.99 J	7.9 J	0.83 UJ
Total DMMP PCB Aroclors (U = 1/2 max limit)	3.8 J	6.3 J	9.1 J	5.99 J	13 J	0.83 UJ

Table 2
Sediment Core Sample Analytical Results Compared to DMMP Criteria

Notes:

- Detected concentration is greater than DMMP SL screening level
- Detected concentration is greater than DMMP BT screening level
- Detected concentration is greater than DMMP ML screening level

Bold: Detected result

Calculated values have been rounded to laboratory-reported significant digits.

- J: Estimated value
- U: Compound analyzed for, but not detected above detection limit
- UJ: Compound analyzed for, but not detected above estimated detection limit
- : not applicable/no data
- µg/kg: microgram per kilogram
- BT: bioaccumulation trigger
- DMMP: Dredged Material Management Program
- EDL: estimated detection limit
- ft: foot
- mg/kg: milligram per kilogram
- ML: maximum level
- MLLW: mean lower low water
- ng/kg: nanogram per kilogram
- PAH: polycyclic aromatic hydrocarbon
- PCB: polychlorinated biphenyl
- pct: percent
- SL: screening level
- TEQ: toxic equivalence

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Chemical	Method	D/F TEF	SMS_Marine_SCO	SMS_Marine_CSL	AET_Marine_SCO	Location ID Sample ID Sample Date Depth Below Mudline Elevation Depth AET_Marine_CSL	MB-SC01	
							MB-SC01-Z1-2024-08-13	MB-SC01-Z2-2024-08-13
							8/13/2024 3 to 4 ft -49.0 to -50.0 ft MLLW	8/13/2024 4 to 6 ft -50.0 to -52.0 ft MLLW
Conventional Parameters (pct)								
Total organic carbon	SW9060AM	--	--	--	--	--	0.32	0.090 U
Total solids	D2216	--	--	--	--	--	75.96	82.41
Total solids	SM2540G	--	--	--	--	--	75.65	79.37
Total volatile solids	PSEP-TVS	--	--	--	--	--	1.81	1.53
Metals (mg/kg)								
Antimony	SW6020	--	--	--	--	--	0.26 UJ	0.25 UJ
Arsenic	SW6020		57	93	57	93	4.01	3.17
Cadmium	SW6020		5.1	6.7	5.1	6.7	0.06 J	0.07 J
Chromium	SW6020		260	270	260	270	14.7	12
Copper	SW6020		390	390	390	390	18.9	13.7
Lead	SW6020		450	530	450	530	4.04	1.48
Mercury	SW7471B		0.41	0.59	0.41	0.59	0.0301 U	0.0266 U
Selenium	SW6020	--	--	--	--	--	0.61 J	0.57 J
Silver	SW6020		6.1	6.1	6.1	6.1	0.06 J	0.04 J
Zinc	SW6020		410	960	410	960	29.6	21.7
Organometals (mg/kg-OC)								
Tributyltin (ion)	SW8270ESIM	--	--	--	--	--	--	--
Organometals (µg/kg)								
Tributyltin (ion)	SW8270ESIM	--	--	--	--	--	2.23 J	3.86 U
Semivolatile Organics (mg/kg-OC)								
1,2,4-Trichlorobenzene	SW8270ESIM	--	0.81	1.8	--	--	--	--
1,2-Dichlorobenzene	SW8270ESIM	--	2.3	2.3	--	--	--	--
1,4-Dichlorobenzene	SW8270ESIM	--	3.1	9	--	--	--	--
Bis(2-ethylhexyl)phthalate	SW8270E	--	47	78	--	--	--	--
Butylbenzyl phthalate	SW8270ESIM	--	4.9	64	--	--	--	--
Di-n-butyl phthalate	SW8270E	--	220	1700	--	--	--	--
Di-n-octyl phthalate	SW8270E	--	58	4500	--	--	--	--
Diethyl phthalate	SW8270ESIM	--	61	110	--	--	--	--
Dimethyl phthalate	SW8270ESIM	--	53	53	--	--	--	--
Hexachlorobenzene	SW8270ESIM	--	0.38	2.3	--	--	--	--
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	SW8270ESIM	--	3.9	6.2	--	--	--	--
n-Nitrosodiphenylamine	SW8270ESIM	--	11	11	--	--	--	--
Pentachlorophenol	SW8270ESIM	--	--	--	--	--	--	--
Semivolatile Organics (µg/kg)		--						
1,2,4-Trichlorobenzene	SW8270ESIM	--	--	--	31	51	5.0 UJ	5.0 UJ
1,2-Dichlorobenzene	SW8270ESIM	--	--	--	35	50	5.0 U	5.0 U
1,4-Dichlorobenzene	SW8270ESIM	--	--	--	110	110	5.0 U	5.0 U

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Chemical	Method	D/F TEF	SMS_Marine_SCO	SMS_Marine_CSL	AET_Marine_SCO	Location ID Sample ID Sample Date Depth Below Mudline Elevation Depth AET_Marine_CSL	MB-SC01	
							MB-SC01-Z1-2024-08-13 8/13/2024 3 to 4 ft -49.0 to -50.0 ft MLLW	MB-SC01-Z2-2024-08-13 8/13/2024 4 to 6 ft -50.0 to -52.0 ft MLLW
2,4-Dimethylphenol	SW8270ESIM	--	29	29	29	29	20.0 UJ	19.9 UJ
2-Methylphenol (o-Cresol)	SW8270ESIM	--	63	63	63	63	5.0 U	5.0 U
4-Methylphenol (p-Cresol)	SW8270ESIM	--	670	670	670	670	5.0 U	5.0 U
Benzoic acid	SW8270ESIM	--	650	650	650	650	99.9 UJ	99.7 UJ
Benzyl alcohol	SW8270ESIM	--	57	73	57	73	20.0 U	19.9 U
Bis(2-ethylhexyl)phthalate	SW8270E	--	--	--	1300	1900	50.0 U	49.8 U
Butylbenzyl phthalate	SW8270ESIM	--	--	--	63	900	5.0 U	5.0 U
Di-n-butyl phthalate	SW8270E	--	--	--	1400	1400	20.0 U	19.9 U
Di-n-octyl phthalate	SW8270E	--	--	--	6200	6200	20.0 U	19.9 U
Diethyl phthalate	SW8270ESIM	--	--	--	200	1200	20.8 U	20 U
Dimethyl phthalate	SW8270ESIM	--	--	--	71	160	5.0 U	5.0 U
Hexachlorobenzene	SW8270ESIM	--	--	--	22	70	5.0 U	5.0 U
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	SW8270ESIM	--	--	--	11	120	5.0 U	5.0 U
n-Nitrosodiphenylamine	SW8270ESIM	--	--	--	28	40	5.0 U	5.0 U
Pentachlorophenol	SW8270ESIM	--	360	690	360	690	50.0 UJ	49.8 UJ
Phenol	SW8270ESIM	--	420	1200	420	1200	4.0 J	2.9 J
Polycyclic Aromatic Hydrocarbons (mg/kg-OC)								
1-Methylnaphthalene	SW8270E	--	--	--	--	--	--	--
2-Methylnaphthalene	SW8270E	--	38	64	--	--	--	--
Acenaphthene	SW8270E	--	16	57	--	--	--	--
Acenaphthylene	SW8270E	--	66	66	--	--	--	--
Anthracene	SW8270E	--	220	1200	--	--	--	--
Benzo(a)anthracene	SW8270E	--	110	270	--	--	--	--
Benzo(a)pyrene	SW8270E	--	99	210	--	--	--	--
Benzo(b,j,k)fluoranthenes	SW8270E	--	230	450	--	--	--	--
Benzo(g,h,i)perylene	SW8270E	--	31	78	--	--	--	--
Carbazole	SW8270E	--	--	--	--	--	--	--
Chrysene	SW8270E	--	110	460	--	--	--	--
Dibenzo(a,h)anthracene	SW8270ESIM	--	12	33	--	--	--	--
Dibenzofuran	SW8270E	--	15	58	--	--	--	--
Fluoranthene	SW8270E	--	160	1200	--	--	--	--
Fluorene	SW8270E	--	23	79	--	--	--	--
Indeno(1,2,3-c,d)pyrene	SW8270E	--	34	88	--	--	--	--
Naphthalene	SW8270E	--	99	170	--	--	--	--
Phenanthrene	SW8270E	--	100	480	--	--	--	--
Pyrene	SW8270E	--	1000	1400	--	--	--	--
Total Benzofluoranthenes (b,j,k) (U = 0 max limit)	Calculated	--	230	450	--	--	--	--
Polycyclic Aromatic Hydrocarbons (µg/kg)								

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Chemical	Method	D/F TEF	SMS_Marine_SCO	SMS_Marine_CSL	AET_Marine_SCO	Location ID Sample ID Sample Date Depth Below Mudline Elevation Depth AET_Marine_CSL	MB-SC01	
							MB-SC01-Z1-2024-08-13 8/13/2024 3 to 4 ft -49.0 to -50.0 ft MLLW	MB-SC01-Z2-2024-08-13 8/13/2024 4 to 6 ft -50.0 to -52.0 ft MLLW
1-Methylnaphthalene	SW8270E	--	--	--	--	--	20.0 U	19.9 U
2-Methylnaphthalene	SW8270E	--	--	--	670	670	20.0 U	19.9 U
Acenaphthene	SW8270E	--	--	--	500	500	20.0 U	19.9 U
Acenaphthylene	SW8270E	--	--	--	1300	1300	20.0 UJ	19.9 UJ
Anthracene	SW8270E	--	--	--	960	960	20.0 U	19.9 U
Benzo(a)anthracene	SW8270E	--	--	--	1300	1600	20.0 U	19.9 U
Benzo(a)pyrene	SW8270E	--	--	--	1600	1600	20.0 U	19.9 U
Benzo(b,j,k)fluoranthenes	SW8270E	--	--	--	3200	3600	40.0 U	39.9 U
Benzo(g,h,i)perylene	SW8270E	--	--	--	670	720	20.0 UJ	19.9 UJ
Carbazole	SW8270E	--	--	--	--	--	20.0 U	19.9 U
Chrysene	SW8270E	--	--	--	1400	2800	20.0 U	19.9 U
Dibenzo(a,h)anthracene	SW8270ESIM	--	--	--	230	230	5.0 U	5.0 U
Dibenzofuran	SW8270E	--	--	--	540	540	20.0 U	19.9 U
Fluoranthene	SW8270E	--	--	--	1700	2500	20.0 U	19.9 U
Fluorene	SW8270E	--	--	--	540	540	20.0 U	19.9 U
Indeno(1,2,3-c,d)pyrene	SW8270E	--	--	--	600	690	20.0 UJ	19.9 UJ
Naphthalene	SW8270E	--	--	--	2100	2100	20.0 U	19.9 U
Phenanthrene	SW8270E	--	--	--	1500	1500	20.0 U	19.9 U
Pyrene	SW8270E	--	--	--	2600	3300	13.5 J	19.9 U
Total Benzofluoranthenes (b,j,k) (U = 0 max limit)	Calculated	--	--	--	3200	3600	40.0 U	39.9 U
Total HPAH (DMMP) (U = 0 max limit)	Calculated	--	--	--	--	--	13.5 J	39.9 UJ
Total LPAH (DMMP) (U = 0 max limit)	Calculated	--	--	--	--	--	20.0 UJ	19.9 UJ
Pesticides (mg/kg-OC)								
2,4'-DDD (o,p'-DDD)	SW8081B	--	--	--	--	--	--	--
2,4'-DDE (o,p'-DDE)	SW8081B	--	--	--	--	--	--	--
2,4'-DDT (o,p'-DDT)	SW8081B	--	--	--	--	--	--	--
4,4'-DDD (p,p'-DDD)	SW8081B	--	--	--	--	--	--	--
4,4'-DDE (p,p'-DDE)	SW8081B	--	--	--	--	--	--	--
4,4'-DDT (p,p'-DDT)	SW8081B	--	--	--	--	--	--	--
Aldrin	SW8081B	--	--	--	--	--	--	--
Chlordane, alpha- (Chlordane, cis-)	SW8081B	--	--	--	--	--	--	--
Chlordane, beta- (Chlordane, trans-)	SW8081B	--	--	--	--	--	--	--
Dieldrin	SW8081B	--	--	--	--	--	--	--
Endrin ketone	SW8081B	--	--	--	--	--	--	--
Heptachlor	SW8081B	--	--	--	--	--	--	--
Hexachlorocyclohexane (BHC), beta-	SW8081B	--	--	--	--	--	--	--
Nonachlor, cis-	SW8081B	--	--	--	--	--	--	--
Nonachlor, trans-	SW8081B	--	--	--	--	--	--	--

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Chemical	Method	D/F TEF	SMS_Marine_SCO	SMS_Marine_CSL	AET_Marine_SCO	Location ID Sample ID Sample Date Depth Below Mudline Elevation Depth AET_Marine_CSL	MB-SC01	
							MB-SC01-Z1-2024-08-13 8/13/2024 3 to 4 ft -49.0 to -50.0 ft MLLW	MB-SC01-Z2-2024-08-13 8/13/2024 4 to 6 ft -50.0 to -52.0 ft MLLW
Oxychlordane	SW8081B	--	--	--	--	--	--	--
Pesticides (µg/kg)								
2,4'-DDD (o,p'-DDD)	SW8081B	--	--	--	--	--	0.99 U	1.00 U
2,4'-DDE (o,p'-DDE)	SW8081B	--	--	--	--	--	0.99 U	1.00 U
2,4'-DDT (o,p'-DDT)	SW8081B	--	--	--	--	--	0.99 U	1.00 U
4,4'-DDD (p,p'-DDD)	SW8081B	--	--	--	--	--	0.99 U	1.00 U
4,4'-DDE (p,p'-DDE)	SW8081B	--	--	--	--	--	0.99 U	1.00 U
4,4'-DDT (p,p'-DDT)	SW8081B	--	--	--	--	--	0.99 U	1.00 U
Aldrin	SW8081B	--	--	--	--	--	0.50 U	0.50 U
Chlordane, alpha- (Chlordane, cis-)	SW8081B	--	--	--	--	--	0.50 U	0.50 U
Chlordane, beta- (Chlordane, trans-)	SW8081B	--	--	--	--	--	0.50 U	0.50 U
Dieldrin	SW8081B	--	--	--	--	--	0.99 U	1.00 U
Endrin ketone	SW8081B	--	--	--	--	--	0.99 U	1.00 U
Heptachlor	SW8081B	--	--	--	--	--	0.50 U	0.50 U
Hexachlorocyclohexane (BHC), beta-	SW8081B	--	--	--	--	--	0.50 U	0.50 U
Nonachlor, cis-	SW8081B	--	--	--	--	--	0.99 U	1.00 U
Nonachlor, trans-	SW8081B	--	--	--	--	--	0.99 U	1.00 U
Oxychlordane	SW8081B	--	--	--	--	--	0.99 U	1.00 U
Dioxin Furans (ng/kg)								
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	E1613B	0.0003	--	--	--	--	3980	40.2
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	E1613B	0.0003	--	--	--	--	62	2.17 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	E1613B	0.01	--	--	--	--	307	2.66 J
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	E1613B	0.01	--	--	--	--	45.2	0.869 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	E1613B	0.01	--	--	--	--	3.84	1.77 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	E1613B	0.1	--	--	--	--	1.73 J	1.14 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	E1613B	0.1	--	--	--	--	6.34	0.748 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	E1613B	0.1	--	--	--	--	13.1	1.08 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	E1613B	0.1	--	--	--	--	2.08	0.710 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	E1613B	0.1	--	--	--	--	5.99 J	1.20 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	E1613B	0.1	--	--	--	--	2.83	1.25 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	E1613B	1	--	--	--	--	1.08 J	0.772 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	E1613B	0.03	--	--	--	--	1.46 J	0.531 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	E1613B	0.1	--	--	--	--	2.93	0.750 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	E1613B	0.3	--	--	--	--	1.37 J	0.560 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	E1613B	1	--	--	--	--	0.797 U	0.427 U
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	E1613B	0.1	--	--	--	--	1.99	0.527 U
Total Heptachlorodibenzo-p-dioxin (HpCDD)	E1613B	--	--	--	--	--	589	0 U
Total Heptachlorodibenzofuran (HpCDF)	E1613B	--	--	--	--	--	169	1.55

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Chemical	Method	D/F TEF	SMS_Marine_SCO	SMS_Marine_CSL	AET_Marine_SCO	Location ID Sample ID Sample Date Depth Below Mudline Elevation Depth AET_Marine_CSL	MB-SC01	
							MB-SC01-Z1-2024-08-13 8/13/2024 3 to 4 ft -49.0 to -50.0 ft MLLW	MB-SC01-Z2-2024-08-13 8/13/2024 4 to 6 ft -50.0 to -52.0 ft MLLW
Total Hexachlorodibenzo-p-dioxin (HxCDD)	E1613B	--	--	--	--	--	87.9	0 U
Total Hexachlorodibenzofuran (HxCDF)	E1613B	--	--	--	--	--	103	0 U
Total Pentachlorodibenzo-p-dioxin (PeCDD)	E1613B	--	--	--	--	--	0 U	0 U
Total Pentachlorodibenzofuran (PeCDF)	E1613B	--	--	--	--	--	11.5	0 U
Total Tetrachlorodibenzo-p-dioxin (TCDD)	E1613B	--	--	--	--	--	4.42	0 U
Total Tetrachlorodibenzofuran (TCDF)	E1613B	--	--	--	--	--	2.88	0 U
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0 max limit)	Calculated	--	--	--	--	--	10.0 J	0.0387 J
Dioxin Furans (ng/kg-OC)								
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0 max limit)	Calculated	--	--	--	--	--	--	--
PCB Aroclors (mg/kg-OC)								
Aroclor 1016	SW8082A	--	--	--	--	--	--	--
Aroclor 1221	SW8082A	--	--	--	--	--	--	--
Aroclor 1232	SW8082A	--	--	--	--	--	--	--
Aroclor 1242	SW8082A	--	--	--	--	--	--	--
Aroclor 1248	SW8082A	--	--	--	--	--	--	--
Aroclor 1254	SW8082A	--	--	--	--	--	--	--
Aroclor 1260	SW8082A	--	--	--	--	--	--	--
Total DMMP PCB Aroclors (U = 0 max limit)	Calculated	--	--	--	--	--	--	--
PCB Aroclors (µg/kg)								
Aroclor 1016	SW8082A	--	--	--	--	--	4.0 U	4.0 U
Aroclor 1221	SW8082A	--	--	--	--	--	4.0 U	4.0 U
Aroclor 1232	SW8082A	--	--	--	--	--	4.0 U	4.0 U
Aroclor 1242	SW8082A	--	--	--	--	--	4.0 U	4.0 U
Aroclor 1248	SW8082A	--	--	--	--	--	9.9 J	4.0 U
Aroclor 1254	SW8082A	--	--	--	--	--	4.7 J	4.0 U
Aroclor 1260	SW8082A	--	--	--	--	--	4.0 UJ	4.0 UJ
Total DMMP PCB Aroclors (U = 0 max limit)	Calculated	--	--	--	--	--	15 J	4.0 UJ

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Chemical	MB-SC02		MB-SC03	
	MB-SC02-Z1-2024-08-13	MB-SC02-Z2-2024-08-13	MB-SC03-Z1-2024-08-13	MB-SC03-Z2-2024-08-13
	8/13/2024 2.4to- 3.4 ft -49.0 to -50.0 ft MLLW	8/13/2024 3.4 to 5.4 ft -50.0 to -52.0 ft MLLW	8/13/2024 6.7 to 7.7 ft -49.0 to -50.0 ft MLLW	8/13/2024 7.7 to 9.7 ft -50.0 to -52.0 ft MLLW
Conventional Parameters (pct)				
Total organic carbon	0.5	0.36	0.16	0.48
Total solids	70.54	79.03	82.8	82.1
Total solids	71.98	82.46	81.43	81.62
Total volatile solids	2.59	1.45	1.72	2.23
Metals (mg/kg)				
Antimony	0.28 UJ	0.23 UJ	0.23 UJ	0.22 UJ
Arsenic	5.84	3.19	2.36	2.69
Cadmium	0.08 J	0.11 U	0.12 U	0.04 J
Chromium	14.2	9.51	12	10.5
Copper	23.7	10.4	13.3	13.5
Lead	5.31	1.25	1.52	3.89
Mercury	0.0384	0.0222 U	0.0293 U	0.0225 U
Selenium	0.61 J	0.30 J	0.47 J	0.36 J
Silver	0.09 J	0.03 J	0.03 J	0.04 J
Zinc	32.8	16.7	21.1	20.5
Organometals (mg/kg-OC)				
Tributyltin (ion)	1.43	--	--	--
Organometals (µg/kg)				
Tributyltin (ion)	7.13	3.85 U	3.85 U	3.85 U
Semivolatile Organics (mg/kg-OC)				
1,2,4-Trichlorobenzene	1.0 UJ	--	--	--
1,2-Dichlorobenzene	1.0 U	--	--	--
1,4-Dichlorobenzene	1.0 U	--	--	--
Bis(2-ethylhexyl)phthalate	9.98 U	--	--	--
Butylbenzyl phthalate	0.78 J	--	--	--
Di-n-butyl phthalate	3.98 U	--	--	--
Di-n-octyl phthalate	3.98 U	--	--	--
Diethyl phthalate	4 U	--	--	--
Dimethyl phthalate	1.0 U	--	--	--
Hexachlorobenzene	1.0 U	--	--	--
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	1.0 U	--	--	--
n-Nitrosodiphenylamine	1.0 U	--	--	--
Pentachlorophenol	9.98 UJ	--	--	--
Semivolatile Organics (µg/kg)				
1,2,4-Trichlorobenzene	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,2-Dichlorobenzene	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	5.0 U	5.0 U	5.0 U	5.0 U

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Chemical	MB-SC02		MB-SC03	
	MB-SC02-Z1-2024-08-13 8/13/2024 2.4to- 3.4 ft -49.0 to -50.0 ft MLLW	MB-SC02-Z2-2024-08-13 8/13/2024 3.4 to 5.4 ft -50.0 to -52.0 ft MLLW	MB-SC03-Z1-2024-08-13 8/13/2024 6.7 to 7.7 ft -49.0 to -50.0 ft MLLW	MB-SC03-Z2-2024-08-13 8/13/2024 7.7 to 9.7 ft -50.0 to -52.0 ft MLLW
2,4-Dimethylphenol	19.9 UJ	20.0 UJ	20.0 UJ	19.9 UJ
2-Methylphenol (o-Cresol)	5.0 U	5.0 U	5.0 U	5.0 U
4-Methylphenol (p-Cresol)	5.0 U	5.0 U	5.0 U	5.0 U
Benzoic acid	99.7 UJ	99.8 UJ	99.8 UJ	99.4 UJ
Benzyl alcohol	19.9 U	20.0 U	20.0 U	12.1 J
Bis(2-ethylhexyl)phthalate	49.9 U	49.9 U	49.9 U	155
Butylbenzyl phthalate	3.9 J	5.0 U	5.0 U	14.9
Di-n-butyl phthalate	19.9 U	20.0 U	20.0 U	19.9 U
Di-n-octyl phthalate	19.9 U	20.0 U	20.0 U	19.9 U
Diethyl phthalate	20 U	19.9 U	19.9 U	20 U
Dimethyl phthalate	5.0 U	5.0 U	5.0 U	5.0 U
Hexachlorobenzene	5.0 U	5.0 U	5.0 U	5.0 U
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	5.0 U	5.0 U	5.0 U	5.0 U
n-Nitrosodiphenylamine	5.0 U	5.0 U	5.0 U	5.0 U
Pentachlorophenol	49.9 UJ	49.9 UJ	49.9 UJ	49.7 UJ
Phenol	4.1 J	5.0 U	3.7 J	7.5
Polycyclic Aromatic Hydrocarbons (mg/kg-OC)				
1-Methylnaphthalene	3.98 U	--	--	--
2-Methylnaphthalene	3.98 U	--	--	--
Acenaphthene	3.98 U	--	--	--
Acenaphthylene	3.98 UJ	--	--	--
Anthracene	3.98 U	--	--	--
Benzo(a)anthracene	2.22 J	--	--	--
Benzo(a)pyrene	3.16 J	--	--	--
Benzo(b,j,k)fluoranthenes	10.4	--	--	--
Benzo(g,h,i)perylene	3.98 UJ	--	--	--
Carbazole	3.98 U	--	--	--
Chrysene	3.44 J	--	--	--
Dibenzo(a,h)anthracene	0.62 J	--	--	--
Dibenzofuran	3.98 U	--	--	--
Fluoranthene	4.06	--	--	--
Fluorene	3.98 U	--	--	--
Indeno(1,2,3-c,d)pyrene	3.98 UJ	--	--	--
Naphthalene	3.98 U	--	--	--
Phenanthrene	3.06 J	--	--	--
Pyrene	5.24	--	--	--
Total Benzofluoranthenes (b,j,k) (U = 0 max limit)	10.4	--	--	--
Polycyclic Aromatic Hydrocarbons (µg/kg)				

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Chemical	MB-SC02		MB-SC03	
	MB-SC02-Z1-2024-08-13 8/13/2024 2.4to- 3.4 ft -49.0 to -50.0 ft MLLW	MB-SC02-Z2-2024-08-13 8/13/2024 3.4 to 5.4 ft -50.0 to -52.0 ft MLLW	MB-SC03-Z1-2024-08-13 8/13/2024 6.7 to 7.7 ft -49.0 to -50.0 ft MLLW	MB-SC03-Z2-2024-08-13 8/13/2024 7.7 to 9.7 ft -50.0 to -52.0 ft MLLW
1-Methylnaphthalene	19.9 U	20.0 U	20.0 U	19.9 U
2-Methylnaphthalene	19.9 U	20.0 U	20.0 U	19.9 U
Acenaphthene	19.9 U	20.0 U	20.0 U	19.9 U
Acenaphthylene	19.9 UJ	20.0 UJ	20.0 UJ	19.9 UJ
Anthracene	19.9 U	20.0 U	20.0 U	21.8
Benzo(a)anthracene	11.1 J	20.0 U	20.0 U	40.5
Benzo(a)pyrene	15.8 J	20.0 U	20.0 U	89.4
Benzo(b,j,k)fluoranthenes	52.1	39.9 U	39.9 U	264
Benzo(g,h,i)perylene	19.9 UJ	20.0 UJ	20.0 UJ	20.2 J
Carbazole	19.9 U	20.0 U	20.0 U	19.9 U
Chrysene	17.2 J	20.0 U	20.0 U	67.3
Dibenzo(a,h)anthracene	3.1 J	5.0 U	5.0 U	12.6 J
Dibenzofuran	19.9 U	20.0 U	20.0 U	19.9 U
Fluoranthene	20.3	20.0 U	20.0 U	58.5
Fluorene	19.9 U	20.0 U	20.0 U	19.9 U
Indeno(1,2,3-c,d)pyrene	19.9 UJ	20.0 UJ	20.0 UJ	21.3 J
Naphthalene	19.9 U	20.0 U	20.0 U	19.9 U
Phenanthrene	15.3 J	20.0 U	20.0 U	39.4
Pyrene	26.2	20.0 U	20.0 U	272
Total Benzofluoranthenes (b,j,k) (U = 0 max limit)	52.1	39.9 U	39.9 U	264
Total HPAH (DMMP) (U = 0 max limit)	150 J	39.9 UJ	39.9 UJ	846 J
Total LPAH (DMMP) (U = 0 max limit)	15.3 J	20.0 UJ	20.0 UJ	61.2 J
Pesticides (mg/kg-OC)				
2,4'-DDD (o,p'-DDD)	0.200 U	--	--	--
2,4'-DDE (o,p'-DDE)	0.200 U	--	--	--
2,4'-DDT (o,p'-DDT)	0.200 U	--	--	--
4,4'-DDD (p,p'-DDD)	0.16 J	--	--	--
4,4'-DDE (p,p'-DDE)	0.200 U	--	--	--
4,4'-DDT (p,p'-DDT)	0.200 U	--	--	--
Aldrin	0.10 U	--	--	--
Chlordane, alpha- (Chlordane, cis-)	0.10 U	--	--	--
Chlordane, beta- (Chlordane, trans-)	0.10 U	--	--	--
Dieldrin	0.200 U	--	--	--
Endrin ketone	0.200 U	--	--	--
Heptachlor	0.10 U	--	--	--
Hexachlorocyclohexane (BHC), beta-	0.10 U	--	--	--
Nonachlor, cis-	0.200 U	--	--	--
Nonachlor, trans-	0.200 U	--	--	--

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Chemical	MB-SC02		MB-SC03	
	MB-SC02-Z1-2024-08-13 8/13/2024 2.4to- 3.4 ft -49.0 to -50.0 ft MLLW	MB-SC02-Z2-2024-08-13 8/13/2024 3.4 to 5.4 ft -50.0 to -52.0 ft MLLW	MB-SC03-Z1-2024-08-13 8/13/2024 6.7 to 7.7 ft -49.0 to -50.0 ft MLLW	MB-SC03-Z2-2024-08-13 8/13/2024 7.7 to 9.7 ft -50.0 to -52.0 ft MLLW
Oxychlordane	0.200 U	--	--	--
Pesticides (µg/kg)				
2,4'-DDD (o,p'-DDD)	1.00 U	1.00 U	1.00 U	1.00 U
2,4'-DDE (o,p'-DDE)	1.00 U	1.00 U	1.00 U	1.00 U
2,4'-DDT (o,p'-DDT)	1.00 U	1.00 U	1.00 U	1.00 U
4,4'-DDD (p,p'-DDD)	0.82 J	1.00 U	1.00 U	1.00 U
4,4'-DDE (p,p'-DDE)	1.00 U	1.00 U	1.00 U	1.00 U
4,4'-DDT (p,p'-DDT)	1.00 U	1.00 U	1.00 U	1.00 U
Aldrin	0.50 U	0.50 U	0.50 U	0.50 U
Chlordane, alpha- (Chlordane, cis-)	0.50 U	0.50 U	0.50 U	0.50 U
Chlordane, beta- (Chlordane, trans-)	0.50 U	0.50 U	0.50 U	0.50 U
Dieldrin	1.00 U	1.00 U	1.00 U	1.00 U
Endrin ketone	1.00 U	1.00 U	1.00 U	1.00 U
Heptachlor	0.50 U	0.50 U	0.50 U	0.50 U
Hexachlorocyclohexane (BHC), beta-	0.50 U	0.50 U	0.50 U	0.50 U
Nonachlor, cis-	1.00 U	1.00 U	1.00 U	1.00 U
Nonachlor, trans-	1.00 U	1.00 U	1.00 U	1.00 U
Oxychlordane	1.00 U	1.00 U	1.00 U	1.00 U
Dioxin Furans (ng/kg)				
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3570	112	506	921
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	67.6	0.925 J	15	10.5 J
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	268	11.7 J	41.9	71.5
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	42.4	1.02 J	7	10.2
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	3.23 J	1.05 U	1.74 U	2.14 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	2.26	0.898 U	1.40 U	1.31 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	11.6	0.633 U	1.9	2.07
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	10.6 J	0.931 U	1.49	2.18
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	4.19	0.558 U	0.775 U	0.981 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	7.26	0.995 U	1.51 U	1.36 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	2.42	1.02 U	1.01 U	1.69 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	1.64 J	0.890 U	1.01 U	1.04 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	5.7	0.511 U	0.752 U	0.862 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	2.63	0.668 U	0.718 U	1.05 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	2.54	0.526 U	0.752 U	0.907 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.630 U	0.732 U	0.669 U	0.973 U
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	2.79	0.754 U	1.02 U	1.24 U
Total Heptachlorodibenzo-p-dioxin (HpCDD)	564	12.4	88.6	148
Total Heptachlorodibenzofuran (HpCDF)	140	0 U	29.8	10.2

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Chemical	MB-SC02		MB-SC03	
	MB-SC02-Z1-2024-08-13 8/13/2024 2.4to- 3.4 ft -49.0 to -50.0 ft MLLW	MB-SC02-Z2-2024-08-13 8/13/2024 3.4 to 5.4 ft -50.0 to -52.0 ft MLLW	MB-SC03-Z1-2024-08-13 8/13/2024 6.7 to 7.7 ft -49.0 to -50.0 ft MLLW	MB-SC03-Z2-2024-08-13 8/13/2024 7.7 to 9.7 ft -50.0 to -52.0 ft MLLW
Total Hexachlorodibenzo-p-dioxin (HxCDD)	91.1	0 U	6.62	7.88
Total Hexachlorodibenzofuran (HxCDF)	94.6	1.46	13	27.1
Total Pentachlorodibenzo-p-dioxin (PeCDD)	1.35	0 U	0 U	0 U
Total Pentachlorodibenzofuran (PeCDF)	22.3	0 U	2.9	2.29
Total Tetrachlorodibenzo-p-dioxin (TCDD)	3.16	0 U	6.52	7.89
Total Tetrachlorodibenzofuran (TCDF)	2.79	0 U	0 U	0 U
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0 max limit)	11.2 J	0.161 J	0.984	1.52 J
Dioxin Furans (ng/kg-OC)				
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0 max limit)	2240 J	--	--	--
PCB Aroclors (mg/kg-OC)				
Aroclor 1016	0.80 U	--	--	--
Aroclor 1221	0.80 U	--	--	--
Aroclor 1232	0.80 U	--	--	--
Aroclor 1242	0.80 U	--	--	--
Aroclor 1248	1.7 J	--	--	--
Aroclor 1254	1.8 J	--	--	--
Aroclor 1260	1.2 J	--	--	--
Total DMMP PCB Aroclors (U = 0 max limit)	4.7 J	--	--	--
PCB Aroclors (µg/kg)				
Aroclor 1016	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1221	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1232	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1242	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1248	8.5 J	7.9	4.5	4.0 U
Aroclor 1254	9.2 J	9.5	4.3	4.0 U
Aroclor 1260	6.0 J	7.4 J	3.8 J	4.0 UJ
Total DMMP PCB Aroclors (U = 0 max limit)	24 J	25 J	13 J	4.0 UJ

Table 3
Sediment Core Z-Sample Analytical Results Compared to SMS Criteria

Notes:

TOC in range (0.5% - 3.5%)

 Detected concentration is greater than SMS_Marine_SCO_SCUMII_2019V10 screening level

 Detected concentration is greater than SMS_Marine_CSL_SCUMII_2019V10 screening level

TOC out of range

 Detected concentration is greater than AET_Marine_SCO_SCUMII_2019V10 screening level

 Detected concentration is greater than AET_Marine_CSL_SCUMII_2019V10 screening level

Bold: Detected result

Calculated values have been rounded to laboratory-reported significant digits.

Organic Carbon Normalized results are not reported if TOC concentration of the sample is outside of 0.5% to 3.5%.

J: Estimated value

U: Compound analyzed for, but not detected above detection limit

UJ: Compound analyzed for, but not detected above estimated detection limit

--: not applicable/no data

CSL: cleanup screening level

DMMP: Dredged Material Management Program

D/F: dioxins/furans

ft: foot

MLLW: mean lower low water

ng/kg: nanogram per kilogram

OC: organic carbon

PCB: polychlorinated biphenyl

pct: percent

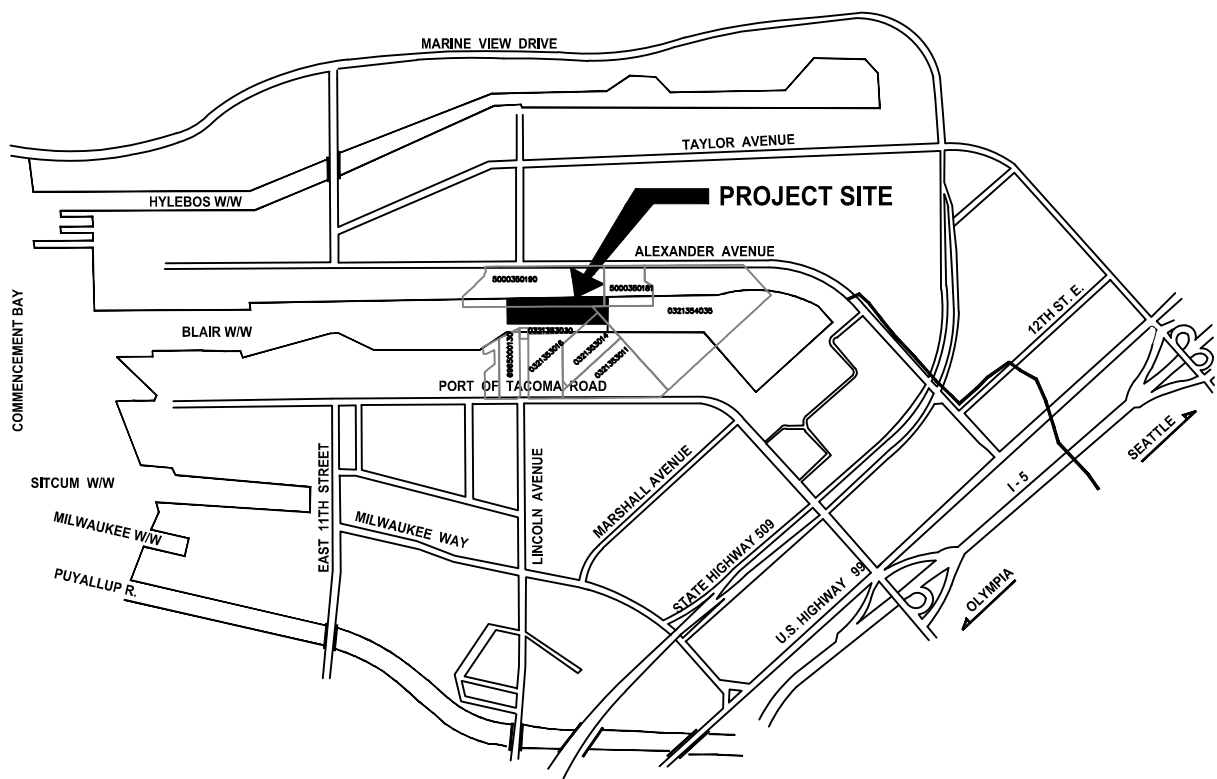
SCO: sediment cleanup objective

SMS: Sediment Management Standards

TEF: toxic equivalence factor

TOC: total organic carbon

Figures



SOURCE: Base file provided by WSP USA, Inc.

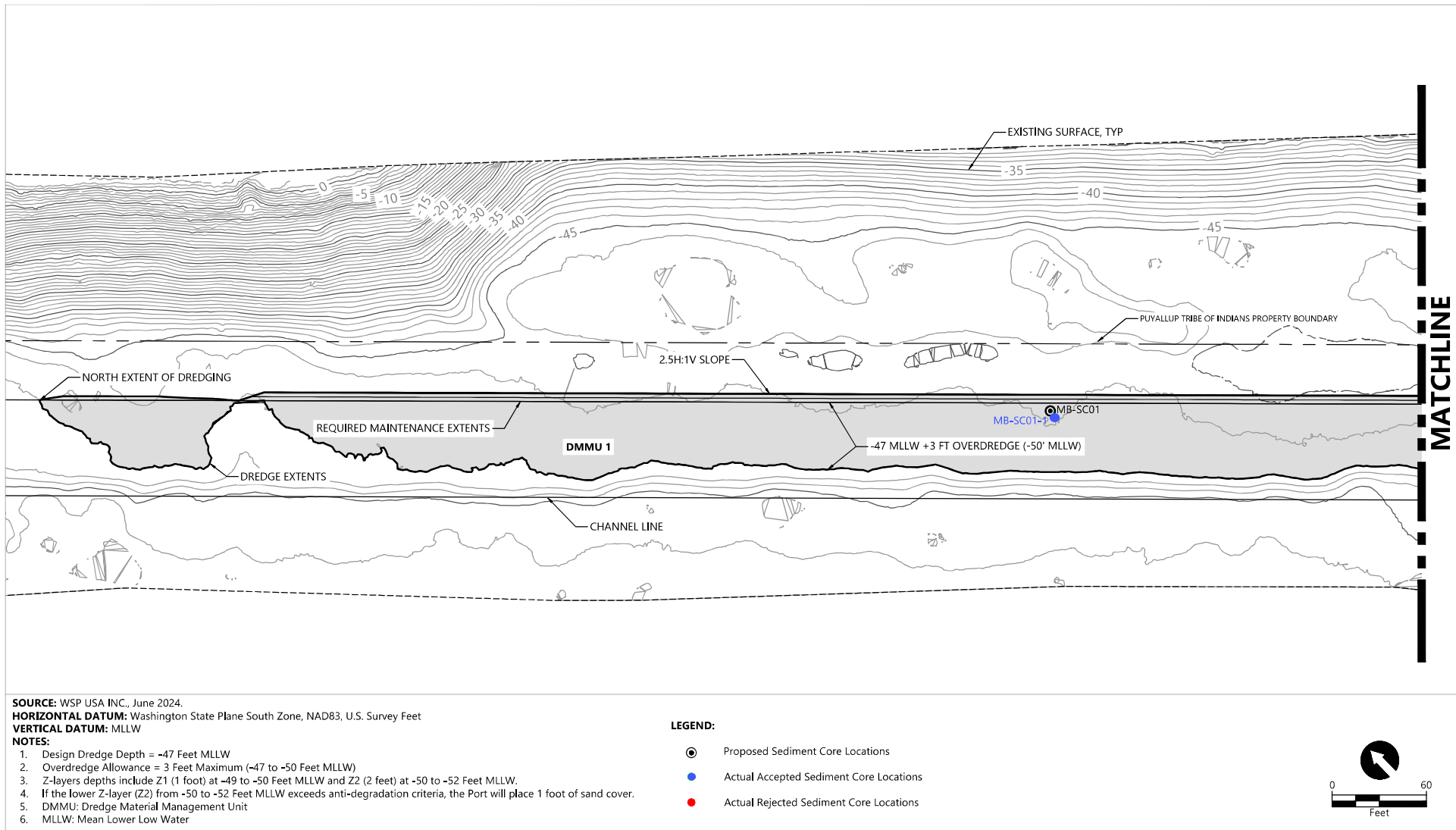


Publish Date: 2024/07/12 9:00 AM | User: tgriga
 Filepath: K:\Projects\0092 - Port of Tacoma\Middle Blair Waterway Initial Safety Improvements SAP\0092-RP-001 (Vicinity Map).dwg Figure 1



Figure 1
Project Site and Vicinity

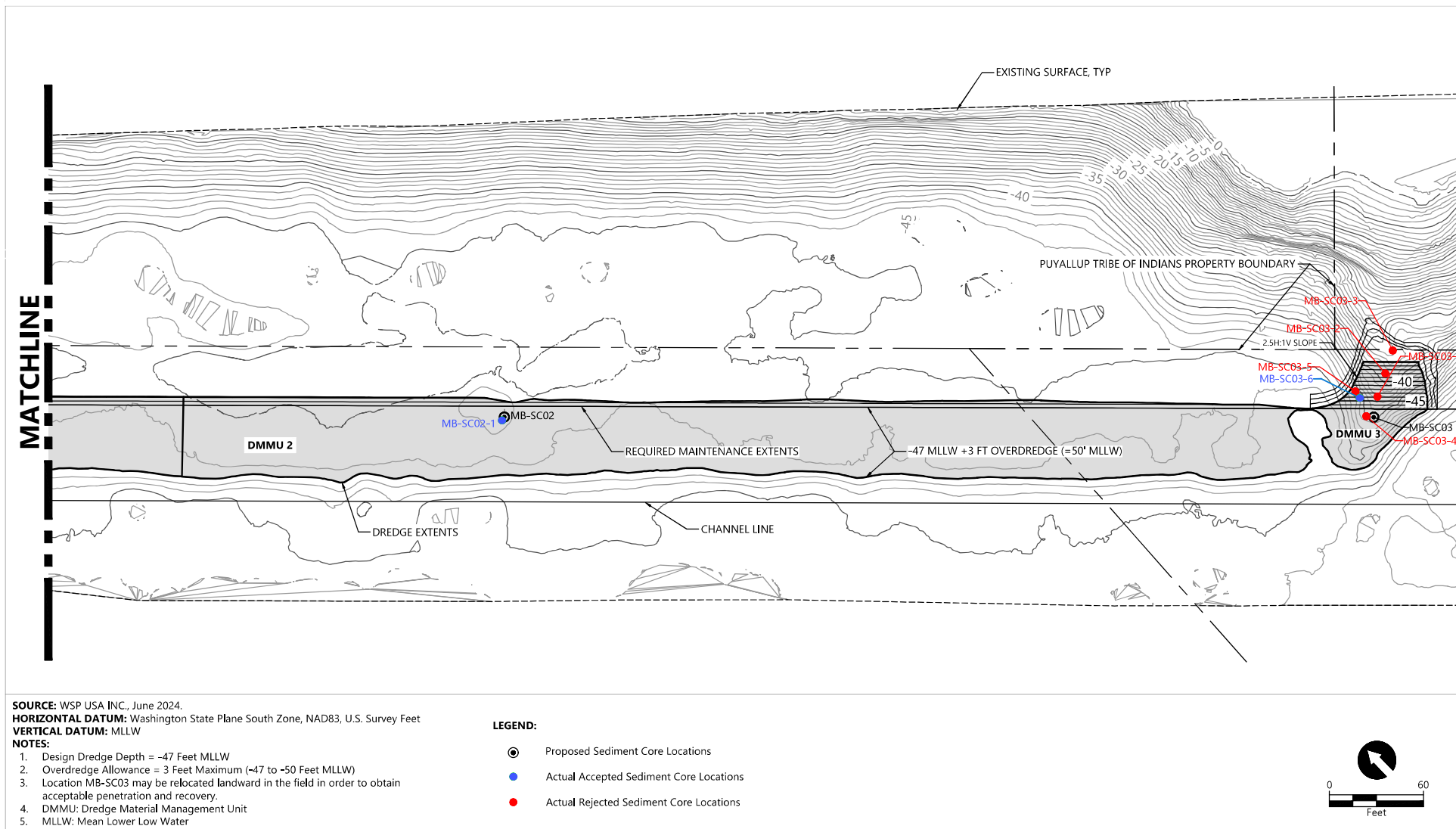
Sediment Characterization Report
 Middle Blair Waterway Navigation Safety Improvement Project



Publish Date: 2024/08/21 9:35 AM | User: tgriga
 Filepath: K:\Projects\0092 - Port of Tacoma\Middle Blair Waterway Initial Safety Improvements SAP\0092-RP-004 Sampling Actuals.dwg Figure 1a

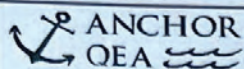


Figure 2a
Proposed and Actual Sampling Locations: Northern Bench
 Sediment Characterization Report
 Middle Blair Waterway Navigation Safety Improvement Project



Appendix A

Field Forms and Core Photographs



Sediment Core Collection Log

Page 1 of 1Job: Blair Waterway Deepening ProgramStation ID: MB-SC01Job No: 240092-03.04.05^{AR}Attempt No. 1Field Staff: AR, NB, CW, SNDate: 8/13/24Contractor: GravityLogged By: Arno RiosVertical Datum: MLLWHorizontal Datum: NAD83 WA State Plane North, feet

Field Collection Coordinates:

Lat/Northing: 710034.91Long/Easting: 1171118.98

A. Water Depth

DTM Depth Sounder: _____

DTM Lead Line: 52.0

B. Water Level Measurements

Time: 9:54Height: 5.97' MLLWSource: 1446484

NEAA Gauge # _____

C. Mudline Elevation

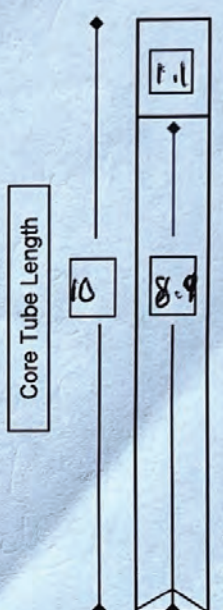
-46.03' MLLW

Recovery Measurements (prior to cuts)

Core Collection Recovery Details:

Core Accepted: Yes / NoCore Tube Length: 10' feetDrive Penetration: 9' feetHeadspace Measurement: 1.1' feetRecovery Measurement: 8.9' feetRecovery Percentage: 98%Total Length of Core To Process: 8.9' feet

Drive Notes:

Easy Drive to 9'.

Sections To Process:

A: 0-8.9

B: _____

C: _____

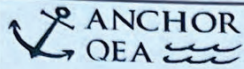
D: _____

Core Field Observations and Description:

Sediment type, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biota

Notes:

AR



Sediment Core Collection Log

Page 1 of 1

Job: Blair Waterway Deepening
Job No: 240092-03.04-05 AR
Field Staff: AR, NB, CW, SN
Contractor: Gravity
Vertical Datum: MLLW

Station ID: MB-S(03)
Attempt No. 1
Date: 8/13/24
Logged By: Arno Riolo
Horizontal Datum: NAD83 WA State Plane North, feet

Field Collection Coordinates:

Lat/Northing: ~~1171908.42~~ 709293.34

Long/Easting: ~~709293.34~~ 1171908.42

A. Water Depth

DTM Depth Sounder:

DTM Lead Line: 46.9' Feet

B. Water Level Measurements

Time: AR Not recorded

Height: Not recorded

Source: MLLW

C. Mudline Elevation AR

not recorded

Core Collection Recovery Details:

Core Accepted: Yes / No

Core Tube Length:

Drive Penetration:

Headspace Measurement: AR

Recovery Measurement:

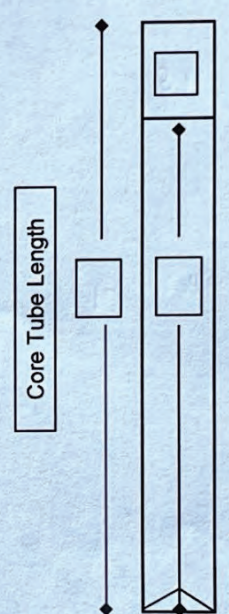
Recovery Percentage:

Total Length of Core To Process:

Drive Notes:

Shallow refusal, core tube damaged

Recovery Measurements (prior to cuts)



Sections To Process:

A:

B: AR

C:

D:

Core Field Observations and Description:

Sediment type, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biota

Notes:

No material recovered, core rejected.



Sediment Core Collection Log

Page 1 of 1

Job: Blair Waterway Deepening
Job No: 240092-03, 04, 05 AR
Field Staff: AR, NB, CW, SN
Contractor: Gravity
Vertical Datum: MLLW

Station ID: MB-JC03
Attempt No. 2
Date: 8/13/24
Logged By: Arna Riolo
Horizontal Datum: NAD83 WA State Plane North, feet

Field Collection Coordinates:

Lat/Northing: 709300.50

Long/Easting: W7922.28

A. Water Depth

DTM Depth Sounder: _____

DTM Lead Line: 44.1

B. Water Level Measurements

Time: 2:24^{AR} 1424

Height: 9.31' Feet

Source: MLLW

C. Mudline Elevation

-34.8

Recovery Measurements (prior to cuts)

Core Collection Recovery Details:

Core Accepted: Yes / No

Core Tube Length: _____

Drive Penetration: _____

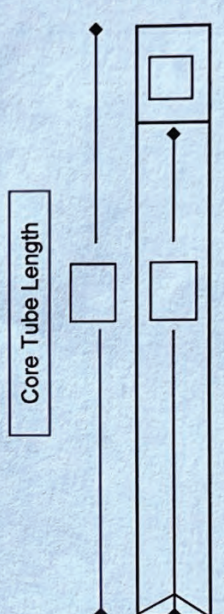
Headspace Measurement: AR

Recovery Measurement: _____

Recovery Percentage: _____

Total Length of Core To Process: _____

Drive Notes: Shallow refusal, NO recovery



Sections To Process:

A: _____

B: AR

C: _____

D: _____

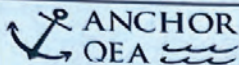
Core Field Observations and Description:

Sediment type, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biota

AR

Notes:

Core rejected.



Sediment Core Collection Log

Page 1 of 1

Job: Blair Waterway Deepening
Job No: 240092-03.0485
Field Staff: AR, NB, CW, SW
Contractor: Gravity
Vertical Datum: MLW

Station ID: MB-SC03
Attempt No. 3
Date: 8/13/24
Logged By: Arno R. Jolo
Horizontal Datum: NAD83 WA State Plane North, feet

Field Collection Coordinates:

Lat/Northing: 709307.74Long/Easting: 1171935.89

A. Water Depth

DTM Depth Sounder: _____

DTM Lead Line: 40.9

B. Water Level Measurements

Time: 1436Height: 9.29Source: MLW

C. Mudline Elevation

~ 31.6

Core Collection Recovery Details:

Core Accepted: Yes / NOCore Tube Length: 20' Feet

Drive Penetration: _____

Headspace Measurement: _____

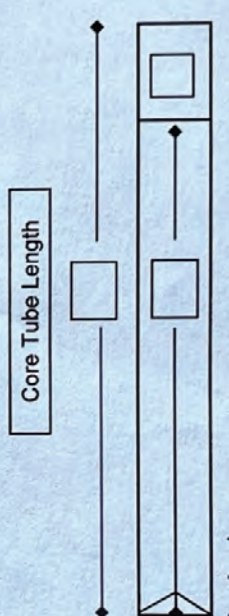
Recovery Measurement: _____

Recovery Percentage: _____

Total Length of Core To Process: _____

Drive Notes: shallow refusal, no recovery

Recovery Measurements (prior to cuts)



Sections To Process:

A: _____

B: AR

C: _____

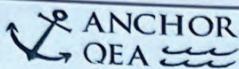
D: _____

Core Field Observations and Description:

Sediment type, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biota

Notes:

Core Rejected



Sediment Core Collection Log

Page 1 of 1

Job: Blair Waterway Deepening
Job No: 240092-03, 0405 AR
Field Staff: AR, NB, CW, SN
Contractor: Gravity
Vertical Datum: MLLW

Station ID: MB-SC03
Attempt No. 4
Date: 8/13/24
Logged By: Arno Rielo
Horizontal Datum: NAD83 WA State Plane North, feet

Field Collection Coordinates:

Lat/Northing: 709289.26

Long/Easting: 1171894.60

A. Water Depth

DTM Depth Sounder:

DTM Lead Line: 52.0 feet

B. Water Level Measurements

Time: 15:15

Height: 9.23 feet

Source: MLW

C. Mudline Elevation

-42.8

Core Collection Recovery Details:

Core Accepted: Yes / No

Core Tube Length:

Drive Penetration:

Headspace Measurement:

Recovery Measurement:

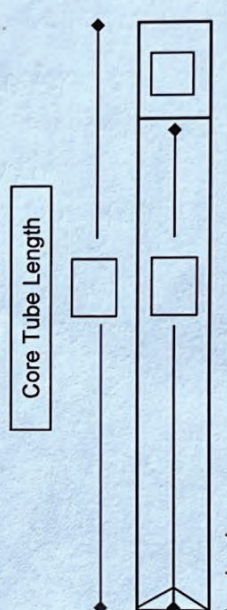
Recovery Percentage:

Total Length of Core To Process:

Drive Notes:

Shallow refusal, No recovery

Recovery Measurements (prior to cuts)



Sections To Process:

A:

B: AR

C:

D:

Core Field Observations and Description:

Sediment type, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biota

Notes:

Core rejected



Sediment Core Collection Log

Page 1 of 1

Job: Blair Waterway Deepening
Job No: 240092-03.05 AR
Field Staff: AR, NB, CW, SN
Contractor: Gravity
Vertical Datum: MLLW

Station ID: MB-SC03
Attempt No. 5
Date: 8/13/24
Logged By: Arno Riolo
Horizontal Datum: NAD83 WA State Plane North, feet

Field Collection Coordinates:

Lat/Northing: 709305.46Long/Easting: 1171900.57

A. Water Depth

DTM Depth Sounder: _____

DTM Lead Line: 51.2

B. Water Level Measurements

Time: 1512Height: 9.14Source: MLLW

C. Mudline Elevation

-42.1

Recovery Measurements (prior to cuts)

Core Collection Recovery Details:

Core Accepted: Yes / No

Core Tube Length: _____

Drive Penetration: _____

Headspace Measurement: _____

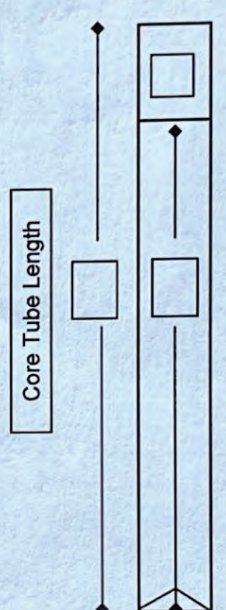
Recovery Measurement: _____

Recovery Percentage: _____

Total Length of Core To Process: _____

Drive Notes:

Moderate drive to 7' feet, Hard drive to 12' feet
Refusal at 12' feet,



Sections To Process:

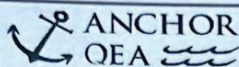
A: _____
B: AR
C: _____
D: _____

Core Field Observations and Description:

Sediment type, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biota

Notes:

all Material Slipped out of core as it was Being recovered,
Core Rejected.



Sediment Core Collection Log

Page 1 of 1

Job: Blair Waterway Deepening
Job No: 240092-03, #105 AR
Field Staff: ARND, CW, SN
Contractor: Gravity
Vertical Datum: MLLW

Station ID: MB-SC03
Attempt No. 6
Date: 8/13/24
Logged By: Arne Risto
Horizontal Datum: NAD83 WA State Plane North, feet

Field Collection Coordinates:

Lat/Northing: 709300.58

Long/Easting: 1171899.67

A. Water Depth

DTM Depth Sounder:

DTM Lead Line: 51.3

B. Water Level Measurements

Time: 1542

Height: 8.97

Source: MLLC

C. Mudline Elevation

-42.3

Core Collection Recovery Details:

Core Accepted: ☒ Yes / No

Core Tube Length: 20' Feet

Drive Penetration: 13' Feet

Headspace Measurement: 10.2 AR 9.5' Feet

Recovery Measurement: 10.5' Feet

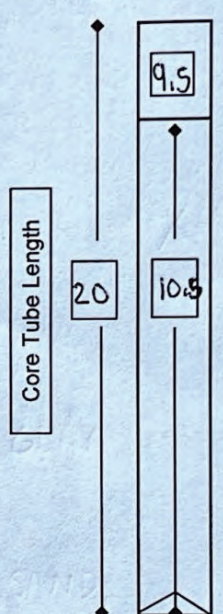
Recovery Percentage: 60%

Total Length of Core To Process: 10.5

Drive Notes:

Hard to 6' Feet, Really hard but pushed through. Refusal at 13' Feet

Recovery Measurements (prior to cuts)



Sections To Process:

A: 0 - 10.5

B:

C:

D:

Core Field Observations and Description:

Sediment type, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biota

AR

Notes:

Daily Safety Briefing Form



Date:

8/13/24

Project No:

240692-03.015

Project Name:

Blairwaterway Deepening
Middle Blair

Submit a
Playing It
Safe Event

Person Conducting

Meeting:

Sasha Norman

Health & Safety

Officer:

Tim Strayer

Project

Manager:

Christine Simmons

TOPICS COVERED: Highlighted topics are required

- | | | |
|---|--|--|
| ☒ Emergency Procedures and Evacuation Route | ☐ Lines of Authority | ☐ Lifting Techniques |
| ☒ Directions to Hospital | ☒ Communication | ☒ Slips, Trips, and Falls |
| ☒ HASP Review and Location | ☐ Site Security | ☐ Hazard Exposure Routes |
| ☒ Safety Equipment Location | ☐ Vessel Safety Protocols | ☒ Heat and Cold Stress |
| ☐ Proper Safety Equipment Use | ☒ Work Zones | ☒ Overhead and Underfoot Hazards |
| ☐ Employee Right-to-Know/ SDS Location | ☐ Vehicle Safety and Driving/ Road Conditions | ☐ Chemical Hazards |
| ☒ Fire Extinguisher Location | ☐ Equipment Safety and Operation | ☐ Flammable Hazards |
| ☒ Eye Wash Station Location | ☒ Proper Use of PPE | ☐ Biological Hazards |
| ☐ Buddy System | ☐ Decontamination Procedures | ☐ Eating/Drinking/Smoking |
| ☐ Self and Coworker Monitoring | ☐ Near Miss Reporting Procedures | ☐ Reviewed Prior Lessons Learned |
| ☐ Field Team Medical Conditions for Emergency Purposes (Confidential): | | |

☐ Other:

Weather Conditions: cloudy, 61°F

Daily Work Scope: Sediment
Coring

Site-specific Hazards: Slips/Trips/Falls
On boat
pinch boat points
5/13 Aug 24

Safety Comments:

Attendees

Printed Name

Signature

Sasha Norman	[Signature]
Christine Woodward	[Signature]
Arne Riolo	Arne Riolo
Kyle Sanders	[Signature]
Nik Bacher	[Signature]
René Trier	[Signature]

End of Day Wellness Check

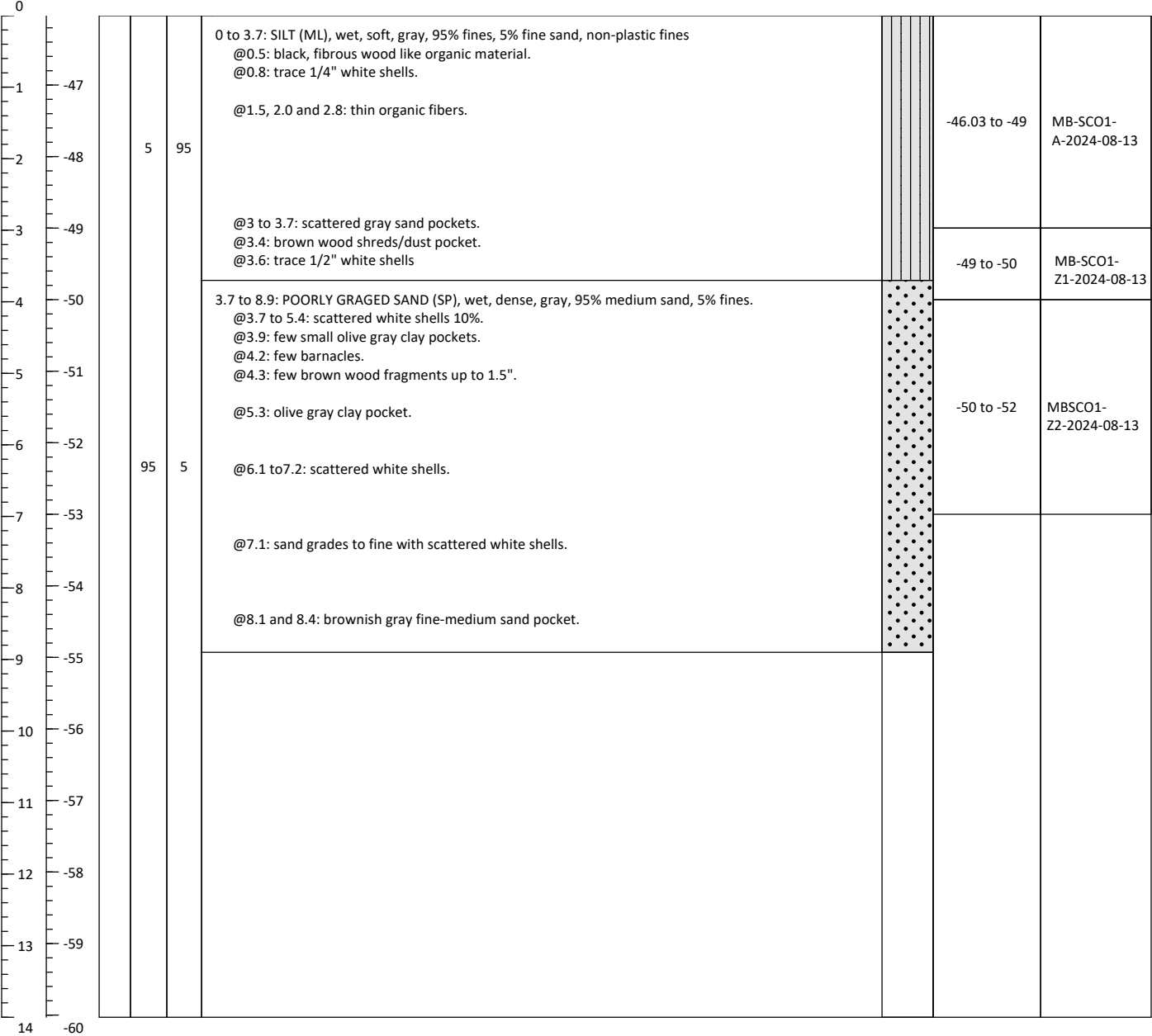
Sediment Core Log

MB-SCO1

Sheet 1 of 1

Project: Blair Waterway Deepening Program	Logged By: Arno Riolo	Latitude: 710034.91 WSP South NAD83 ft
Project #: 240092-03.05	Method/Core Diameter: Vibracore / 4 inches	Longitude: 1171118,98 WSP South NAD83 ft
Client: Port of Tacoma	Drive Length (feet): 9	Mudline Elevation (ft): -46.03
Location: Tacoma, Washington	Recovery Length (feet): 8.9	Vertical Datum: MLLW
Contractor: Gravity	Percent Recovery (%): 98%	Core Collection Date/Time: 3/13/2024 09:45

In-situ Depth (feet)	Elevation (feet MLLW)	% Gravel	% Sand	% Fines	Sediment Description (Density, Moisture, Color, Minor Constituent, MAJOR Constituent, with Additional Constituents, Sheen, Odor)	Lithology	Sample Depth (feet)	Sample ID
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Sediment Core Log
MB-SCO2

Sheet 1 of 1

Project: Blair Waterway Deepening Program	Logged By: Arno Riolo	Latitude: 709670.15 WSP South NAD83 ft
Project #: 240092-03.05	Method/Core Diameter: Vibracore / 4 inches	Longitude: 1171495.34 WSP South NAD83 ft
Client: Port of Tacoma	Drive Length (feet): 8	Mudline Elevation (ft): -46.63
Location: Tacoma, Washington	Recovery Length (feet): 6.6	Vertical Datum: MLLW
Contractor: Gravity	Percent Recovery (%): 82.5	Core Collection Date/Time: 8/13/2024 12:06

In-situ Depth (feet)	Elevation (feet MLLW)	% Gravel	% Sand	% Fines	Sediment Description (Density, Moisture, Color, Minor Constituent, MAJOR Constituent, with Additional Constituents, Sheen, Odor)	Lithology	Sample Depth (feet)	Sample ID
----------------------	-----------------------	----------	--------	---------	---	-----------	---------------------	-----------

0					0 to 3.3: SILT (ML), soft, wet, gray, 95% fines, 5% fine sand, nonplastic. @0.2: brown fibrous organics.			
-47								
-1								
-48								
2		5	95		@2.2: black fibrous organics. @2.3: black/bark like organics. @2.4: Fine Sand pocket.		-46.63 to -49	MB-SCO2-A-2024-08-13
-49								
3							-49 to -50	MB-SCO2-Z1-2024-08-13
-50								
4					3.3 to 6.6: POORLY GRADED SAND (SP), wet, medium dense, gray, 95% sand, 5% fines. Multi color grains throughout (red, gray, white). @3.5: gray clay pocket. @3.7 to 3.9: scattered shell fragments. @4.3: wood bark like organics. @4.5 to 5.3: scattered shell fragments.			
-51								
5		95	5				-50 to -52	MB-SCO2-Z2-2024-08-13
-52								
6					@6.3: silt pocket			
-53								
7								
-54								
8								
-55								
9								
-56								
10								
-57								
11								
-58								
12								
-59								
13								
-60								
14								

Notes:

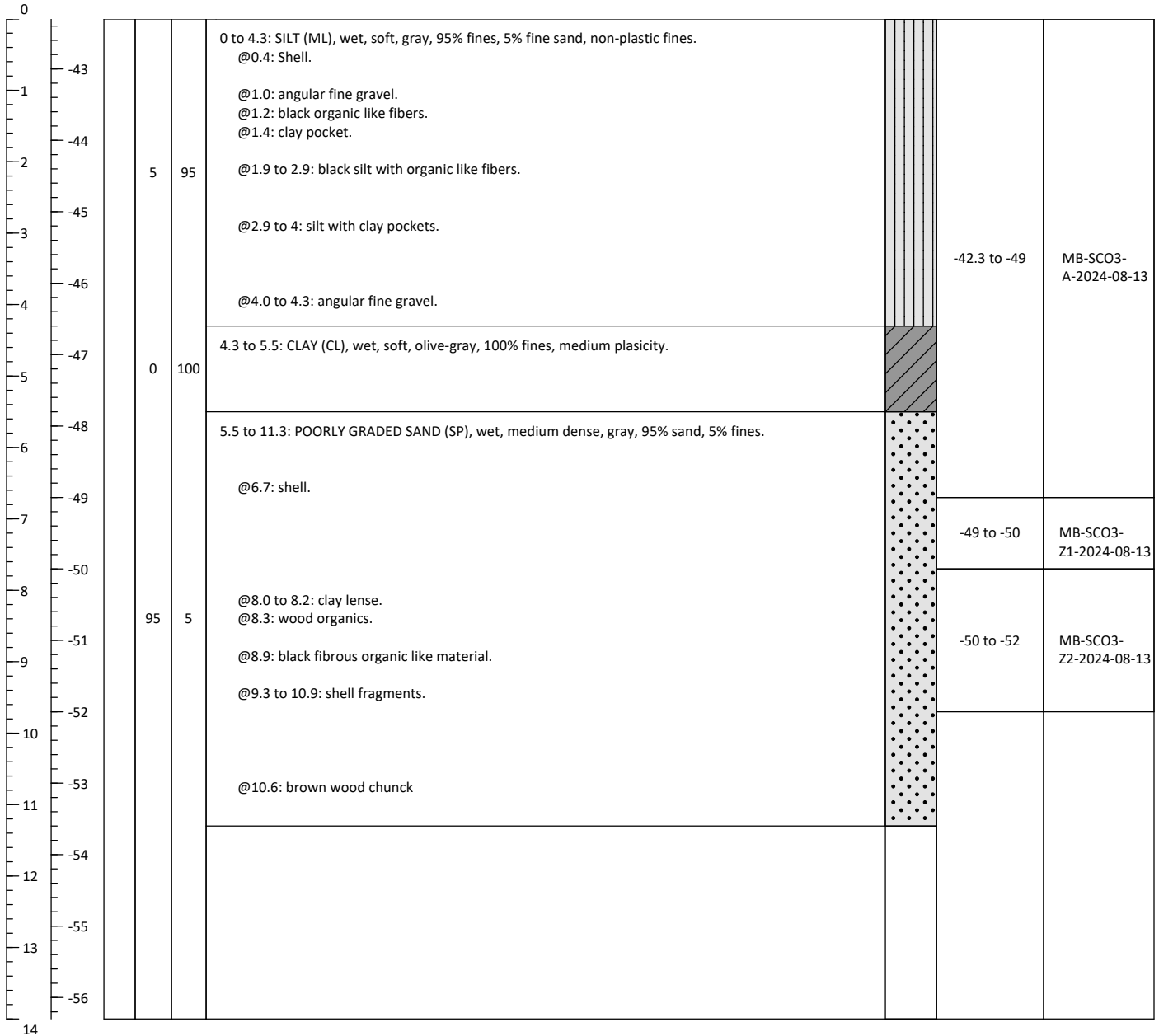
Sediment Core Log

MB-SCO3

Sheet 1 of 1

Project: Blair Waterway Deepening Program	Logged By: Arno Riolo	Latitude: 709300.58 WSP South NAD83 ft
Project #: 240092-03.05	Method/Core Diameter: Vibracore / 4 inches	Longitude: 1171899.67 WSP South NAD83 ft
Client: Port of Tacoma	Drive Length (feet): 13	Mudline Elevation (ft): -42.3
Location: Tacoma, Washington	Recovery Length (feet): 11.3	Vertical Datum: MLLW
Contractor: Gravity	Percent Recovery (%): 86	Core Collection Date/Time: 8/13/2024 15:42

In-situ Depth (feet)	Elevation (feet MLLW)	% Gravel	% Sand	% Fines	Sediment Description (Density, Moisture, Color, Minor Constituent, MAJOR Constituent, with Additional Constituents, Sheen, Odor)	Lithology	Sample Depth (feet)	Sample ID
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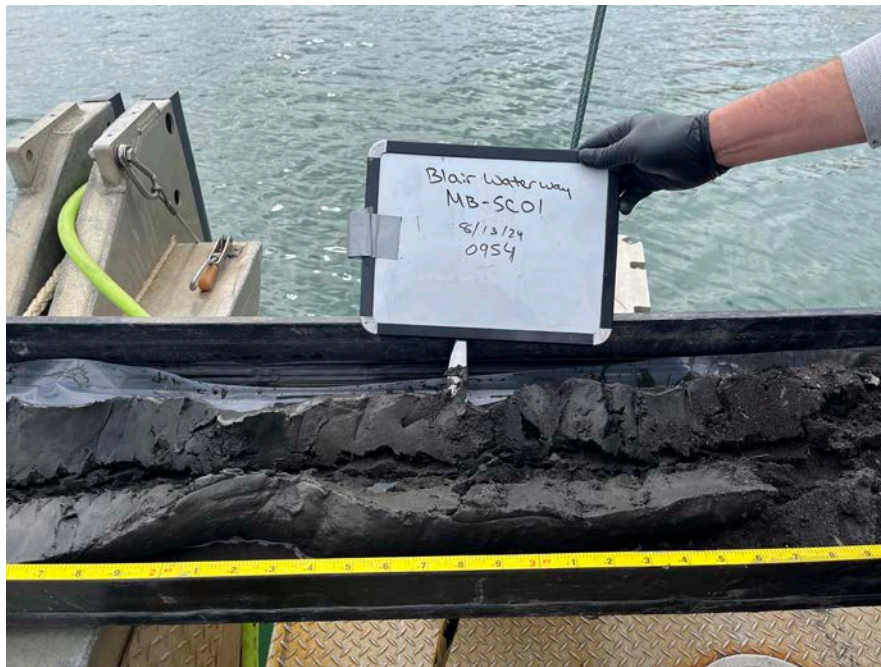
Photograph 1
MB-SC01 0 to 1.8 feet



Photograph 2
MB-SC01 0.6 to 2.7 feet



Photograph 3
MB-SC01 1.7 to 3.9 feet



Photograph 4
MB-SC01 3.1 to 5.2 feet



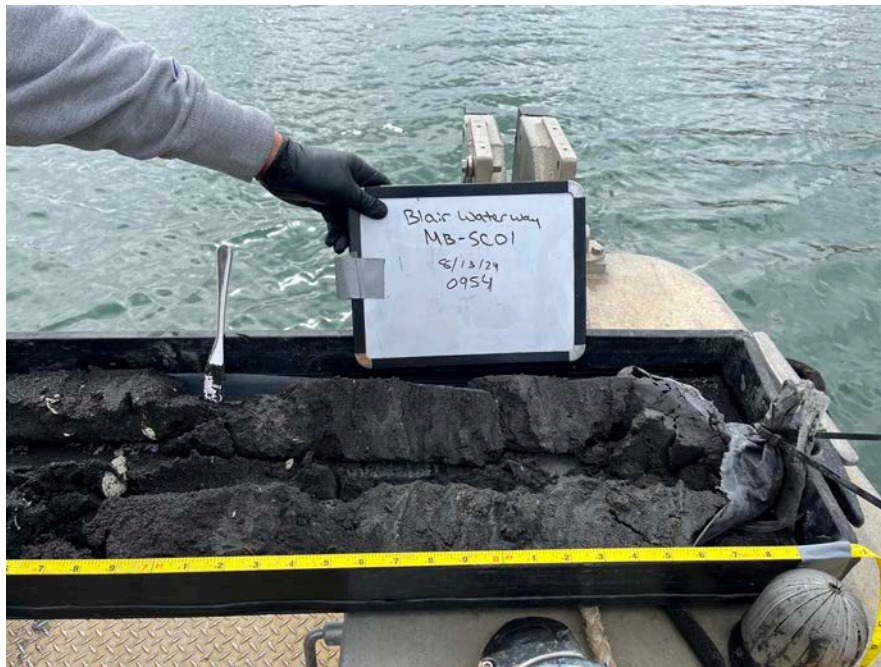
Photograph 5
MB-SC01 4.5 to 6.7 feet



Photograph 6
MB-SC01 5.6 to 8.1 feet



Photograph 7
MB-SC01 6.6 to 8.9 feet



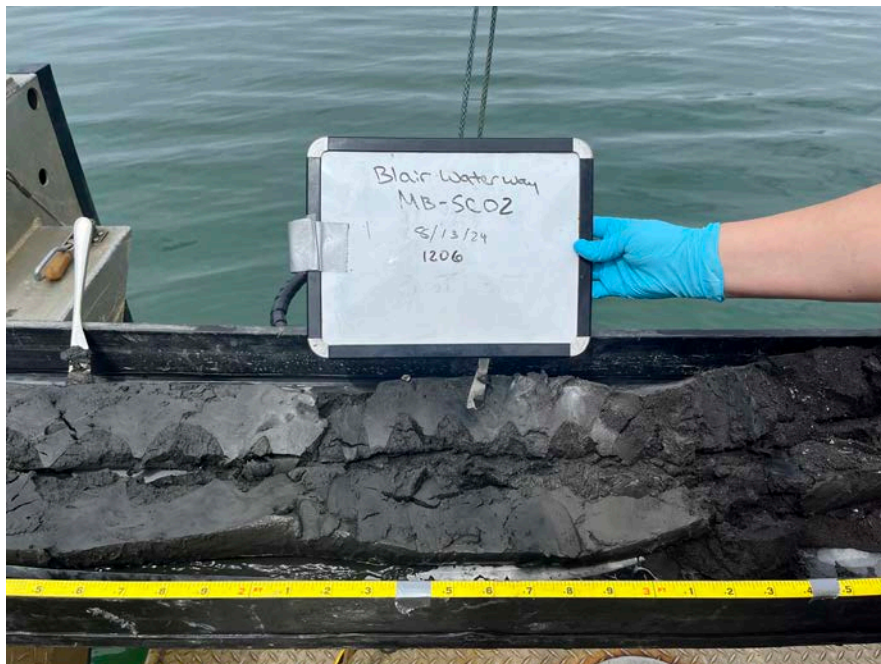
Photograph 8
MB-SC02 0 to 2.1 feet



Photograph 9
MB-SC02 0.5 to 2.8 feet



Photograph 10
MB-SC02 1.5 to 3.6 feet



Photograph 11
MB-SC02 2.5 to 4.5 feet



Photograph 12
MB-SC02 3.4 to 5.4 feet



Photograph 13
MB-SC02 4.5 to 6.6 feet



Photograph 14
MB-SC03 0 to 2.1 feet



Photograph 15
MB-SC03 1.3 to 3.6 feet



Photograph 16
MB-SC03 3.1 to 5.6 feet



Photograph 17
MB-SC03 4.7 to 7.3 feet



Photograph 18
MB-SC03 6.4 to 9.4 feet



Photograph 19
MB-SC03 7.9 to 11 feet



Photograph 20
MB-SC03 9.2 to 11.3 feet



Appendix B

Laboratory Analytical Report

File provided as separate attachment

Appendix C

Data Validation Report

Data Validation Report – EPA Stage 2B

October 31, 2024

Project: Middle Blair Navigation Safety Improvement Project
Project Number: 201037-01.01
AQ DVR Number AQ-2024-0146

This report summarizes the review of analytical results for nine sediment samples collected August 13, 2024. The samples were collected by Anchor QEA and submitted to Analytical Resources, LLC (ARL) in Tukwila, Washington. Select samples were analyzed for grain size by AmTest Laboratories in Kirkland, Washington, and Atterberg limits were analyzed by Materials Testing and Consulting, Inc., in Burlington, Washington. The following analytical parameter results were reviewed in this report:

- Semivolatile organic compounds (SVOCs) by U.S. Environmental Protection Agency (USEPA) Methods 8270E and 8270E – select ion monitoring (SIM)
- Polychlorinated biphenyl Aroclors (PCBs) by USEPA Method 8082A
- Chlorinated pesticides by USEPA Method 8081B
- Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (D/F) by USEPA Method 1613B
- Tributyltin (TBT) by USEPA Method 8270E – SIM
- Metals by USEPA Methods 6020B and 7471B
- Total organic carbon (TOC) by USEPA Method 9060A modified
- Total solids (TS) by Standard Method 2540G
- Grain size (GS) by ASTM International (ASTM) Method D2216
- Atterberg limits (AL) by ASTM Method D4318

ARL sample delivery group number (SDG) 24H0273 was reviewed in this report. Sample IDs, matrices, and analyses are presented in Table 1.

Table 1
Sample IDs, Matrices, and Analyses

Sample ID	Lab Sample ID	Matrix	Analyses
MB-SC01-A-2024-08-13	24H0273-01	Sediment	SVOCs, PCBs, pesticides, D/F, TBT, metals, TOC, TS, GS, AL
MB-SC01-Z1-2024-08-13	24H0273-02	Sediment	SVOCs, PCBs, pesticides, D/F, TBT, metals, TOC, TS
MB-SC01-Z2-2024-08-13	24H0273-03	Sediment	SVOCs, PCBs, pesticides, D/F, TBT, metals, TOC, TS
MB-SC02-A-2024-08-13	24H0273-04	Sediment	SVOCs, PCBs, pesticides, D/F, TBT, metals, TOC, TS, GS, AL
MB-SC02-Z1-2024-08-13	24H0273-05	Sediment	SVOCs, PCBs, pesticides, D/F, TBT, metals, TOC, TS
MB-SC02-Z2-2024-08-13	24H0273-06	Sediment	SVOCs, PCBs, pesticides, D/F, TBT, metals, TOC, TS
MB-SC03-A-2024-08-13	24H0273-07	Sediment	SVOCs, PCBs, pesticides, D/F, TBT, metals, TOC, TS, GS, AL

Sample ID	Lab Sample ID	Matrix	Analyses
MB-SC03-Z1-2024-08-13	24H0273-08	Sediment	SVOCs, PCBs, pesticides, D/F, TBT, metals, TOC, TS
MB-SC03-Z2-2024-08-13	24H0273-09	Sediment	SVOCs, PCBs, pesticides, D/F, TBT, metals, TOC, TS

Data Validation and Qualifications

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

- Middle Blair Navigation Safety Improvement Project *Sampling and Quality Assurance Project Plan* (Anchor QEA 2024)
- *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW-846)* (USEPA 1986)
- *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA 2020a)
- *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2020b)
- *National Functional Guidelines for High-Resolution Superfund Methods Data Review* (USEPA 2020c)

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

Field Documentation

Field documentation was checked for completeness and accuracy. The chain-of-custody form was signed by ARL at the time of sample receipt. The samples were received in good condition and within the recommended temperature range.

Sample Preservation and Holding Times

Samples were appropriately preserved and analyzed within holding times.

Laboratory Method Blanks and Calibration Blanks

Laboratory method blanks and calibration blanks were analyzed at the required frequencies. Blanks were free of target analytes with the following exceptions:

- **SVOC Batch BMH0520:** Diethyl phthalate was detected in the method blank at a level between the method detection limit (MDL) and the method reporting limit (MRL). Associated sample results were not greater than ten times the method blank concentration, as required for common laboratory contaminants, and results have been qualified as non-detects.
- **D/F:** OCDD was detected in method blank BMI0060-BLK1. Associated sample results were greater than five times the concentration detected in the blank, so no data were qualified.

- **Metals:** Mercury was detected in the method blank and the initial and continuing calibration blanks at levels between the MDL and the MRL. Associated sample results that were less than five times the concentration detected in the blank have been qualified as non-detects.
- **Conventionals:** TOC was detected between the MDL and MRL in the initial and continuing calibration blanks analyzed in association with this sample set. Results were greater than five times the concentrations detected in the blanks, except for sample MB-SC01-Z2-2024-08-13. This sample result has been qualified as a non-detect.

Field Quality Control

No field quality control samples were collected with this sample set.

Instrument Performance Checks

Instrument performance checks were analyzed at required frequencies. Ion abundance criteria were met for the SVOC analyses. Peak resolution was within ± 0.1 atomic mass units, and the percent relative standard deviation was less than 5% for metals analyses.

Initial Calibrations and Calibration Verifications

All initial calibrations, initial calibration verifications (ICVs), and continuing calibration verifications (CCVs) met method criteria with the following exceptions:

- **SVOCs:**
 - **SMH0270-ICV1:** The percent difference/drift (%D) values for acenaphthylene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene were below the control limit. Associated sample results have been qualified "J" or "UJ" to indicate a potentially low bias.
 - **SMH0113-SCV1:** Benzoic acid, 2,4-dimethylphenol, 1,2,4-trichlorobenzene, and pentachlorophenol %D values were below the control limit. Associated sample results have been qualified "J" or "UJ" to indicate a potentially low bias.
 - **SMH0271-ICV2:** The dibenzo(a,h)anthracene %D value was above the control limit. Associated detected sample results have been qualified "J" to indicate a potentially high bias.
 - **SMH0394-ICV1 and SMH0394-ICV2:** Pentachlorophenol %D values were below the control limit. No reported results were associated with these CCVs, so no data were qualified.
- **PCB SMH0333-ICV2 and SMH0333-CCV4:** The average %D values for Aroclor 1260 were below the control limit. Associated sample results have been qualified "J" or "UJ" to indicate a potentially low bias.

Internal Standard Area Counts and Surrogate Recoveries

Internal standards and surrogates were added to all samples, calibration standards, and quality control analyses as required. Internal standard area counts and surrogate recoveries were within method-required or laboratory control limits.

Interference Check Sample

An interference check sample was analyzed at the required frequency, and results were within method criteria.

Laboratory Control Samples and Laboratory Control Sample Duplicates

Laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) were analyzed at the required frequency and resulted in recoveries and/or relative percent difference (RPD) values within project-required control limits except for acenaphthylene and benzo(g,h,i)perylene in LCS BMH0319-BS1 and 2,4-dimethylphenol in LCS BMH0319-BS2. All three compounds recovered below the control limit, and associated batch sample results have been qualified "J" or "UJ" to indicate a potentially low bias.

Standard Reference Material

A standard reference material sample was analyzed in association with the TOC analyses and recovered within control limits.

Matrix Spike and Matrix Spike Duplicate Samples

Matrix spike (MS) and matrix spike duplicate (MSD) samples were analyzed at the required frequency. No data were qualified when native sample concentrations were greater than four times the spike concentration. All MS/MSDs were analyzed on sample MB-SC01-A-2024-08-13. Recoveries and/or RPD values were within project-required control limits, with the following exceptions:

- **SVOCs:**
 - Benzo(g,h,i)perylene recovered below the control limit in the 8270E MS, and acenaphthylene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene recovered below the control limit in the MSD. Associated parent sample results have been qualified "UJ" to indicate a potentially low bias.
 - Benzoic acid and 2,4-dimethylphenol recovered below the control limit in the 8270E-SIM MS and MSD. Associated parent sample results have been qualified "J" or "UJ" to indicate a potentially low bias.
- **Tributyltin:** The MSD recovered above the control limit, and the MS/MSD RPD was also above the control limit. The parent sample result has been qualified "J" to indicate it is estimated with a potentially high bias.

- **Pesticides:** Trans-Chlordane recovered above the control limit in the MSD, and the MS/MSD RPD values were above the control limit for this analyte and for aldrin. Associated parent sample results were below detection, so no data were qualified.
- **PCBs:** The Aroclor 1260 MS/MSD RPD value was above the control limit. Associated parent sample detected sample results have been qualified "J" to indicate they are estimated.
- **Metals:** Antimony recovered below 10% in the MS. Since the post-spike sample recovery was within control limits, associated batch sample results have been qualified "UJ" to indicate a potentially low bias.

Laboratory Replicates

Laboratory duplicates and triplicates were analyzed at the required frequency except for grain size. Duplicate results that were less than five times MRLs were assessed by the difference between them instead of RPD values and evaluated using a control limit of $\pm$ twice the MRL. Triplicates were evaluated by relative standard deviation values. Laboratory duplicate RPD or difference values were within control limits except for total PeCDF, PeCDD, HxCDD, TCDF, and TCDD in the parent sample and duplicate analyses of sample MB-SC01-A-2024-08-13. RPD or difference values were above control limits, and associated parent sample results have been qualified "J" to indicate they are estimated. Relative standard deviation values met project-required control limits.

Second Column Confirmations

Second column confirmations were analyzed as required for pesticides and PCB analyses. RPD values were less than 40% except for eleven Aroclor results reported in five samples. Associated results have been qualified "J" to indicate they are estimated.

Estimated Maximum Potential Concentration

Results qualified as estimated maximum potential concentration (EMPC) by the laboratory due to ion abundance ratios outside of method-required criteria have been qualified "J" as estimated.

Serial Dilutions

No serial dilutions were reported for this sample set.

Method Reporting Limits

Reporting limits were acceptable as reported. All values were reported using the laboratory reporting limits. Values were reported as undiluted, or when diluted, the reporting limit reflects the dilution factor. All sample results were above reporting limits.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical methods, and all requested sample analyses were completed. Accuracy was acceptable as demonstrated by the calibration, internal standard, surrogate, LCS/LCSD, and MS/MSD recovery values. Precision was acceptable as demonstrated by the LCS/LCSD, MS/MSD, and laboratory duplicate RPD or difference values. All data are acceptable as reported or as qualified. Table 2 summarizes the qualifiers applied to the sample results reviewed in this report.

Data Qualifier Definitions

- U Indicates the compound or analyte was analyzed for but not detected at or above the specified limit
- J Indicates an estimated value
- UJ Indicates the compound or analyte was analyzed for but not detected and that the specified limit reported is estimated

Table 2
Data Qualification Summary

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
MB-SC01-A-2024-08-13	D/F	1,2,3,7,8-PeCDD	1.92 ng/kg	1.92J ng/kg	EMPC
		2,3,4,6,7,8-HxCDF	1.59 ng/kg	1.59J ng/kg	
		2,3,7,8-TCDF	2.65 ng/kg	2.65J ng/kg	
		Total PeCDF	10.9 ng/kg	10.9J ng/kg	LD difference above CL
		Total TCDD	10.6 ng/kg	10.6J ng/kg	
		Total TCDF	5.54 ng/kg	5.54J ng/kg	
		Total HxCDD	32.2 ng/kg	32.2J ng/kg	LD RPD above CL
		Total PeCDD	4.58 ng/kg	4.58J ng/kg	
	Metals	Antimony	0.28U mg/kg	0.28UJ mg/kg	MS %R below CL
	PCBs	Aroclor 1260	4.0U µg/kg	4.0UJ µg/kg	CCV %D below CL
		Aroclor 1248	6.1 µg/kg	6.1J µg/kg	MS/MSD RPD above CL
		Aroclor 1254	4.9 µg/kg	4.9J µg/kg	
	SVOCs	Dibenzo(a,h)anthracene	5.5 µg/kg	5.5J µg/kg	CCV %D above CL
		1,2,4-Trichlorobenzene	5.0U µg/kg	5.0UJ µg/kg	ICV %D below CL
		Pentachlorophenol	49.9U µg/kg	49.9UJ µg/kg	
		2,4-Dimethylphenol	20.0U µg/kg	20.0UJ µg/kg	LCS, MS/MSD %R below CL; ICV %D below CL
		Acenaphthylene	20.0U µg/kg	20.0UJ µg/kg	LCS, MS/MSD %R, CCV %D below CL

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
		Benzo(g,h,i)perylene	20.0U µg/kg	20.0UJ µg/kg	LCS, MSD %R, CCV %D below CL
		Diethyl phthalate	16.0J µg/kg	20.0U µg/kg	MB contamination
		Benzoic acid	51.4J µg/kg	51.4J µg/kg	MS/MSD %R, ICV %D below CL
		Indeno(1,2,3-c,d)pyrene	20.0U µg/kg	20.0UJ µg/kg	MSD %R, CCV %D below CL
		Tributyltin (ion)	4.40 µg/kg	4.40J µg/kg	MSD, MS/MSD RPD above CL
MB-SC01-Z1-2024-08-13	D/F	1,2,3,4,7,8-HxCDD	1.73 ng/kg	1.73J ng/kg	EMPC
		1,2,3,7,8,9-HxCDD	5.99 ng/kg	5.99J ng/kg	
		1,2,3,7,8-PeCDD	1.08 ng/kg	1.08J ng/kg	
		1,2,3,7,8-PeCDF	1.46 ng/kg	1.46J ng/kg	
		2,3,4,7,8-PeCDF	1.37 ng/kg	1.37J ng/kg	
	Metals	Mercury	0.0287J mg/kg	0.0301U mg/kg	MB contamination
		Antimony	0.26U mg/kg	0.26UJ mg/kg	MS %R below CL
	PCBs	Aroclor 1260	4.0U µg/kg	4.0UJ µg/kg	CCV %D below CL
		Aroclor 1248	9.9 µg/kg	9.9J µg/kg	Column confirmation RPD above CL
		Aroclor 1254	4.7 µg/kg	4.7J µg/kg	
	SVOCs	Indeno(1,2,3-c,d)pyrene	20.0U µg/kg	20.0UJ µg/kg	CCV %D below CL
		1,2,4-Trichlorobenzene	5.0U µg/kg	5.0UJ µg/kg	ICV %D below CL
		Benzoic acid	99.9U µg/kg	99.9UJ µg/kg	
		Pentachlorophenol	50.0U µg/kg	50.0UJ µg/kg	
		Acenaphthylene	20.0U µg/kg	20.0UJ µg/kg	LCS %R, CCV %D below CL
		Benzo(g,h,i)perylene	20.0U µg/kg	20.0UJ µg/kg	
		2,4-Dimethylphenol	20.0U µg/kg	20.0UJ µg/kg	LCS %R, ICV %D below CL
		Diethyl phthalate	20.8 µg/kg	20.8U µg/kg	MB contamination
MB-SC01-Z2-2024-08-13	Conventionals	Total organic carbon	0.09 pct	0.09U pct	CCB contamination
	D/F	1,2,3,4,6,7,8-HpCDD	2.66 ng/kg	2.66J ng/kg	EMPC
	Metals	Mercury	0.0171J mg/kg	0.0266U mg/kg	MB contamination
		Antimony	0.25U mg/kg	0.25UJ mg/kg	MS %R below CL
	PCBs	Aroclor 1260	4.0U µg/kg	4.0UJ µg/kg	CCV %D below CL
	SVOCs	Indeno(1,2,3-c,d)pyrene	19.9U µg/kg	19.9UJ µg/kg	
		1,2,4-Trichlorobenzene	5.0U µg/kg	5.0UJ µg/kg	ICV %D below CL
		Benzoic acid	99.7U µg/kg	99.7UJ µg/kg	
		Pentachlorophenol	49.8U µg/kg	49.8UJ µg/kg	

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
		Acenaphthylene	19.9U µg/kg	19.9UJ µg/kg	LCS %R, CCV %D below CL
		Benzo(g,h,i)perylene	19.9U µg/kg	19.9UJ µg/kg	
		2,4-Dimethylphenol	19.9U µg/kg	19.9UJ µg/kg	LCS %R, ICV %D below CL
		Diethyl phthalate	13.0J µg/kg	20.0U µg/kg	MB contamination
MB-SC02-A-2024-08-13	D/F	1,2,3,4,7,8,9-HpCDF	2.85 ng/kg	2.85J ng/kg	EMPC
		1,2,3,6,7,8-HxCDD	5.37 ng/kg	5.37J ng/kg	
		1,2,3,6,7,8-HxCDF	2.70 ng/kg	2.70J ng/kg	
		1,2,3,7,8,9-HxCDD	2.29 ng/kg	2.29J ng/kg	
		1,2,3,7,8-PeCDF	2.38 ng/kg	2.38J ng/kg	
		2,3,4,7,8-PeCDF	1.19 ng/kg	1.19J ng/kg	
	Metals	Antimony	0.28U mg/kg	0.28UJ mg/kg	MS %R below CL
	PCBs	Aroclor 1260	4.0U µg/kg	4.0UJ µg/kg	CCV %D below CL
		Aroclor 1248	5.5 µg/kg	5.5J µg/kg	Column confirmation RPD above CL
		Aroclor 1254	6.4 µg/kg	6.4J µg/kg	
	SVOCs	Dibenzo(a,h)anthracene	5.4 µg/kg	5.4J µg/kg	CCV %D above CL
		Indeno(1,2,3-c,d)pyrene	20.0U µg/kg	20.0UJ µg/kg	
		1,2,4-Trichlorobenzene	5.0U µg/kg	5.0UJ µg/kg	ICV %D below CL
		Benzoic acid	99.9U µg/kg	99.9UJ µg/kg	
		Pentachlorophenol	49.9U µg/kg	49.9UJ µg/kg	ICV %D below CL
		Acenaphthylene	20.0U µg/kg	20.0UJ µg/kg	LCS %R, CCV %D below CL
		Benzo(g,h,i)perylene	20.0U µg/kg	20.0UJ µg/kg	
		2,4-Dimethylphenol	20.0U µg/kg	20.0UJ µg/kg	LCS %R, ICV %D below CL
		Diethyl phthalate	12.6J µg/kg	19.9U µg/kg	MB contamination
MB-SC02-Z1-2024-08-13	D/F	1,2,3,4,7,8,9-HpCDF	3.23 ng/kg	3.23J ng/kg	EMPC
		1,2,3,6,7,8-HxCDD	10.6 ng/kg	10.6J ng/kg	
		1,2,3,7,8-PeCDD	1.64 ng/kg	1.64J ng/kg	
	Metals	Antimony	0.28U mg/kg	0.28UJ mg/kg	MS %R below CL
	PCBs	Aroclor 1260	6.0 µg/kg	6.0J µg/kg	CCV %D below CL; column confirmation RPD above CL
		Aroclor 1248	8.5 µg/kg	8.5J µg/kg	Column confirmation RPD above CL
		Aroclor 1254	9.2 µg/kg	9.2J µg/kg	
	SVOCs	Dibenzo(a,h)anthracene	3.1J µg/kg	3.1J µg/kg	CCV %D above CL
		Indeno(1,2,3-c,d)pyrene	19.9U µg/kg	19.9UJ µg/kg	
		1,2,4-Trichlorobenzene	5.0U µg/kg	5.0UJ µg/kg	ICV %D below CL

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
		Benzoic acid	99.7U µg/kg	99.7UJ µg/kg	ICV %D below CL
		Pentachlorophenol	49.9U µg/kg	49.9UJ µg/kg	
		Acenaphthylene	19.9U µg/kg	19.9UJ µg/kg	LCS %R, CCV %D below CL
		Benzo(g,h,i)perylene	19.9U µg/kg	19.9UJ µg/kg	
		2,4-Dimethylphenol	19.9U µg/kg	19.9UJ µg/kg	LCS %R, ICV %D below CL
		Diethyl phthalate	11.3J µg/kg	20.0U µg/kg	MB contamination
MB-SC02-Z2-2024-08-13	D/F	1,2,3,4,6,7,8-HpCDD	11.7 ng/kg	11.7J ng/kg	EMPC
		1,2,3,4,6,7,8-HpCDF	1.02 ng/kg	1.02J ng/kg	
		OCDF	0.925J ng/kg	0.925J ng/kg	
	Metals	Mercury	0.0117J mg/kg	0.0222U mg/kg	MB contamination
		Antimony	0.23U mg/kg	0.23UJ mg/kg	MS %R below CL
	PCBs	Aroclor 1260	7.4 µg/kg	7.4J µg/kg	CCV %D below CL
	SVOCs	Indeno(1,2,3-c,d)pyrene	20.0U µg/kg	20.0UJ µg/kg	CCV %D below CL
		1,2,4-Trichlorobenzene	5.0U µg/kg	5.0UJ µg/kg	ICV %D below CL
		Benzoic acid	99.8U µg/kg	99.8UJ µg/kg	
		Pentachlorophenol	49.9U µg/kg	49.9UJ µg/kg	
		Acenaphthylene	20.0U µg/kg	20.0UJ µg/kg	LCS %R, CCV %D below CL
		Benzo(g,h,i)perylene	20.0U µg/kg	20.0UJ µg/kg	
		2,4-Dimethylphenol	20.0U µg/kg	20.0UJ µg/kg	LCS %R, ICV %D below CL
		Diethyl phthalate	17.7J µg/kg	19.9U µg/kg	MB contamination
MB-SC03-A-2024-08-13	Metals	Antimony	0.31U mg/kg	0.31UJ mg/kg	MS %R below CL
	PCBs	Aroclor 1260	10.0 µg/kg	10.0J µg/kg	CCV %D below CL, column confirmation RPD above CL
		Aroclor 1248	16.9 µg/kg	16.9J µg/kg	Column confirmation RPD above CL
		Aroclor 1254	13.0 µg/kg	13.0J µg/kg	
	SVOCs	Indeno(1,2,3-c,d)pyrene	20.0U µg/kg	20.0UJ µg/kg	CCV %D below CL
		1,2,4-Trichlorobenzene	5.0U µg/kg	5.0UJ µg/kg	ICV %D below CL
		Benzoic acid	99.8U µg/kg	99.8UJ µg/kg	
		Pentachlorophenol	49.9U µg/kg	49.9UJ µg/kg	
		Acenaphthylene	20.0U µg/kg	20.0UJ µg/kg	LCS %R, CCV %D below CL
		Benzo(g,h,i)perylene	20.0U µg/kg	20.0UJ µg/kg	
		2,4-Dimethylphenol	20.0U µg/kg	20.0UJ µg/kg	LCS %R, ICV %D below CL
		Diethyl phthalate	17.4J µg/kg	20.0U µg/kg	MB contamination

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
MB-SC03-Z1-2024-08-13	Metals	Mercury	0.0197J mg/kg	0.0293U mg/kg	MB contamination
		Antimony	0.23U mg/kg	0.23UJ mg/kg	MS %R below CL
	PCBs	Aroclor 1260	3.8J µg/kg	3.8J µg/kg	CCV %D below CL; column confirmation RPD above CL
	SVOCs	Indeno(1,2,3-c,d)pyrene	20.0U µg/kg	20.0UJ µg/kg	CCV %D below CL
		1,2,4-Trichlorobenzene	5.0U µg/kg	5.0UJ µg/kg	ICV %D below CL
		Benzoic acid	99.8U µg/kg	99.8UJ µg/kg	
		Pentachlorophenol	49.9U µg/kg	49.9UJ µg/kg	
		Acenaphthylene	20.0U µg/kg	20.0UJ µg/kg	LCS %R, CCV %D below CL
		Benzo(g,h,i)perylene	20.0U µg/kg	20.0UJ µg/kg	
		2,4-Dimethylphenol	20.0U µg/kg	20.0UJ µg/kg	LCS %R, ICV %D below CL
		Diethyl phthalate	14.6J µg/kg	19.9U µg/kg	MB contamination
MB-SC03-Z2-2024-08-13	D/F	OCDF	10.5 ng/kg	10.5J ng/kg	EMPC
	Metals	Mercury	0.0174J mg/kg	0.0225U mg/kg	MB contamination
		Antimony	0.22U mg/kg	0.22UJ mg/kg	MS %R below CL
	PCBs	Aroclor 1260	4.0U µg/kg	4.0UJ µg/kg	CCV %D below CL
	SVOCs	Dibenzo(a,h)anthracene	12.6 µg/kg	12.6J µg/kg	CCV %D above CL
		Indeno(1,2,3-c,d)pyrene	21.3 µg/kg	21.3J µg/kg	
		1,2,4-Trichlorobenzene	5.0U µg/kg	5.0UJ µg/kg	ICV %D below CL
		Benzoic acid	99.4U µg/kg	99.4UJ µg/kg	
		Pentachlorophenol	49.7U µg/kg	49.7UJ µg/kg	ICV %D below CL
		Acenaphthylene	19.9U µg/kg	19.9UJ µg/kg	LCS %R, CCV %D below CL
		Benzo(g,h,i)perylene	20.2 µg/kg	20.2J µg/kg	
		2,4-Dimethylphenol	19.9U µg/kg	19.9UJ µg/kg	LCS %R, ICV %D below CL
		Diethyl phthalate	14.0J µg/kg	20.0U µg/kg	MB contamination

Notes:

%R: percent recovery

µg/kg: microgram per kilogram

CCB: continuing calibration blank

CL: control limit

ICV: initial calibration verification

EMPC: estimated maximum potential concentration

MB: method blank

mg/kg: milligram per kilogram

ng/kg: nanogram per kilogram

References

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