CENWS-OD-TS-DMMO

MEMORANDUM FOR: RECORD August 5, 2010 (errata correction 8/10/2010)

SUBJECT: DETERMINATION ON THE SUITABILITY OF CHARACTERIZATION OF PROPOSED DREDGED MATERIAL FROM WASHINGTON STATE DEPARTMENT OF TRANSPORTATION SR-520 PONTOON CONSTRUCTION PROJECT (NWS-2008-151) AT THE ABERDEEN LOG YARD, GRAYS HARBOR, WASHINGTON EVALUATED UNDER SECTION 404 OF THE CLEAN WATER ACT FOR OPEN-WATER DISPOSAL AT A DMMP DISPERSIVE ESTUARINE OPEN-WATER DISPOSAL SITES

1. The following summary reflects the supplemental suitability determination on the characterization of material proposed for dredging for Washington State Department of Transportation (WSDOT) pontoon construction project for the proposed SR 520 Bridge (Lake Washington) at the Aberdeen Log Yard, and the consensus determination of the Dredged Material Management Program (DMMP) agencies (U.S. Army Corps of Engineers, Washington Departments of Ecology and Natural Resources, and the Environmental Protection Agency) on the suitability of an estimated 95,900 cy of sediment to be excavated for this project evaluated for open-water unconfined disposal at the estuarine dispersive disposal sites in Grays Harbor, Washington (either Point Chehalis, or South jetty).

Table 1. Project DMMP Tracking Details

JARPA APPLICATION NO.	NWS-2008-151
SAP received	February 16, 2010
SAP approved	February 26, 2010
Sampling dates: Sonic Drill rig (Stations C1 – C3); MudMole (Stations C4, C5, C6, C7)	March 16-19, 2010
Data Characterization Report	July 15, 2010
Recency Determination: High Concern (2 years) Recency Extension (Best Professional Judgment: 8/10/2010)	March 2012 March 2015
DAIS reference number:	SR520-1-A-F-296

Table 2. Sample Coordinates Pontoon Construction Project

Sample Station ID:	Sample Station Actual Coordinates NAD83 WA State Plane		Date Time	Mudline	
	Latitutude	Longitude		Water depth (ft)	Elevation ft (MLLW)
C1	46.96283	123.83273	3/17/2010 8:45	NA	+10.0
C2	46.96296	123.83233	3/16/2010 10:45	NA	+10.0
C3	46.96308	123.83185	3/18/2010 8:05	NA	+10.0
C4	46.96218	123.83202	3/19/2010 17:30	6.3	+1.0
C5	46.96243	123.83156	3/19/2010 15:45	6.8	+2.0
C6	46.96200	123.83191	3/16/2010 12:30	12.6	-2.0
C7a (10 ft core)	46.96213	123.83140	3/17/2010 11:30	6.1	-2.0
C7b (10 ft core)	46.96213	123.83140	3/17/2010 12:10	7.4	-2.0
C7c (20 ft core)	46.96213	123.83144	3/18/2010 12:25	6.2	-2.0

NA = Not Applicable

Table 3. DMMU Volume Estimates Pontoon Construction Project.

DMMU ID:	Elevation (ft)	Volume Based on 2008 Bathymetric Data (cy)	Volume Based on March 2010 Field Data (cy)
Surface DMMUs			
S1	Grade minus 4'	3,900	3,900
S2	Grade minus 4'	3,800	3,800
S3	Grade minus 4'	3,900	3,900
S4	Grade minus 4'	4,000	4,000
S5	Grade minus 4'	4,000	4,000
S6	Grade minus 4'	3,500	3,500
S7	Grade minus 4'	3,800	3,800
Subtotal (Surface DMMUs)		26,900	26,900
Subsurface DMMUs			
B1	6' to -2' MLLW	4,800	5,400
B2	-2' to -6' MLLW	9,500	7,500
B8	-2' to -6' MLLW	NA	8,600
B3	-6' to -10' MLLW	10,100	10,100
B4	-6' to -10' MLLW	10,700	10,700
B5	-10' to -15' MLLW	11,700	11,700
B6	-10' to -15' MLLW	7,500	7,500
B7	-10' to -15' MLLW	7,500	7,500
Subtotal (Subsurface DMMUs)		61,800	69,000
Totals:		88,700	95,900

2. Background. WSDOT plans to construct a number of pontoons for the proposed SR 520 floating bridge crossing Lake Washington. The SR 520 Pontoon Construction Project would involve excavating a launch channel at Aberdeen Log Yard where sediment dredging in the offshore areas would be required (Figure 1). The proposed launch channel would have a design depth of -13 feet mean lower low water (MLLW) , and the nearshore boundary of the proposed dredge prism is defined by +10 feet MLLW (Figure 2).

3. Sampling and Analysis Plan Submittal/Approval. The SAP was submitted to the DMMP for review on February 16, 2010, and approved by the DMMP agencies on February 26, 2010. As indicated in the SAP, dredging at the high ranked proposed dredge prism at Aberdeen Log Yard would remove approximately 95,900 cy (updated from 88,700 cy in approved SAP based on March 2010 field survey data) of sediment s to a maximum depth of -15 feet MLLW (including 2 feet of overdepth) from an area approximately 183,000 square feet (4.2 acres) measured at the top of the proposed launch channel.

4. Sampling. Sampling was initiated on March 16, 2010 and completed on March 19, 2010 with a Sonic Core™ drill rig and Mudmole™ pneumatic coring device at seven sampling stations as denoted in Tables 2 and 3, and Figure 2. Figure 3 provides a three-dimensional view of the surface and subsurface Dredged Material Management Units (DMMUs) and the sampling locations approved in the Sampling and Analysis Plan (SAP). The Nearshore locations (C1, C2, and C3) were sampled using a track-mounted Sonic Core ™ drill rig. A variety of frequencies and down pressure were utilized to reduce potential compaction. Borehole location C3 was

relocated approximately 5 feet south of its predetermined location after poor recovery from the -2 to -6 foot MLLW sampling interval. Offshore drilling utilized a Mudole™ pneumatic coring device at sampling stations C4, C5, C6, and C7. Samples were composited vertically within each core sample resulted in 7 Surface DMMUs and 8 subsurface DMMUs (Table 3, Figure 3). Additional Core samples were collected at Station C7 to provide enough sample for the field duplicate sample, resulting in three cores (C7a, C7b, C7c). A field replicate was also collected and analyzed at Station B5. Subsurface DMMUs are illustrated in Figure 3, and further described in Table 3.

5. The testing for all fifteen DMMU's included evaluation of dioxins/furans, as well as the PSDDA/DMMP Chemical of Concern list, excluding TBT, volatile organic compounds, and guaiacols. The approved sampling and analysis plan with minor approved sampling deviations was generally followed. The sampling and analysis characterization report was submitted on July 15, 2010 to the DMMP agencies for review. After reviewing, the DMMP agencies concluded that the quality assurance/quality control guidelines specified by the DMMP were generally complied with, and these data were deemed suitable for decision-making using best-professional-judgment.

6. Chemical Analysis and Comparison with DMMP Marine Guidelines. The Agencies' approved sampling and analysis plan was followed and quality assurance/quality control guidelines specified by PSEP and DMMP were generally complied with. A summary of chemical analysis results for all COC except dioxins/furans is provided in Table 4, and demonstrates that for all chemicals analyzed other than dioxin), had no detected chemicals exceeding DMMP-Marine guidelines.

7. However, there were numerous undetected exceedances of SLs and MLs,,and SQS and CSL, as depicted in Table 4 for Dibenzo(a,h)anthracene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2,4-Trichlorobenzene, Hexachlorobenzene, Dimethylphthalate, Diethylphthalate, Butylbenzylphthalate, Bis(2-ethylhexyl)phthalate, 2-Methylphenol, 4-Methylphenol, 2,4-Dimethylphenol, Pentachlorophenol, Benzyl Alcohol, Benzoic Acid, Hexachlorobutadiene, and N-Nitrosodiphenylamine. The reasons for these detection limit (e.g., Method Reporting Limit = MRL; and Method Detection Limit = MDL) exceedances are discussed further below.

8. During Data QA review, the following issues were reported relative to Semi-volatile-organic chemical (SVOC) analyses:

    a. Before analysis, the laboratory conducted screening that indicated a large amount of interference (seen in chromatographs), was possibly due to the presence of native biota.
    b. The laboratory attempted to clean the samples using gel permeation chromatography, which is the only available standard cleanup technique that is appropriate. The other standard cleanup techniques remove the target SVOC in the cleanup process.
    c. Following cleanup, a subset of samples still needed to be diluted because of interferences that caused the instrument to malfunction during quantification.
    d. Of the 17 samples analyzed, dilutions were necessary in 6 samples: DMMU-S1 (S1F1006) (10x), DMMU-S2 (S2F1006) (5x), DMMU-S5 (S5F02-2) (10x), DMMU-B1 (B1F06-2) (10x), DMMU-B2 (B2F-2-6) (25x), and DMMU-B3 (B3F-6-10) (50x)
    e. The project chemist evaluated the consequences of rerunning the extracts without dilution and determined that running the extracts without dilution would damage the detector components and the chromatographic column, which would have caused delays and major costs.
    f. For the SVOC analytes in question, all 11 nondiluted samples had results that were either nondetects or were well below the SLs, consistent with the February 2009 reconnaissance sampling results (e.g., analysis results for 19 samples). Five of the six samples requiring dilution came from the nearshore area, which were not sampled during the reconnaissance sampling event in 2009.

9. The DMMP agencies reviewed the quantitation problems relative to the SVOCs and previous testing from DMMP projects in Grays Harbor that do not demonstrate elevated concentrations for SVOCs in Grays Harbor, and subsequently determined based on weight-of-evidence that there was no reason-to-believe that these chemicals were a concern. The DMMP agencies agreed with the laboratory QA/QC review that the exceedances were likely due to matrix interferences, that would not be resolved by additional testing.

10. Dioxin Testing Results Summary. Table 5 provides the results of dioxin/furan testing results for the fifteen DMMUs, indicated all were below the Grays Harbor regulatory limit of 15 pptr-TEQ, and ranged from a low of 0.29 pptr-TEQ in DMMU-S3, to a high of 8.3 pptr-TEQ within DMMU-B7, which also had a field replicated value of 6.7 pptr-TEQ (Average of 7.5 pptr-TEQ) (U = ½ detection limit).

11. Dioxin Interpretation on Suitability for Unconfined-Open-Water Disposal. As summarized in paragraph 9 above, and in Tables 4 and 5, all fifteen DMMUs were quantitated below the existing Grays Harbor Regulatory limit of 15 pptr-TEQ, and would be suitable for unconfined open-water disposal at either estuarine dispersive site in Grays Harbor.

12. Suitability for Unconfined-Open Water Disposal. All 95,900 cy of material are suitable for open-water disposal at either estuarine dispersive site in Grays Harbor, based on these testing results based on best-professional-judgment.

13. This memorandum documents the suitability determination based on the testing conducted for the proposed dredging at the SR-520 Pontoon Construction Project for unconfined-open-water disposal at either the Point Chehalis or South Jetty dispersive disposal sites. However, this suitability determination does not constitute final agency approval of the project. A dredging plan for this project must be completed as part of the final project approval process. A final decision will be made after full consideration of agency input, and after an alternatives analysis is done under Section 404(b)(1) of the Clean Water Act.

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Concur:

8/5/2010
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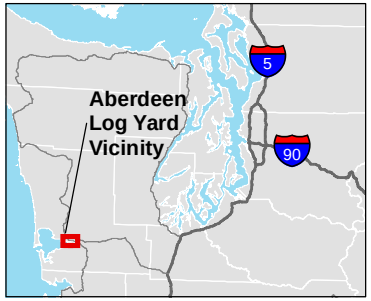

Proposed Dredge Area

Project Site Boundary

N 0 2,000 4,000 Feet

Source: Grays Harbor County (2006) GIS Data (Waterbody and Street), Grays Harbor County (2007) GIS Data (City Limits), WSDOT(2004) GIS Data (State Route). Horizontal datum for all layers is State Plane Washington South NAD 83; vertical datum for layers is NAVD88.

Figure 1. **Project Vicinity Map**

Pontoon Construction Project

Washington State Department of Transportation

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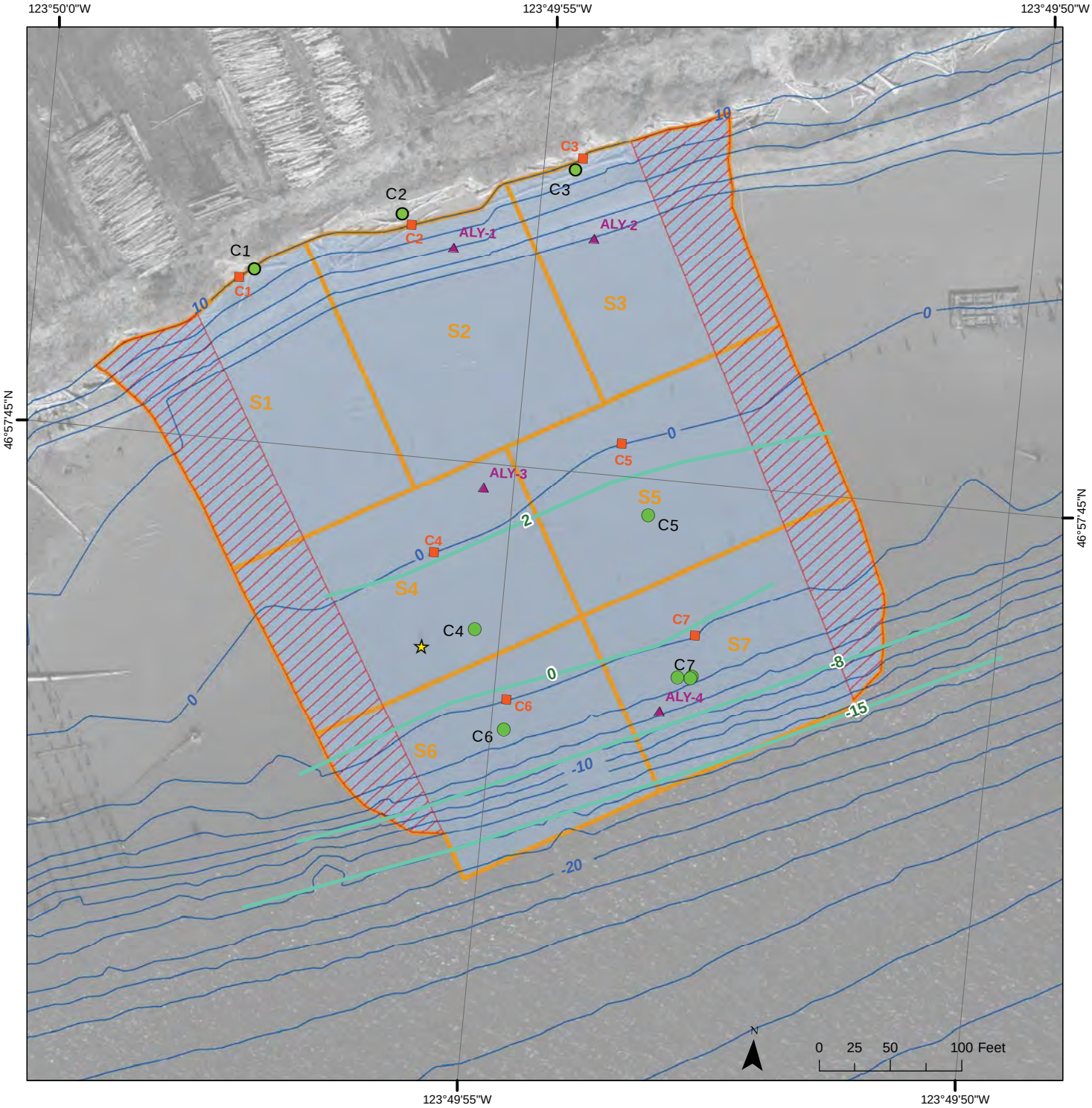


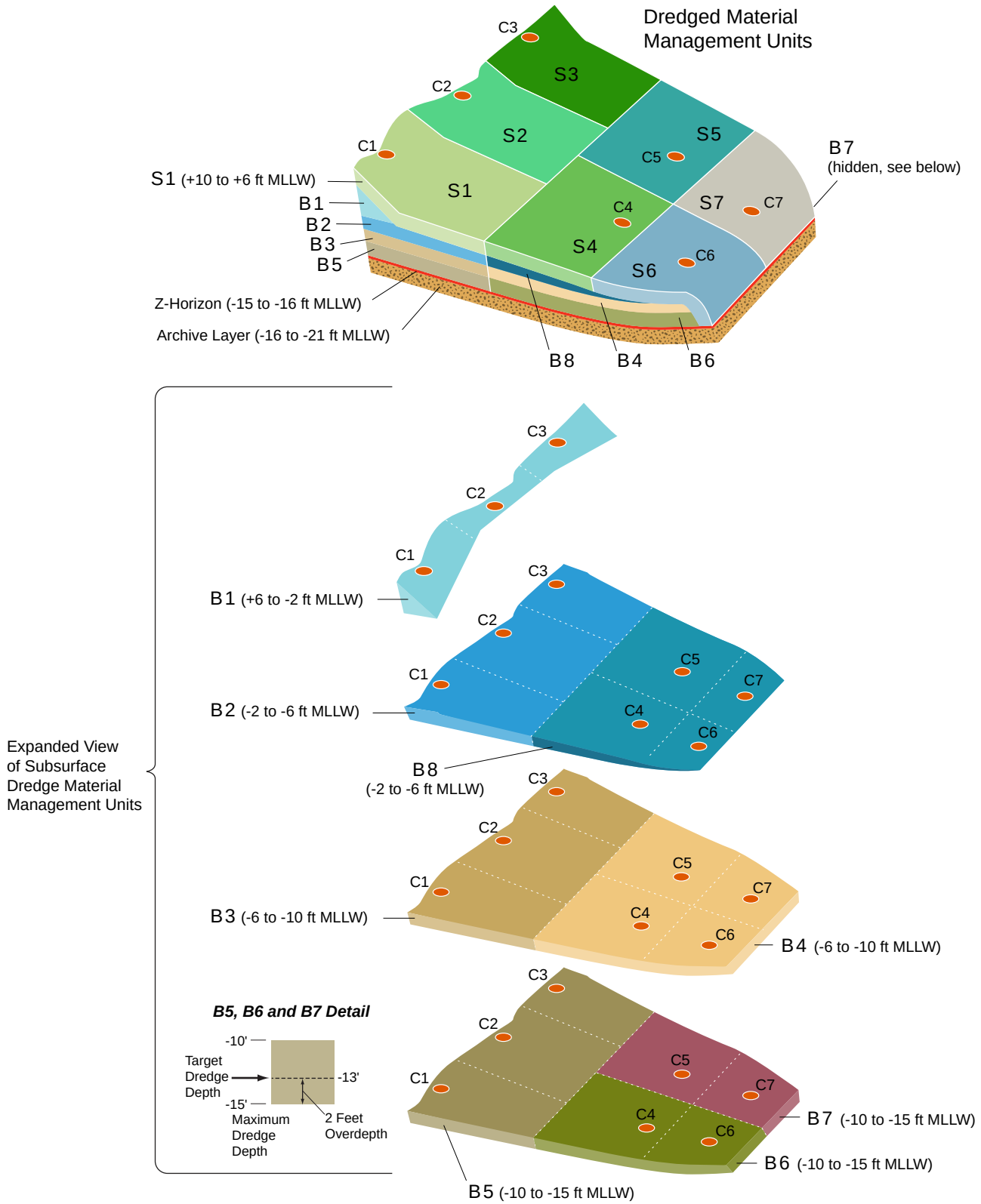
- Actual March 2010 Sample Location
- Proposed March 2010 Sample Location
- February 2009 Reconnaissance Sample Location
- Referenced Piling Location
- March 2010 Field Bathymetry
- 2008 Bathymetry (2 ft Contours)
- Dredged Material Management Unit
- Rock Side Slope
- Proposed Dredge Prism

Source: Golder Associates (2008) GIS Data (Bathymetry), WSDOT (2006) Aerial Photo. Horizontal datum for all layers is State Plane Washington South NAD 83; vertical datum for layers is NAVD88.

Figure 2. **Sediment Sample Locations at Aberdeen Log Yard**

Pontoon Construction Project

Washington State Department of Transportation



Legend

S3	**Dredged Material Management Unit ID**
C1	**Sampling Location**
ft MLLW	**Feet Mean Lower Low Water**

Figure 3
Dredged Material Management Units and Sample Locations

Pontoon Construction Project

Washington State Department of Transportation

Table 4. SR-520 Pontoon Construction Project: DMMP Characterization Report Summary

						Sample ID:		S1F1006 (10x D)			S2F1006 (5x D)			S3F1006			S4F01-3R			S5F02-2 (10x D)			S6F-2-6			S7F-2-6			B1F06-2 (10x D)			B2F-2-6 (25x D)		
						DMMU ID:		DMMU-S1			DMMU-S2			DMMU-S3			DMMU-S4			DMMU-S5			DMMU-S6			DMMU-S7			DMMU-B1			DMMU-B2		
						Depth (ft MLLW)		+10 to +6 ft			+10 to +6 ft			+10 to +6 ft			+1 to -3 ft			+2 to -2 ft			-2 to -6 ft			-2 to -6 ft			+6 to -2 FT			-2 to -6 ft		
		DMMP				SMS		mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ
CHEMICAL NAME	Units	SL	BT	ML	Units	SQS	CSL	DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS	
Antimony		150		200				5.1		J	6.6		J	9.9		U	4.0		J	6.0		J	3.8		J	4.2		J	4.8		J	3.1		J
Arsenic	mg/kg	57	507.1	700	mg/kg	57	93	19.0		U	20.0		U	20.0		U	20.0		U	20.0		U	19.0		U	20.0		U	20.0		U	20.0		U
Cadmium	mg/kg	5.1	11.3	14	mg/kg	5.1	6.7	0.50		J	0.60		J	0.60		J	0.70		J	0.6		J	0.6		J	0.8		J	0.6		J	0.6		J
Chromium	mg/kg	(2)	267	(2)	mg/kg	260	270	26.4			53.7			16.2			42.8			42.0			46.3			44.0			33.3			29.2		
Copper	mg/kg	390	1,027	1,300	mg/kg	390	390	29.3			43.8			21.5			61.4			63.3			59.9			57.9			54.9			41.7		
Lead	mg/kg	450	975	1,200	mg/kg	450	530	11.7		J	20.8			7.1		J	17.1		J	13.2		J	18.0		J	12.6		J	18.8		J	13.6		J
Mercury	mg/kg	0.41	1.5	2.3	mg/kg	0.41	0.59	0.03			0.05			0.08			0.12			0.09			0.12			0.09			0.05			0.06		
Nickel	mg/kg	140	370	370	mg/kg	--	--	19.1			25.9			14.0			27.5			27.9			28.4			27.0			24.7			21.3		
Selenium	mg/kg	(2)	3	(2)	mg/kg	--	--	0.80		J	0.6		J	0.4		J	1.2		J	1.1		J	0.9		J	1.0		J	0.6		J	0.7		J
Silver	mg/kg	6.1	6.1	8.4	mg/kg	6.1	6.1	1.9		U	2.0		U	2.0		U	2.0		U	2.0		U	1.9		U	0.5		J	2.0		U	2.0		U
Zinc	mg/kg	410	2,783	3,800	mg/kg	410	960	72.2			77.4			58.4			94.6			91.9			98.5			89.7			85.1			78.9		
ORGANIC CHEMICALS																																			
Naphthalene	ug/kg	2,100		2,400	mg/kg-OC	99	170	33.0	0.7	U	60.0	2.7		5.8	0.2		21.0	0.8		48.0	1.8	U	29.0	0.9		17.0	0.5		43.0	1.4	U	190.0	5.9	
Acenaphthylene	ug/kg	560		2,000	mg/kg-OC	66	66	33.0	0.7	U	20.0	0.9		1.9	0.1	J	7.8	0.3		48.0	1.8	U	8.9	0.3		4.8	0.2		43.0	1.4	U	39.0	1.2	J
Acenaphthene	ug/kg	500		2,000	mg/kg-OC	16	57	33.0	0.7	U	15.0	0.7	J	3.7	0.1		3.4	0.1	J	48.0	1.8	U	4.8	0.1		4.1	0.1	J	43.0	1.4	U	110.0	3.4	U
Fluorene	ug/kg	540		3,600	mg/kg-OC	23	79	33.0	0.7	U	30.0	1.4		3.7	0.1		5.5	0.2		48.0	1.8	U	7.1	0.2		6.2	0.2		16.0	0.5	J	110.0	3.4	U
Phenanthrene	ug/kg	1,500		2,100	mg/kg-OC	100	480	29.0	0.6	J	85.0	3.8		9.2	0.3		26.0	0.9		37.0	1.4	J	32.0	1.0		25.0	0.8		54.0	1.7		79.0	2.4	J
Anthracene	ug/kg	560		13,000	mg/kg-OC	220	1,200	33.0	0.7	U	16.0	0.7	J	2.6	0.1	J	6.0	0.2		48.0	1.8	U	6.0	0.2		5.5	0.2		16.0	0.5	J	110.0	3.4	U
2-Methylnapthalene	ug/kg	670		1,900	mg/kg-OC	38	64	33.0	0.7	U	93.0	4.2		8.6	0.2		8.8	0.3		48.0	1.8	U	12.0	0.4		6.4	0.2		24.0	0.8	J	110.0	3.4	U
Total LPAH	ug/kg	5,200		29,000	mg/kg-OC	370	780	29.0	0.6	J	319.0	14.4		35.5	1.0		78.5	2.8		37.0	1.4		99.8	3.1		69.0	2.2		86.0	2.7		308.0	9.5	
Fluoranthene	ug/kg	1,700	4,600	30,000	mg/kg-OC	160	1,200	50.0	1.1		65.0	2.9		12.0	0.3		34.0	1.2		58.0	2.2		35.0	1.1		46.0	1.5		68.0	2.2		71.0	2.2	J
Pyrene	ug/kg	2,600	11,980	16,000	mg/kg-OC	1,000	1,400	55.0	1.2		82.0	3.7		13.0	0.4		34.0	1.2		58.0	2.2		33.0	1.0		41.0	1.3		78.0	2.5		76.0	2.4	J
Benzo(a)anthracene	ug/kg	1,300		5,100	mg/kg-OC	110	270	48.0	1.0		35.0	1.6		4.1	0.1		11.0	0.4		29.0	1.1	J	9.1	0.3		16.0	0.5		41.0	1.3	J	110.0	3.4	U
Chrysene	ug/kg	1,400		21,000	mg/kg-OC	110	460	69.0	1.5		56.0	2.5		5.8	0.2		14.0	0.5		35.0	1.3	J	9.9	0.3		21.0	0.7		52.0	1.7		44.0	1.4	J
Total Benzo(b+k)fluoranthenes	ug/kg	3,200		9,900	mg/kg/OC	230	450	202.0	4.3		59.0	2.7		7.6	0.2	J	21.5	0.8		52.0	1.9	J	18.2	0.6	J	29.9	1.0		59.0	1.9	J	47.0	1.5	J
Benzo(a)pyrene	ug/kg	1,600		3,600	mg/kg-OC	99	210	89.0	1.9		39.0	1.8		4.3	0.1		13.0	0.5		33.0	1.2	J	12.0	0.4		20.0	0.6		41.0	1.3	J	110.0	3.4	U
Indeno(1,2,3-cd)pyrene	ug/kg	600		4,400	mg/kg-OC	34	88	92.0	1.9		24.0	1.1		3.2	0.1	J	11.0	0.4		24.0	0.9	J	7.3	0.2		12.0	0.4		30.0	1.0	J	110.0	3.4	U
Dibenzo(a,h)anthracene	ug/kg	230		1,900	mg/kg-OC	12	33	24.0	0.5	J	13.0	0.6	J	3.4	0.1	U	21.0	0.8	J	48.0	1.8	U	4.5	0.1	U	3.0	0.1	J	43.0	1.4	U	110.0	3.4	U
Benzo(g,h,i)perylene	ug/kg	670		3,200	mg/kg-OC	31	78	110.0	2.3		36.0	1.6		4.2	0.1		13.0	0.5		24.0	0.9	J	9.4	0.3		13.0	0.4		32.0	1.0	J	110.0	3.4	U
Total HPAH	ug/kg	12,000		69,000	mg/kg-OC	960	5,300	739.0	15.7		409.0	18.4		54.2	1.6		153.6	5.5		313.0	11.7		138.4	4.3		201.9	6.4		401.0	12.7		238.0	7.4	
1,3-Dichlorobenzene	ug/kg	170			mg/kg-OC	2.3	2.3	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	9.0	0.3	U	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
1,4-Dichlorobenzene	ug/kg	110		120	mg/kg-OC	3.1	9	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	3.1	0.1	JL	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
1,2-Dichlorobenzene	ug/kg	35		110	mg/kg-OC	2.3	2.3	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	9.0	0.3	U	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
1,2,4-Trichlorobenzene	ug/kg	31		64	mg/kg-OC	0.81	1.8	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	9.0	0.3	U	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
Hexachlorobenzne (HCB)	ug/kg	22	168	230	mg/kg-OC	0.38	2.3	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	9.0	0.3	U	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
Dimethylphthalate	ug/kg	71		1,400	mg/kg-OC	53	53	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	2.5	0.1	JL	96.0	3.6	U	5.3	0.2	JL	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
Diethylphthalate	ug/kg	200		1,200	mg/kg-OC	61	110	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	1.6	0.1	JL	96.0	3.6	U	41.0	1.3	JL	1.6	0.1	JL	85.0	2.7	U	210.0	6.5	U
Di-n-butylphthalate	ug/kg	1,400		5,100	mg/kg-OC	220	1,700	140.0	3.0	U	70.0	3.2	U	14.0	0.4	U	19.0	0.7	U	200.0	7.5	U	18.0	0.6	U	18.0	0.6	U	170.0	5.4	U	410.0	12.7	U
Butylbenzylphthalate	ug/kg	63		970	mg/kg-OC	4.9	64	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	9.0	0.3	U	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
Bis(2-ethylhexyl)phthalate	ug/kg	1,300		8,300	mg/kg-OC	47	78	660.0	14.0	U	350.0	15.8	U	12.0	0.3	JL	13.0	0.5	JL	960.0	36.0	U	40.0	1.2	JL	31.0	1.0	JL	850.0	27.0	U	2,100.0	65.0	U
Di-n-octylphthalate	ug/kg	6,200		6,200	mg/kg-OC	58	4,500	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	9.0	0.3	U	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
Phenol	ug/kg	420		1,200	ug/kg	420	1,200	26.0	0.6	JL	17.0	0.8	JL	58.0	1.7	JL	22.0	0.8	JL	290.0	10.9	U	9.8	0.3	JL	9.3	0.3	JL	26.0	0.8	JL	620.0	19.2	U
2-Methylphenol	ug/kg	63		77	ug/kg	63	63	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	1.9	0.1	JL	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
4-Methylphenol	ug/kg	670		3,600	ug/kg	670	670	18.0		JL	21.0		JL	6.3		JL	32.0		JL	36.0		JL	120.0		JL	77.0		JL	48.0		JL	140.0		JL
2,4-Dimethylphenol	ug/kg	29		210	ug/kg	29	29	330.0		UJ	180.0		UJ	34.0		UJ	48.0		UJ	480.0		UJ	45.0		UJ	45.0		UJ	430.0		UJ	1,100.0		UJ
Pentachlorophenol	ug/kg	400		690	ug/kg	360	690	660.0		U	350.0		U	67.0		U	95.0		U	960.0		U	90.0		U	90.0		U	850.0		U	2,100.0		U
Benzyl alcohol	ug/kg	57		87	ug/kg	57	73	140.0		U	70.0		U	14.0		U	3.1		JL	200.0		U	3.2		JL	18.0		U	170.0		U	410.0		U
Benzoic acid	ug/kg	650		760	ug/kg	650	650	1,400.0		U	700.0		U	140.0		U	190.0		U	2,000.0		U	180.0		U	180.0		U	1,700.0		U	4,100.0		U
Dibenzofuran	ug/kg	540		1,700	mg/kg-OC	15	58	66.0	1.4	U	12.0	0.5	JL	1.9	0.1	JL	3.7	0.1	JL	96.0	3.6	U	4.5	0.1	JL	3.1	0.1	JL	85.0	2.7	U	210.0	6.5	U
Hexachloroethane	ug/kg	600		1,600	mg/kg-OC			66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	9.0	0.3	U	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
Hexachlorobutadiene	ug/kg	29		270	mg/kg-OC	3.9	6.2	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	9.0	0.3	U	9.0	0.3	U	85.0	2.7	U	210.0	6.5	U
N-Nitrosodiphenylamine	ug/kg	28		130	mg/kg-OC	11	11	66.0	1.4	U	35.0	1.6	U	6.7	0.2	U	9.5	0.3	U	96.0	3.6	U	9.0	0.3	U	2.1	0.1	JL	85.0	2.7	U	210.0	6.5	U
Total DDT (sum of 4,4'-DDD, 4,4'-DDE and 4,4'-DDT)	ug/kg	6.9	50	69		--	--	1.1			0.7		U	0.7		UJ	1.4		UJK	4.7			0.9		JL	0.5		J	0.2		J	0.8		J
Aldrin	ug/kg	10				--	--	0.65		U	0.71		U	0.68		UJ	0.95		U	0.96		U	0.89		U	0.9		U	0.8		U	0.8		UJK
Chlordane	ug/kg	10	37			--	--	0.90		JK	0.71		UJK	0.68		UJ	3.70		JK	0.7		JK	0.8		JL	1.0		JK	0.8		JK	0.8		UJK
Dieldrin	ug/kg	10				--	--	0.7		UJK	0.7		U	0.68		UJ	0.95		UJK	0.96		UJK	0.89		U	0.9		UJK	0.8		U	0.8		UJK
Heptachlor	ug/kg	10				--	--	0.65		U	0.71		U	0.68		UJ	0.95		UJK	0.96		UJK	0.89		UJK	0.9		UJK	0.8		U	0.8		U
Alpha-BHC	ug/kg		10			--	--																												
Gamma-BHC (Lindane)	ug/kg	10				--	--	1.2		JK	0.71		UJK	0.68		UJK	0.95		U	0.96		U	0.89		UJK	0.9		U	0.8		UJK	0.8		U
Total PCBs	**ug/kg**	**130.0**	**38*****	**3,100**				13.0		U	7.7		JK	14.0		UJ	22.0			20.0			17.0			14.0			3.1		J	17.0		U
Total PCBs (TOC-normalized)	**mg/kg**				**mg/kg-OC**	**12.0**	**65.0**	0.28		-	0.35			0.4			0.8			0.7			0.5			0.4			0.1			0.5		
Dioxin (TEQ: see Table 5 for detailed results)	ng/kg							0.43			0.86			0.29			2.41			1.75			6.24			3.33			0.75			1.38		
Total Solids	%							75.6			70.9			73.6			52.3			52.2			55.8			55.3			58.7			60.5		
Total Volatile Solids	%							9.41			8.0			12.4			8.6			9.7			13.5			11.0			7.1			9.4		
Total Organic Carbon	%							4.72			2.22			3.46			2.79			2.67			3.23			3.14			3.15			3.23		
Total Ammonia	mg/kg							4.1			30.6			168.0			228.0			201.0			235.0			209.00			43.30			70.30		
Total Sulfides	mg/kg							125.0			44.0			29.0			755.0			1,340.0			1,500.0			1,860.0			4,280.0			2,030.0		
Gravel	%							42.0			51.0			58.1			-			2.3			-			0.4			52.8			29.0		
Sand	%							26.8			21.2			20.7			9.6			13.5			19.0			18.8			25.8			17.0		
Silt	%							17.0			22.2			11.6			62.5			59.6			61.6			66.3			19.8			33.3		
Clay	%							9.1			9.5			6.4			22.3			22.5			21.5			16.8			8.5			13.7		
Fines (percent silt + clay)	%							26.1			31.7			18.0			84.8			82.1			83.1			83.1			28.3			47.0		
Bioassay Determination: **(P/F)**								NA			NA			NA			NA			NA			NA			NA			NA			NA		
BTs exceeded:								No			No			No			No			No			No			No			No			No		
Bioaccumulation conducted:								No			No			No			No			No			No			No			No			No		
Bioaccumulation Determination: **(P/F)**																																			
ML Rule exceeded:								No			No			No			No			No			No			No			No			No		
PSDDA Determination:								PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)		
DMMU Volume:	cy							3,900			3,800			3,900			4,000			4,000			3,500			3,800			5,400			7,500		
Rank								H			H			H			H			H			H			H			H			H		
Mean Core sampling depth	ft							6.0			6.0			6.0			4.0			4.0			4.0			4.0			4.0			4.0		
Maximum sampling depth (mudline) (with Z-sample)	ft							6.0			6.0			6.0			(3.0)			(2.0)			(6.0)			(6.0)			(2.0)			(6.0)		
DMMU ID:								DMMU-S1			DMMU-S2			DMMU-S3			DMMU-S4			DMMU-S5			DMMU-S6			DMMU-S7			DMMU-B1			DMMU-B2		

Legend:

SL = Screening Level exceedance (undetected)
ML = Maximum Level exceedance (undetected)
P = Pass (BPJ: Suitable for UCOWD)
SQS = Sediment Quality Standards exceedance (SMS)(undetected)
CSL = Cleanup Screening Level exceedance (SMS)(undetected)

NA - Not Analyzed
VQ = Validation Qualifier
UCOWD = Unconfined open-water disposal
U = undetected at the reporting limit
UJ = result undetected at the estimated reporting limit shown
J = Estimated Concentration (< reporting limit)
JL = Analyte was positively identified, value may be less than reported
JK = Analyte was positively identified. Reported results is estimate with unknown bias
UJK = Analyte was not detected at or above the reported estimate with unknown bias
5, 10, 25, 50 x D = Sample Dilutions required from Matrix interferences

Table 4. SR-520 Pontoon Construction Project: DMMP Characterization Report Summary

						Sample ID:		B3F-6-10 (50x D)			B4F-6-10			B5F-10-15			B5FD-10-15			B6F-10-15			B7F-10-15			B7FD-10-15			B8F-2-6		
						DMMU ID:		DMMU-B3			DMMU-B4			DMMU-B5			DMMU-B5 (field duplicate)			DMMU-B6			DMMU-B7			DMMU-B7 (field duplicate)			DMMU-B8		
						Depth (ft MLLW)		-6 to - 10 ft			-6 to -10 ft			-10 to -15 ft			-10 to -15 ft			-10 to -15 ft			-10 to -15 ft			-10 to -15 ft			-2 to -6 ft		
		DMMP				SMS		mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ	mg/kg-dry wgt	mg/kg-OC	VQ
CHEMICAL NAME	Units	SL	BT	ML	Units	SQS	CSL	DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS	
Antimony		150		200				9.9		U	5.5		J	7.6		J	4.0		J	4.3		J	5.0		J	9.9		U	6.1		U
Arsenic	mg/kg	57	507.1	700	mg/kg	57	93	20.0		U	20.0		U	20.0		U	20.0		U	5.0		J	20.0		U	20.0		U	20.0		U
Cadmium	mg/kg	5.1	11.3	14	mg/kg	5.1	6.7	0.9		J	0.8		J	0.7		J	0.8		J	0.6		J	0.9		J	0.8		J	0.7		J
Chromium	mg/kg	(2)	267	(2)	mg/kg	260	270	34.2			41.5			42.4			37.6			39.1			38.4			38.5			41.2		
Copper	mg/kg	390	1,027	1,300	mg/kg	390	390	53.6			60.8			59.9			54.6			54.4			55.0			54.2			61.6		
Lead	mg/kg	450	975	1,200	mg/kg	450	530	17.7		J	13.9		J	17.7		J	14.6		J	14.6		J	12.6		J	14.3		J	13.3		J
Mercury	mg/kg	0.41	1.5	2.3	mg/kg	0.41	0.59	0.12			0.10			0.15			0.002			0.002			0.002			0.002			0.002		
Nickel	mg/kg	140	370	370	mg/kg	--	--	22.2			27.2			28.3			25.5			26.3			26.1			26.6			28.3		
Selenium	mg/kg	(2)	3	(2)	mg/kg	--	--	0.9		J	1.1		J	1.1		J	1.2		J	0.9		J	1.1		J	0.9		J	1.0		J
Silver	mg/kg	6.1	6.1	8.4	mg/kg	6.1	6.1	2.0		U	2.0		U	2.0		U	0.5		J	2.0		U	2.0		U	2.0		U	0.6		J
Zinc	mg/kg	410	2,783	3,800	mg/kg	410	960	87.2			94.8			101.0			92.9			89.8			90.4			88.5			97.9		
ORGANIC CHEMICALS																															
Naphthalene	ug/kg	2,100		2,400	mg/kg-OC	99	170	310.0	11.3		47.0	1.5		55.0	2.0		92.0	2.2		110.0	4.7		69.0	3.1		91.0	3.8		71.0	2.5	
Acenaphthylene	ug/kg	560		2,000	mg/kg-OC	66	66	63.0	2.3	J	16.0	0.5		22.0	0.8		27.0	0.6		39.0	1.7		26.0	1.2		21.0	0.9		31.0	1.1	
Acenaphthene	ug/kg	500		2,000	mg/kg-OC	16	57	260.0	9.5	U	5.3	0.2		6.3	0.2		7.2	0.2		12.0	0.5		8.0	0.4		8.0	0.3		10.0	0.3	
Fluorene	ug/kg	540		3,600	mg/kg-OC	23	79	260.0	9.5	U	8.1	0.3		12.0	0.4		14.0	0.3		1.1	0.0		1.1	0.0		1.1	0.0		1.1	0.0	
Phenanthrene	ug/kg	1,500		2,100	mg/kg-OC	100	480	130.0	4.7	J	41.0	1.3		61.0	2.3		91.0	2.2		110.0	4.7		54.0	2.4		51.0	2.2		76.0	2.7	
Anthracene	ug/kg	560		13,000	mg/kg-OC	220	1,200	260.0	9.5	U	8.9	0.3		13.0	0.5		18.0	0.4		25.0	1.1		11.0	0.5		11.0	0.5		17.0	0.6	
2-Methylnapthalene	ug/kg	670		1,900	mg/kg-OC	38	64	260.0	9.5	U	13.0	0.4		16.0	0.6		16.0	0.4		36.0	1.5		17.0	0.8		23.0	1.0		21.0	0.7	
Total LPAH	ug/kg	5,200		29,000	mg/kg-OC	370	780	503.0	18.4		139.3	4.4		185.3	6.9		265.2	6.3		355.0	15.2		196.0	8.8		216.0	9.1		241.0	8.4	
Fluoranthene	ug/kg	1,700	4,600	30,000	mg/kg-OC	160	1,200	130.0	4.7	J	49.0	1.6		57.0	2.1		86.0	2.0		98.0	4.2		53.0	2.4		45.0	1.9		79.0	2.8	
Pyrene	ug/kg	2,600	11,980	16,000	mg/kg-OC	1,000	1,400	140.0	5.1	J	53.0	1.7		69.0	2.6		89.0	2.1		110.0	4.7		56.0	2.5		49.0	2.1		81.0	2.8	
Benzo(a)anthracene	ug/kg	1,300		5,100	mg/kg-OC	110	270	260.0	9.5	U	12.0	0.4		17.0	0.6		26.0	0.6		40.0	1.7		19.0	0.9		13.0	0.5		30.0	1.0	
Chrysene	ug/kg	1,400		21,000	mg/kg-OC	110	460	260.0	9.5	U	16.0	0.5		22.0	0.8		30.0	0.7		46.0	2.0		22.0	1.0		16.0	0.7		33.0	1.2	
Total Benzo(b+k)fluoranthenes	ug/kg	3,200		9,900	mg/kg/OC	230	450	80.0	2.9	J	23.9	0.8		25.5	0.9		37.4	0.9		64.0	2.7		34.5	1.6		22.4	0.9		51.0	1.8	
Benzo(a)pyrene	ug/kg	1,600		3,600	mg/kg-OC	99	210	260.0	9.5	U	18.0	0.6		21.0	0.8		29.0	0.7		50.0	2.1		28.0	1.3		19.0	0.8		42.0	1.5	
Indeno(1,2,3-cd)pyrene	ug/kg	600		4,400	mg/kg-OC	34	88	260.0	9.5	U	12.0	0.4		13.0	0.5		17.0	0.4		30.0	1.3		18.0	0.8		13.0	0.5		26.0	0.9	
Dibenzo(a,h)anthracene	ug/kg	230		1,900	mg/kg-OC	12	33	260.0	9.5	U	2.3	0.1	J	2.5	0.1	J	3.6	0.1	J	6.1	0.3		3.6	0.2	J	3.0	0.1	J	4.5	0.2	J
Benzo(g,h,i)perylene	ug/kg	670		3,200	mg/kg-OC	31	78	260.0	9.5	U	15.0	0.5		17.0	0.6		22.0	0.5		35.0	1.5		21.0	0.9		15.0	0.6		31.0	1.1	
Total HPAH	ug/kg	12,000		69,000	mg/kg-OC	960	5,300	350.0	12.8		201.2	6.4		244.0	9.0		340.0	8.1		479.1	20.6		255.1	11.5		195.4	8.2		377.5	13.2	
1,3-Dichlorobenzene	ug/kg	170			mg/kg-OC	2.3	2.3	520.0	19.0	U	8.9	0.3	U	8.9	0.3	U	8.6	0.2	U	9.0	0.4	U	9.0	0.4	U	9.0	0.4	U	9.5	0.3	U
1,4-Dichlorobenzene	ug/kg	110		120	mg/kg-OC	3.1	9	520.0	19.0	U	8.9	0.3	U	8.9	0.3	U	8.6	0.2	U	9.0	0.4	U	9.0	0.4	U	9.0	0.4	U	9.5	0.3	U
1,2-Dichlorobenzene	ug/kg	35		110	mg/kg-OC	2.3	2.3	520.0	19.0	U	8.9	0.3	U	8.9	0.3	U	8.6	0.2	U	9.0	0.4	U	9.0	0.4	U	9.0	0.4	U	9.5	0.3	U
1,2,4-Trichlorobenzene	ug/kg	31		64	mg/kg-OC	0.81	1.8	520.0	19.0	U	8.9	0.3	U	8.9	0.3	U	8.6	0.2	U	9.0	0.4	U	9.0	0.4	U	9.0	0.4	U	9.5	0.3	U
Hexachlorobenzne (HCB)	ug/kg	22	168	230	mg/kg-OC	0.38	2.3	520.0	19.0	U	8.9	0.3	U	8.9	0.3	U	8.6	0.2	U	9.0	0.39	U	9.0	0.41	U	9.0	0.38	U	9.5	0.3	U
Dimethylphthalate	ug/kg	71		1,400	mg/kg-OC	53	53	520.0	19.0	U	8.9	0.3	U	4.0	0.1	JL	2.2	0.1	JL	2.6	0.1	JL	2.2	0.1	JL	3.2	0.1	JL	2.3	0.1	JL
Diethylphthalate	ug/kg	200		1,200	mg/kg-OC	61	110	520.0	19.0	U	1.3	0.0	JL	8.9	0.3	U	8.6	0.2	U	9.0	0.4	U	1.3	0.1	JL	1.4	0.1	JL	1.6	0.1	JL
Di-n-butylphthalate	ug/kg	1,400		5,100	mg/kg-OC	220	1,700	1,100.0	40.1	U	18.0	0.6	U	18.0	0.7	U	18.0	0.4	U	18.0	0.8	U	18.0	0.8	U	18.0	0.8	U	19.0	0.7	U
Butylbenzylphthalate	ug/kg	63		970	mg/kg-OC	4.9	64	520.0	19.0	U	9.4	0.3	JL	8.9	0.3	U	8.6	0.2	U	9.0	0.4	U	9.0	0.4	U	9.0	0.4	U	9.5	0.3	U
Bis(2-ethylhexyl)phthalate	ug/kg	1,300		8,300	mg/kg-OC	47	78	5,200.0	189.8	U	8.5	0.3	JL	28.0	1.0	JL	12.0	0.3	JL	12.0	0.5	JL	90.0	4.1	U	90.0	3.8	U	7.3	0.3	JL
Di-n-octylphthalate	ug/kg	6,200		6,200	mg/kg-OC	58	4,500	520.0	19.0	U	8.9	0.3	U	8.9	0.3	U	8.6	0.2	U	9.0	0.4	U	9.0	0.4	U	9.0	0.4	U	9.5	0.3	U
Phenol	ug/kg	420		1,200	ug/kg	420	1,200	1,600.0	58.4	U	9.1	0.3	JL	11.0	0.4	JL	9.5	0.2	JL	13.0	0.6	JL	8.3	0.4	JL	11.0	0.5	JL	9.9	0.3	JL
2-Methylphenol	ug/kg	63		77	ug/kg	63	63	520.0	19.0	U	8.9	0.3	U	8.9	0.3	U	8.6	0.2	U	2.0	0.1	JL	9.0	0.4	U	9.0	0.4	U	2.0	0.1	JL
4-Methylphenol	ug/kg	670		3,600	ug/kg	670	670	100.0		JL	85.0		JL	55.0		JL	30.0		JL	70.0		JL	31.0		JL	96.0		JL	92.0		JL
2,4-Dimethylphenol	ug/kg	29		210	ug/kg	29	29	2,600.0		UJ	45.0		UJ	45.0		UJ	43.0		UJ	45.0		UJ	45.0		UJ	45.0		UJ	48.0		UJ
Pentachlorophenol	ug/kg	400		690	ug/kg	360	690	5,200.0		U	89.0		U	89.0		U	86.0		U	90.0		U	90.0		U	90.0		U	95.0		U
Benzyl alcohol	ug/kg	57		87	ug/kg	57	73	1,100.0		U	2.7		JL	3.0		JL	18.0		U	18.0		U	2.1		JL	18.0		U	2.5		JL
Benzoic acid	ug/kg	650		760	ug/kg	650	650	11,000.0		U	180.0		U	180.0		U	180.0		U	180.0		U	180.0		U	180.0		U	190.0		U
Dibenzofuran	ug/kg	540		1,700	mg/kg-OC	15	58	520.0	19.0	U	5.6	0.2	JL	7.1	0.3	JL	8.2	0.2	JL	12.0	0.5	JL	7.1	0.3	JL	7.2		JL	9.2	0.3	JL
Hexachloroethane	ug/kg	600		1,600	mg/kg-OC			520.0	19.0	U	8.9	0.3	U	8.9	0.3	U	8.6	0.2	U	9.0	0.4	U	9.0	0.4	U	9.0	0.4	U	9.5	0.3	U
Hexachlorobutadiene	ug/kg	29		270	mg/kg-OC	3.9	6.2	520.0	19.0	U	8.9	0.3	U	8.9	0.3	U	8.6	0.2	U	9.0	0.4	U	9.0	0.4	U	9.0	0.4	U	9.5	0.3	U
N-Nitrosodiphenylamine	ug/kg	28		130	mg/kg-OC	11	11	520.0	19.0	U	8.9	0.3	U	8.9	0.3	U	8.6	0.2	U	9.0	0.4	U	9.0	0.4	U	9.0	0.4	U	9.5	0.3	U
Total DDT (sum of 4,4'-DDD, 4,4'-DDE and 4,4'-DDT)	ug/kg	6.9	50	69		--	--	1.1		U	1.2			0.9		U	0.9		U	0.9		U	0.9		UJK	0.9		UJK	0.6		JK
Aldrin	ug/kg	10				--	--	1.1		UJK	0.9		UJK	0.9		U	0.9		U	0.9		U	0.9		U	0.9		U	1.0		U
Chlordane	ug/kg	10	37			--	--	1.1		UJK	0.9		UJK	0.9		U	0.9		U	0.9		UJK	0.2		J	0.3		JK	1.0		UJK
Dieldrin	ug/kg	10				--	--	1.1		UJK	0.9		UJK	0.9		U	0.9		U	0.9		UJK	0.9		UJK	0.9		U	1.0		U
Heptachlor	ug/kg	10				--	--	1.1		U	0.9		U	0.9		U	0.9		U	0.9		U	0.9		U	0.9		U	1.0		UJK
Alpha-BHC	ug/kg		10			--	--																								
Gamma-BHC (Lindane)	ug/kg	10				--	--	1.1		U	0.9		UJK	0.9		UJK	0.9		U	0.9		UJK	0.9		U	0.9		U	1.0		U
Total PCBs	**ug/kg**	**130.0**	**38*****	**3,100**				21.0		U	6.9		J	18.0		U	18.0		U	18.0		UJK	18.0		U	18.0		U	19.0		U
Total PCBs (TOC-normalized)	**mg/kg**				**mg/kg-OC**	**12.0**	**65.0**	0.8			0.2			0.7			0.4			0.8			0.8			0.8			0.7		
Dioxin (TEQ: see Table 5 for detailed results)	ng/kg							1.38			6.99			1.26			0.67			5.27			5.75			8.34			1.30		
Total Solids	%							47.9			56.2			56.4			57.8			55.7			55.1			55.6			52.3		
Total Volatile Solids	%							17.9			9.2			9.2			8.99			9.2			9.1			9.3			9.4		
Total Organic Carbon	%							2.74			3.16			2.70			4.2			2.33			2.22			2.37			2.86		
Total Ammonia	mg/kg							364.00			342.00			380.00			358.0			315.0			380.0			323.0			385.0		
Total Sulfides	mg/kg							1,930.0			1.8		U	496.0			328.0			1,220.0			367.0			1,210.0			103.0		
Gravel	%							8.9			0.5			-			-			0.9			-			-			-		
Sand	%							9.7			16.7			4.2			5.3			14.4			19.6			14.2			15.3		
Silt	%							63.6			62.5			63.6			63.4			60.8			64.9			66.3			59.1		
Clay	%							25.7			19.5			30.8			30.3			19.7			19.1			19.7			24.6		
Fines (percent silt + clay)	%							89.3			82.0			94.4			93.7			80.5			84.0			86.0			83.7		
Bioassay Determination: **(P/F)**								NA			NA			NA			NA			NA			NA			NA			NA		
BTs exceeded:								No			No			No			No			No			No			No			No		
Bioaccumulation conducted:								No			No			No			No			No			No			No			No		
Bioaccumulation Determination: **(P/F)**																															
ML Rule exceeded:								No			No			No			No			No			No			No			No		
PSDDA Determination:								PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)			PASS (PBJ)		
DMMU Volume:	cy							10,100			10,700			11,700			11,700			7,500			7,500			7,500			8,600		
Rank								H			H			H			H			H			H			H			H		
Mean Core sampling depth	ft							4.0			4.0			5.0			5.0			5.0			5.0			5.0			4.0		
Maximum sampling depth (mudline) (with Z-sample)	ft							(10.0)			(10.0)			(15.0)			(15.0)			(15.0)			(15.0)			(15.0)			(6.0)		
DMMU ID:								DMMU-B3			DMMU-B4			DMMU-B5			DMMU-B5 (field duplicate)			DMMU-B6			DMMU-B7			DMMU-B7 (field duplicate)			DMMU-B8		

Legend:

SL = Screening Level exceedance (undetected)
ML = Maximum Level exceedance (undetected)
P = Pass (BPJ: Suitable for UCOWD)
SQS = Sediment Quality Standards exceedance (SMS)(undetected)
CSL = Cleanup Screening Level exceedance (SMS)(undetected)

NA - Not Analyzed
VQ = Validation Qualifier
UCOWD = Unconfined open-water disposal
U = undetected at the reporting limit
UJ = result undetected at the estimated reporting limit shown
J = Estimated Concentration (< reporting limit)
JL = Analyte was positively identified, value may be less than reported
JK = Analyte was positively identified. Reported results is estimate with unknown bias
UJK = Analyte was not detected at or above the reported estimate with unknown bias
5, 10, 25, 50 x D = Sample Dilutions required from Matrix interferences

Table 5. SR-520 Pontoon Bridge Project Dioxin Testing Results Summary

		DMMU ID	DMMU-S1			DMMU-S2			DMMU-S3			DMMU-S4			DMMU-S5			DMMU-S6			DMMU-S7			DMMU-B1		
	WHO (05)	Sample Depth	+10 to +6 ft			+10 to +6 ft			+10 to +6 ft			+1 to -3 ft			+2 to -2 ft			-2 to -6 ft			-2 to -6 ft			+6 to -2 ft		
Dioxin/furan	TEF	Unit	DMMU-S1	LQ	TEQ	DMMU-S2	LQ	TEQ	DMMU-S3	LQ	TEQ	DMMU-S4	LQ	TEQ	DMMU-S5	LQ	TEQ	DMMU-S6	LQ	TEQ	DMMU-S7	LQ	TEQ	DMMU-B1	LQ	TEQ
2,3,7,8-TCDD	1	ng/kg dw	0.108	U	0.054	0.35	JK	0.175	0.111	U	0.0555	0.507	J	0.507	0.459	JK	0.2295	0.938	J	0.938	0.832	J	0.832	0.144	U	0.072
1,2,3,7,8-PeCDD	1	ng/kg dw	0.0925	U	0.04625	0.293	JK	0.1465	0.108	U	0.054	0.337	JK	0.1685	0.144	U	0.072	1.06	J	1.06	0.691	J	0.691	0.112	U	0.056
1,2,3,4,7,8-HxCDD	0.1	ng/kg dw	0.0657	U	0.003285	0.253	J	0.0253	0.0842	U	0.00421	0.375	J	0.0375	0.208	U	0.0104	0.97	J	0.097	0.724	J	0.0724	0.109	U	0.00545
1,2,3,6,7,8-HxCDD	0.1	ng/kg dw	0.545	J	0.0545	0.767	J	0.0767	0.238	JK	0.0119	2.38	J	0.238	1.77	J	0.177	6.14	J	0.614	2.99	J+	0.299	0.79	J	0.079
1,2,3,7,8,9-HxCDD	0.1	ng/kg dw	0.658	J	0.0658	1.07	J	0.107	0.272	J	0.0272	2.27	J	0.227	1.85	J	0.185	5.56	J	0.556	3.15	J	0.315	1.03	J	0.103
1,2,3,4,6,7,8-HpCDD	0.01	ng/kg dw	6.13	BJ	0.0613	13.6	B	0.136	4.59	BJ	0.0459	56.1	B	0.561	35.6	B	0.356	143	B	1.43	67.2	BJ+	0.672	21.4	B	0.214
OCDD	0.0003	ng/kg dw	33.9		0.01017	103	B	0.0309	35.2	BJ	0.01056	433	B	0.1299	250	B	0.075	1110	B	0.333	537	BJ+	0.1611	182	B	0.0546
2,3,7,8-TCDF	0.1	ng/kg dw	0.123	U	0.00615	0.354	J	0.0354	0.154	U	0.0077	0.525	J	0.0525	0.544	J	0.0544	1.26	J	0.126	1.46	J	0.146	0.189	U	0.00945
1,2,3,7,8-PeCDF	0.03	ng/kg dw	0.138	U	0.00207	0.133	U	0.001995	0.127	U	0.001905	0.0835	U	0.0012525	0.158	U	0.00237	0.139	U	0.002085	0.227	U	0.003405	0.15	U	0.00225
2,3,4,7,8-PeCDF	0.3	ng/kg dw	0.163	U	0.02445	0.147	U	0.02205	0.141	U	0.02115	0.0946	U	0.01419	0.181	U	0.02715	0.163	U	0.02445	0.258	U	0.0387	0.172	U	0.0258
1,2,3,4,7,8-HxCDF	0.1	ng/kg dw	0.205	BJ	0.0205	0.281	BJ	0.0281	0.134	U	0.0067	1.09	BJ	0.109	1.61	BJ	0.161	2.45	BJ	0.245	1	BJ	0.1	0.309	BJK	0.01545
1,2,3,6,7,8-HxCDF	0.1	ng/kg dw	0.157	BJ	0.0157	0.24	BJ	0.024	0.122	U	0.0061	0.456	BJ	0.0456	0.517	BJ	0.0517	1.05	BJ	0.105	0.353	BJK	0.01765	0.22	BJK	0.011
1,2,3,7,8,9-HxCDF	0.1	ng/kg dw	0.163	U	0.00815	0.194	U	0.0097	0.184	U	0.0092	0.215	U	0.01075	0.309	U	0.01545	0.44	U	0.022	0.331	U	0.01655	0.183	U	0.00915
2,3,4,6,7,8-HxCDF	0.1	ng/kg dw	0.423	J	0.0423	0.172	JK	0.0086	0.146	U	0.0073	0.906	J	0.0906	0.898	J	0.0898	2.15	J	0.215	0.913	J	0.0913	0.595	J	0.0595
1,2,3,4,6,7,8-HpCDF	0.01	ng/kg dw	1.03	BJ	0.0103	2.74	BJ	0.0274	0.838	BJ	0.00838	19.1	B	0.191	21.7	B	0.217	41.9	B	0.419	17.5	BJ+	0.175	5.07	BJ	0.0507
1,2,3,4,7,8,9-HpCDF	0.01	ng/kg dw	0.0793	U	0.0003965	0.16	U	0.0008	0.114	U	0.00057	1.03	J	0.0103	0.887	J	0.00887	2.11	J	0.0211	1	J+	0.01	0.309	U	0.001545
OCDF	0.0003	ng/kg dw	2.46	BJ	0.000738	7.23	BJ	0.002169	2.57	BJ	0.000771	43.3	B	0.01299	41.2	B	0.01236	102	B	0.0306	42.9	B	0.01287	14.9	BJ	0.00447
Total TEQ: (u = 1/2)					0.43			0.86			0.28			2.41			1.75			6.24			3.65			0.77
Total TEQ: (U = 0)					0.28			0.49			0.09			2.21			1.39			6.19			3.58			0.57
Total TOC, %:					4.72			2.22			3.46			2.79			2.67			3.23			3.14			3.15

U = Anaylte undetected below the MDL
J = Analyte reported below quantitation limit, but above the MDL
B = Analyte deteced in method blank
JK = Analyte was positively identified, value may be less than the reported estimate
K = Estimated maximum possible concentration (EMPC*) for the associated compound
EMPC qualified data treated as Undetected

Table 5. SR-520 Pontoon Bridge Project Dioxin Testing Results Summary

	WHO (05)	DMMU ID	DMMU-B2			DMMU-B3			DMMU-B4			DMMU-B5			DMMU-B5 (field duplicate)			DMMU-B6			DMMU-B7			DMMU-B7 (field duplicate)		
		Sample Depth	-2 to -6 ft			-6 to -10 ft			-6 to -10 ft			-10 to -15 ft			-10 to -15 ft			-10 to -15 ft			-10 to -15 ft			-10 to -15 ft		
Dioxin/furan	TEF	Unit	DMMU-B2	LQ	TEQ	DMMU-B3	LQ	TEQ	DMMU-B4	LQ	TEQ	DMMU-B5	LQ	TEQ	DMMU-B5	LQ	TEQ	DMMU-B6	LQ	TEQ	DMMU-B7	LQ	TEQ	DMMU-B7	LQ	TEQ
2,3,7,8-TCDD	1	ng/kg dw	0.465	J	0.465	0.478	JK	0.239	1.04	J	1.04	0.585	J	0.585	0.185	U	0.0925	0.97	JK	0.485	0.404	JK	0.202	0.544	JK	0.272
1,2,3,7,8-PeCDD	1	ng/kg dw	0.3	JK	0.15	0.477	J	0.477	1.19	J	1.19	0.438	JK	0.219	0.356	J	0.356	0.953	J	0.953	1.38	J	1.38	0.681	JK	0.3405
1,2,3,4,7,8-HxCDD	0.1	ng/kg dw	0.199	J	0.0199	0.174	JK	0.0087	0.719	J	0.0719	0.145	U	0.00725	0.125	U	0.00625	0.523	J	0.0523	0.681	JK	0.03405	0.351	J	0.0351
1,2,3,6,7,8-HxCDD	0.1	ng/kg dw	0.805	JK	0.04025	1.1	J	0.11	5.97	J	0.597	0.754	J	0.0754	0.47	J	0.047	3.65	J	0.365	3.67	J	0.367	4.13	J	0.413
1,2,3,7,8,9-HxCDD	0.1	ng/kg dw	0.96	J	0.096	2.16	J	0.216	5.35	J	0.535	1.97	J	0.197	1.2	JK	0.06	4.44	J	0.444	2.99	JK	0.1495	2.98	J	0.298
1,2,3,4,6,7,8-HpCDD	0.01	ng/kg dw	12.3	B	0.123	12.6	B	0.126	118	B	1.18	5.55	BJ	0.0555	3.79	BJ	0.0379	57.3	B	0.573	30.5	B	0.305	51.2	B	0.512
OCDD	0.0003	ng/kg dw	77.4	B	0.02322	65.7	B	0.01971	864	B	0.2592	23.5	BJ	0.00705	14.6	BJ	0.00438	492	B	0.1476	168	B	0.0504	372	B	0.1116
2,3,7,8-TCDF	0.1	ng/kg dw	0.402	J	0.0402	0.159	U	0.00795	1.02	J	0.102	0.361	J	0.0361	0.274	JK	0.0137	0.878	JK	0.0439	0.335	J	0.0335	0.304	JK	0.0152
1,2,3,7,8-PeCDF	0.03	ng/kg dw	0.177	U	0.002655	0.111	U	0.001665	0.247	U	0.003705	0.101	U	0.001515	0.125	U	0.001875	0.439	J	0.01317	0.627	J	0.01881	0.687	J	0.02061
2,3,4,7,8-PeCDF	0.3	ng/kg dw	0.198	U	0.0297	0.12	U	0.018	0.638	JK	0.0957	0.112	U	0.0168	0.14	U	0.021	1.29	J	0.387	1.43	J	0.429	1.1	JK	0.165
1,2,3,4,7,8-HxCDF	0.1	ng/kg dw	0.699	BJ	0.0699	0.597	BJ	0.0597	7.01	BJ	0.701	0.214	BJ	0.0214	0.108	U	0.0054	4.87	BJ	0.487	8.25	BJ	0.825	5.25	BJ	0.525
1,2,3,6,7,8-HxCDF	0.1	ng/kg dw	0.394	BJK	0.0197	0.505	BJ	0.0505	1.84	BJ	0.184	0.0992	U	0.00496	0.0932	U	0.00466	2.35	BJ	0.235	3.34	BJ	0.334	4.32	BJ	0.432
1,2,3,7,8,9-HxCDF	0.1	ng/kg dw	0.396	U	0.0198	0.208	U	0.0104	0.165	U	0.00825	0.148	U	0.0074	0.143	U	0.00715	1.63	U	0.0815	3.37	U	0.1685	0.587	U	0.02935
2,3,4,6,7,8-HxCDF	0.1	ng/kg dw	0.81	JK	0.0405	0.53	J	0.053	1.41	J	0.141	0.114	U	0.0057	0.111	U	0.00555	3.23	JK	0.1615	5.26	J	0.526	6.3	J	0.63
1,2,3,4,6,7,8-HpCDF	0.01	ng/kg dw	19.9	B	0.199	21.8	B	0.218	81.4	B	0.814	1.41	BJ	0.0141	0.72	BJ	0.0072	127	B	1.27	179	B	1.79	445	B	4.45
1,2,3,4,7,8,9-HpCDF	0.01	ng/kg dw	0.414	J	0.00414	0.268	U	0.00134	2.6	J	0.026	0.219	J	0.00219	0.198	U	0.00099	2	J	0.02	1.62	J	0.0162	2.87	J	0.0287
OCDF	0.0003	ng/kg dw	17.2	B	0.00516	14.6	BJ	0.00438	134	B	0.0402	1.98	BJ	0.000594	0.0685	BJ	0.00002055	75.7	B	0.02271	75.7	B	0.02271	194	B	0.0582
Total TEQ: (u = 1/2)					1.35			1.62			6.99			1.26			0.67			5.74			6.65			8.34
Total TEQ: (U = 0)					1.05			1.33			6.88			0.99			0.45			4.97			6.10			7.51
Total TOC, %:					3.23			2.74			3.16			2.7			4.2			2.33			2.22			2.37

u = 1/2 DL	0.96
u = 0	0.72

7.49
6.81

U = Anaylte undetected below the MDL
J = Analyte reported below quantitation limit, but above the MDL
B = Analyte deteced in method blank
JK = Analyte was positively identified, value may be less than the reported estimate
K = Estimated maximum possible concentration (EMPC*) for the associated compound
EMPC qualified data treated as Undetected

Table 5. SR-520 Pontoon Bridge Project Dioxin Testing Results Summary

Dioxin/furan	WHO (05) TEF	DMMU ID / Sample Depth / Unit	DMMU-B8 / -2 to -6 ft / DMMU-B8	LQ	TEQ
2,3,7,8-TCDD	1	ng/kg dw	0.104	U	0.052
1,2,3,7,8-PeCDD	1	ng/kg dw	**0.295**	J	**0.295**
1,2,3,4,7,8-HxCDD	0.1	ng/kg dw	0.0668	U	0.00334
1,2,3,6,7,8-HxCDD	0.1	ng/kg dw	0.97	JK	0.0485
1,2,3,7,8,9-HxCDD	0.1	ng/kg dw	1.44	J	0.144
1,2,3,4,6,7,8-HpCDD	0.01	ng/kg dw	**16.8**	B	**0.168**
OCDD	0.0003	ng/kg dw	**118**	B	**0.0354**
2,3,7,8-TCDF	0.1	ng/kg dw	**0.298**	J	**0.0298**
1,2,3,7,8-PeCDF	0.03	ng/kg dw	0.121	U	0.001815
2,3,4,7,8-PeCDF	0.3	ng/kg dw	0.137	U	0.02055
1,2,3,4,7,8-HxCDF	0.1	ng/kg dw	**1**	BJ	**0.1**
1,2,3,6,7,8-HxCDF	0.1	ng/kg dw	**0.473**	BJ	**0.0473**
1,2,3,7,8,9-HxCDF	0.1	ng/kg dw	0.256	U	0.0128
2,3,4,6,7,8-HxCDF	0.1	ng/kg dw	0.721	JK	0.03605
1,2,3,4,6,7,8-HpCDF	0.01	ng/kg dw	**29.5**	B	**0.295**
1,2,3,4,7,8,9-HpCDF	0.01	ng/kg dw	0.37	U	0.00185
OCDF	0.0003	ng/kg dw	**19.8**	B	**0.00594**
Total TEQ: (u = 1/2)					**1.30**
Total TEQ: (U = 0)					**1.12**
Total TOC, %:					**2.86**

U = Anaylte undetected below the MDL
J = Analyte reported below quantitation limit, but above the MDL
B = Analyte deteced in method blank
JK = Analyte was positively identified, value may be less than the reported estimate
K = Estimated maximum possible concentration (EMPC*) for the associated compound
EMPC qualified data treated as Undetected