CENWS-OD-TS-NR

Memorandum for Record December 1, 2016

SUBJECT: TIER 1 EVALUATION FOR PROPOSED DREDGED MATERIAL FROM THE CITY OF ASOTIN MARINA ON THE SNAKE RIVER

1) Introduction. This memorandum documents the Tier 1 evaluation by the Dredged Material Management Program (DMMP) agencies (U.S. Army Corps of Engineers, Washington State Departments of Ecology and Natural Resources, and the Environmental Protection Agency) of the proposed dredging at the City of Asotin Chief Looking Glass Park (Marina) facility on the Snake River. This evaluation resulted in a no-test determination.

2) Project Background. The marina is located on the south side of the Snake River about 800 feet upstream from Asotin Creek. Due to its location at the transition zone between a free-flowing river and the slack water behind the Lower Granite Dam (downstream), the marina receives significant sedimentation from the Snake River. Sedimentation in the marina has made both the marina and boat launch unusable by the public. The City of Asotin is proposing to dredge approximately 10,000 cubic yards (CY) of sediment to restore the City's existing boat launch located at Looking Glass Park on the Snake River. Proposed disposal is upland.

   The Marina originally was originally built in 1974 and consisted of a boat launch, fuel dock, 2 covered and 2 uncovered boat slips, and a sea plane dock. By the early 1990s, the majority of the docks were in disrepair and were removed to make room for the Steam Boat Jean, a historic vessel that was used as a restaurant. The City has reportedly removed significant amounts of sedimentation over the years; however, floods in 1995 and 1996 deposited larger volumes of sediment that were not within the City's budget to dredge. The marina has been unusable to the public since 1997 when the Steam Boat Jean was removed from the marina.

   In 2008, the City prepared a Sampling and Analysis Plan (SAP) to collect core samples from within the marina to assess the suitability of the dredged material. The SAP was approved by 2009 by the USACE Dredged Materials Management Office (DMMO). However, due to funding short-falls, the City was unable to conduct the sampling. Subsequently, in 2011, the USACE Walla Walla office collected and analyzed sediment cores from the marina as part of a larger Snake River dredging program evaluation. This 2011 data was submitted to the DMMP agencies in September 2016 for consideration for a suitability determination.

   No subsequent sediment evaluation activities have occurred. In September 2016, Gravity Consulting (on behalf of the City) submitted a request to the DMMP agencies for a no-test determination for the proposed dredged material on the basis of the existing (2011) sampling data.

3) Evaluation.

   The sediment proposed for removal at the Marina was deposited as a result of natural sedimentation processes on the Snake River. Sediment cores from the 2011 characterization study were collected via sonic drilling from the three locations (A, B, and C) shown on Figure 1. At each location, the sediment core was split into two depth intervals, each representing one sample (Table 1). All six samples (from the three locations) were analyzed for grain size and total organic carbon. Due to the high percentage of sand and gravel encountered at location A, only the cores collected from within the marina (locations B and C) underwent chemical analysis.

Sediment conventional and chemical analytical results (Table 1) show that the proposed dredged material is predominantly sand. Fines ranged from a low of 6.6% (location A) to a high of 42.7% (location C). Total organic carbon was also low throughout, ranging from 0.48 to 1.2%.

Review of the USACE 2011 chemical data indicates that most of the current DMMP freshwater chemicals of concern were not detected or detected at concentrations less than the SL1 in the sediments of the marina (Table 3). A few freshwater COCs were not analyzed, included butyl tins, benzoic acid, carbazole, dibenzofuran, and selected pesticides. Two COCs, dieldrin and di-n-octyl phthalate were not detected at concentrations slightly greater than their respective SL1 values. Numerous additional analytes were measured, but are not reported here because they are not required DMMP freshwater COCs.

Phthalates. One phthalate COC, di-n-octyl phthalate, was not detected at 44.0 µg/kg in all samples analyzed, which slightly greater than the SL1 value of 39 µg/kg. All other phthalates were non-detect. The DMMP agencies concur that the likelihood that di-n-octyl phthalate is present at a concentration of concern is therefore very low.

Butyl tins. Butyl tins are standard DMMP COCs for freshwater projects. Testing for TBT and its related compounds (tetrabutyl tin, dibutyl tin, and monobutyl tin) is required in areas where it is likely to be found, such as marinas, ship repair facilities, and shipping lanes. The proposed dredged material lies within a marina; however, historical information suggests that the Asotin Marina has been only lightly used since its construction (and no use since 1997). The DMMP agencies concur that the likelihood of encountering butyl tins is low.

Pesticides. The submitted data did not include 2,4'-DDT, 2,4'-DDD, and 2,4'-DDE. However, the parent compounds (4,4'-DDT, 4,4'-DDe, 4,4'-DDD) were not detected, so the likelihood of finding the 2,4'-DDx degradation products is low. Dieldrin was reported as not detected at 6.7 µg/kg in samples B1, B2, C1, and C2, which slightly exceeds the freshwater SL1 of 4.9 µg/kg. No other DMMP freshwater pesticide COCs were detected. Furthermore, the 2011 USACE study analyzed the sediment for more than 150 types of pesticides, herbicides, and fungicides, of which none were detected (USACE, 2013). The DMMP agencies concur that the likelihood of concentrations of DMMP freshwater pesticide COCs that may cause adverse effects is very low.

Miscellaneous extractables. For the remaining missing DMMP freshwater COCs (benzoic acid, carbazole, and dibenzofuran), the DMMP agencies concur that their presence is unlikely given that all other semi-volatile organic COCs were not detected are well below their respective SL1 values.

Dioxins. Dioxins are not required for analysis outside of Puget Sound unless there is a reason-to-believe that they may be present. Dioxin data is presented in Table 4; all dioxin Toxic Equivalents (TEQ) are less than 4.0 pptr. Dioxins are therefore not of concern at this location.

4) Antidegradation Evaluation. The 2008 SAP estimated that the depth of the dredge prism varied from 4 to 6 ft (including overdepth). At all three sample locations, at least one discrete sample (A2, B2, and C2) targeted the Z-layer. As discussed in the previous section, freshwater COCs were either not detected or detected at values below SLs in all samples.

5) Debris Management Clarification and Evaluation. The DMMP agencies implemented a debris screening requirement following the 2015 SMARM in order to prevent the disposal of solid waste and large debris at open-water disposal sites in Puget Sound (DMMP, 2015). Because upland disposal of the dredged material is proposed for the Asotin Marina, the debris screening requirement is not applicable for this project.

6) Summary. This project is located in an area of low concern, existing data is fairly clean, and upland disposal is proposed. The DMMP agencies have determined that the sediment to be exposed by dredging will meet the State of Washington antidegradation standard. Therefore, no further testing is required for this project.

   This determination does ***not*** constitute final agency approval of the project. During the public comment period that follows a public notice, resource agencies will provide input on the overall project. A final decision will be made after full consideration of agency input, and after an alternatives analysis is performed under section 404(b)(1) of the Clean Water Act.

7) References.

DMMP, 2016. Dredged material Evaluation and Disposal Procedures: User Manual. Prepared by the Dredged Material Management Office, USACE Seattle District, August 2016.

Gravity Consulting, 2016. Summary of dredge sampling results for City of Asotin Marina. Prepared for the Dredged Material Management Office, USACE Seattle District, September 2016.

USACE, 2013. Lower Snake and Clearwater Rivers Sediment Evaluation Report for Proposed 2013/2014 Channel Maintenance Dredging. Prepared by USACE Walla Walla District, March 2013.

8) Agency Signatures

signed copy on file in DMMO - Seattle District office

Concur:

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Date Heather Whitney Fourie, U.S. Army Corps of Engineers, Seattle District

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Date Erika Hoffman, Environmental Protection Agency

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Date Laura Inouye, Ph.D., Washington Department of Ecology

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Date Celia Barton, Washington Department of Natural Resources

Copies furnished:
DMMP signatories
Shawn Hinz, Gravity Consulting
USACE Seattle District Regulatory

Table 1. Sample Locations, names, and depths

Location	Sample ID	Depth to Mudline (ft)	Sample interval (ft below mudline)	Sampling Date
LGR145.5A	LGR145.5A1	9	0 to 3.1	8/16/20111
	LGR145.5A2		3.1 to 6.2	8/16/20111
LGR145.5B	LGR145.5B1	7	0 to 3.1	8/16/20111
	LGR145.5B2		3.1 to 7.2	8/16/20111
LGR145.5C	LGR145.5C1	9	0 to 3.1	8/16/20111
	LGR145.5C2		3 to 6.4	8/16/20111

Table 2. Grain size and conventional chemistry

Parameter	Units	Sediment Samples					
		LGR145.5A1	LGR145.5A2	LGR145.5B1	LGR145.5B2	LGR145.5C1	LGR145.5C2
Grain Size Classification							
Gravel (>2000 um)	%	0.14	1.5	0.24	3.54	0.53	0.48
Sand (2000 - 62.5 um)	%	93.3	79.01	90.72	80.25	74.57	56.92
Silt (62.5 - 3.9 um)	%	--	--	--	--	--	--
Clay (<3.9 um)	%	--	--	--	--	--	--
Fines (Silt + Clay)	%	6.6	20.2	9.1	17.2	25	42.7
Conventionals							
Total Solids	%	72.4	72.6	72.0	73.1	68.7	67.1
Preserved Total Solids	%	--	--	--	--	--	--
Total Volatile Solids	%	--	--	--	--	--	--
Total Organic Carbon	%	0.64	1.2	0.75	0.48	0.69	1
Ammonia	mg-N/kg	--	--	--	--	--	--
Total Sulfides	mg/kg	--	--	--	--	--	--

Table 3. 2011 Chemical data compared to DMMP freshwater guidelines

Parameter	Units	Freshwater Guidelines					
		SL1	SL2	LGR145.5B1	LGR145.5B2	LGR145.5C1	LGR145.5C2
Metals							
Arsenic	mg/kg	14	120	2.5 U	2.49 U	4.43 U	5.83 U
Cadmium	mg/kg	2.1	5.4	0.091	0.0999	0.139	0.21
Chromium	mg/kg	72	88	14.4 U	12.6 U	17.5 U	17.3 U
Copper	mg/kg	400	1,200	14.3 U	14.8 U	19.2 U	23.5 U
Lead	mg/kg	360	>1,300	5.4321	6.491	8.268	13.71
Mercury	mg/kg	0.66	0.8	0.0117	0.0302	0.0333	0.0709
Nickel	mg/kg	38	110	11.8 U	9.92 U	13.5 U	13.5 U
Selenium	mg/kg	11	>20	1.32 U	0.763 U	2.1 U	2.98 U
Silver	mg/kg	0.57	1.7	0.0576	0.0784	0.103	0.138
Zinc	mg/kg	3,200	>4,200	44.7 U	40.1 U	49.3 U	50.1 U
Organic Contaminants							
1-Methylnaphthalene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
2-Methylnaphthlaene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Acenaphthene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Acenaphthylene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Anthracene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Benz(a)anthracene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Benzo(a)pyrene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	28.6
Benzofluoranthenes (b, j, k)	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Benzo(g,h,i)perylene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	5.43
Chrysene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Dibenz(a,h)anthracene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Fluoranthene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Fluorene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Indeno(1,2,3-c,d)pyrene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Naphthalene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Phenanthrene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Pyrene	ug/kg	--	--	4.4 U	4.4 U	4.4 U	4.4 U
Total PAHs	ug/kg	17,000	30,000	4.4 U	4.4 U	4.4 U	34.03
Phenols							
Phenol	ug/kg	120	210	8.8 U	8.8 U	8.8 U	8.8 U
4-Methylphenol	ug/kg	260	2,000	8.8 U	8.8 U	8.8 U	13
Pentachlorophenol	ug/kg	1,200	>1,200	44.0 U	44.0 U	44.0 U	44.0 U
Phthalates							
Bis(2-ethylhexyl)phthalate	ug/kg	500	22,000	444 U	444 U	444 U	444 U
Di-n-butyl phthalate	ug/kg	380	1,000	43.0 U	43.0 U	43.0 U	43.0 U
Di-n-octyl phthalate	ug/kg	39	>1,100	44.0 U	44.0 U	44.0 U	44.0 U
Chlorinated Hydrocarbons							
beta-Hexachlorocyclohexane	ug/kg	7.2	11	6.7 U	6.7 U	6.7 U	6.7 U
Organometallic Compounds							
Monobutyltin	ug/kg	540	>4,800				

Parameter	Units	Freshwater Guidelines					
		SL1	SL2	LGR145.5B1	LGR145.5B2	LGR145.5C1	LGR145.5C2
Dibutyltin	ug/kg	910	130,000				
Tributyltin	ug/kg	47	320				
Tetrabutyltin	ug/kg	97	>97				
Miscellaneous Extractables							
Benzoic acid	ug/kg	2,900	3,800				
Carbazole	ug/kg	900	1,100				
Dibenzofuran	ug/kg	200	680				
Pesticides & PCBs							
4,4'-DDD	ug/kg	--	--	6.7 U	6.7 U	6.7 U	6.7 U
4,4'-DDE	ug/kg	--	--	6.7 U	6.7 U	6.7 U	6.7 U
4,4'-DDT (1)	ug/kg	--	--	6.7 U	6.7 U	6.7 U	6.7 U
2,4'-DDD	ug/kg	--	--				
2,4'-DDE	ug/kg	--	--				
2,4'-DDT	ug/kg	--	--				
Total of 2,4' and 4,4'-DDD	ug/kg	310	860				
Total of 2,4' and 4,4'-DDE	ug/kg	21	33				
Total of 2,4' and 4,4'-DDT	ug/kg	100	8,100				
Dieldrin	ug/kg	4.9	9.3	6.7 U	6.7 U	6.7 U	6.7 U
Endrin ketone	ug/kg	8.5	>8.5	6.7 U	6.7 U	6.7 U	6.7 U
Aroclor 1016	ug/kg	--	--	2.25 U	2.25 U	2.25 U	2.25 U
Aroclor 1242	ug/kg	--	--	2.25 U	2.25 U	2.25 U	2.25 U
Aroclor 1248	ug/kg	--	--	2.25 U	2.25 U	2.25 U	2.25 U
Aroclor 1254	ug/kg	--	--	2.25 U	2.25 U	7.52	5.67
Aroclor 1260	ug/kg	--	--	2.25 U	2.25 U	2.25 U	2.25 U
Aroclor 1221	ug/kg	--	--	2.25 U	2.25 U	2.25 U	2.25 U
Aroclor 1232	ug/kg	--	--	2.25 U	2.25 U	2.25 U	2.25 U
Total PCBs (Aroclors)	ug/kg	110	2,500	2.25 U	2.25 U	7.52	5.67
Bulk Petroleum Hydrocarbons							
TPH-diesel	mg/kg	340	510	50 U	50 U	50 U	50 U
TPH-residual	mg/kg	3,600	4,400	50 U	50 U	50 U	50 U

J = estimated concentration
U = not detected
SL = screening level
Bold = exceeds SL1
Target analyte not measured

Table 4. 2011 Dioxin/furan data

CHEMICAL	TEF (WHO 2005)	Units	LGR145.5B1				LGR145.5B2				LGR145.5C1				LGR145.5C2			
DIOXINS/FURANS			Result	Flag	TEQ (U = 1/2 RL)	TEQ (U = 0)	Result	Flag	TEQ (U = 1/2 RL)	TEQ (U = 0)	Result	Flag	TEQ (U = 1/2 RL)	TEQ (U = 0)	Result	Flag	TEQ (U = 1/2 RL)	TEQ (U = 0)
2,3,7,8-TCDD	1	pg/g	0.991	U	0.4955	0	0.0888	JEMPC	0.0888	0.0888	0.991	U	0.4955	0	0.14	JEMPC	0.14	0.14
1,2,3,7,8-PeCDD	1	pg/g	0.103	JEMPC	0.103	0.103	0.991	U	0.4955	0	0.249	JEMPC	0.249	0.249	0.369	JEMPC	0.369	0.369
1,2,3,4,7,8-HxCDD	0.1	pg/g	1.98	U	0.099	0	0.191	JEMPC	0.0191	0.0191	0.321	JEMPC	0.0321	0.0321	0.657	JEMPC	0.0657	0.0657
1,2,3,6,7,8-HxCDD	0.1	pg/g	0.234	JEMPC	0.0234	0.0234	0.293	JEMPC	0.0293	0.0293	0.654	JEMPC	0.0654	0.0654	1.28	JEMPC	0.128	0.128
1,2,3,7,8,9-HxCDD	0.1	pg/g	1.98	U	0.099	0	0.191	JEMPC	0.0191	0.0191	0.321	JEMPC	0.0321	0.0321	0.657	JEMPC	0.0657	0.0657
1,2,3,4,6,7,8-HpCDD	0.01	pg/g	3.77		0.0377	0.0377	3.83		0.0383	0.0383	9.37		0.0937	0.0937	27		0.27	0.27
OCDD	0.0003	pg/g	33		0.0099	0.0099	29.8		0.00894	0.00894	69.1		0.02073	0.02073	252		0.0756	0.0756
2,3,7,8-TCDF	0.1	pg/g	0.131	J	0.0131	0.0131	0.142	J	0.0142	0.0142	0.218	J	0.0218	0.0218	0.281	JEMPC	0.0281	0.0281
1,2,3,7,8-PeCDF	0.03	pg/g	0.226	JB	0.00678	0.00678	0.198	JBEMPC	0.00594	0.00594	0.317	JB	0.00951	0.00951	0.445	JB	0.01335	0.01335
2,3,4,7,8-PeCDF	0.3	pg/g	0.161	J	0.0483	0.0483	0.13	J	0.039	0.039	0.173	J	0.0519	0.0519	0.279	J	0.0837	0.0837
1,2,3,4,7,8-HxCDF	0.1	pg/g	0.346	JB	0.0346	0.0346	0.291	JB	0.0291	0.0291	0.488	JB	0.0488	0.0488	0.72	JB	0.072	0.072
1,2,3,6,7,8-HxCDF	0.1	pg/g	0.219	JB	0.0219	0.0219	0.157	JBEMPC	0.0157	0.0157	0.257	JEMPC	0.0257	0.0257	0.541	JEMPC	0.0541	0.0541
1,2,3,7,8,9-HxCDF	0.1	pg/g	0.131	J	0.0131	0.0131	5	U	0.25	0	5	U	0.25	0	0.236	J	0.0236	0.0236
2,3,4,6,7,8-HxCDF	0.1	pg/g	0.155	JEMPC	0.0155	0.0155	0.0662	JEMPC	0.00662	0.00662	0.183	J	0.0183	0.0183	0.479	J	0.0479	0.0479
1,2,3,4,6,7,8-HpCDF	0.01	pg/g	1.29	J	0.0129	0.0129	1.07	J	0.0107	0.0107	2.13		0.0213	0.0213	6.47		0.0647	0.0647
1,2,3,4,7,8,9-HpCDF	0.01	pg/g	5	U	0.025	0	5	U	0.025	0	0.234	J	0.00234	0.00234	0.533	J	0.00533	0.00533
OCDF	0.0003	pg/g	2.02	JEMPC	0.000606	0.000606	2.14	J	0.000642	0.000642	4.26	J	0.001278	0.001278	16.6		0.00498	0.00498
TOTAL TEQ					1.06	0.34			1.10	0.33			1.44	0.69			1.51	1.51

Figure 1. 2011 Sampling Locations

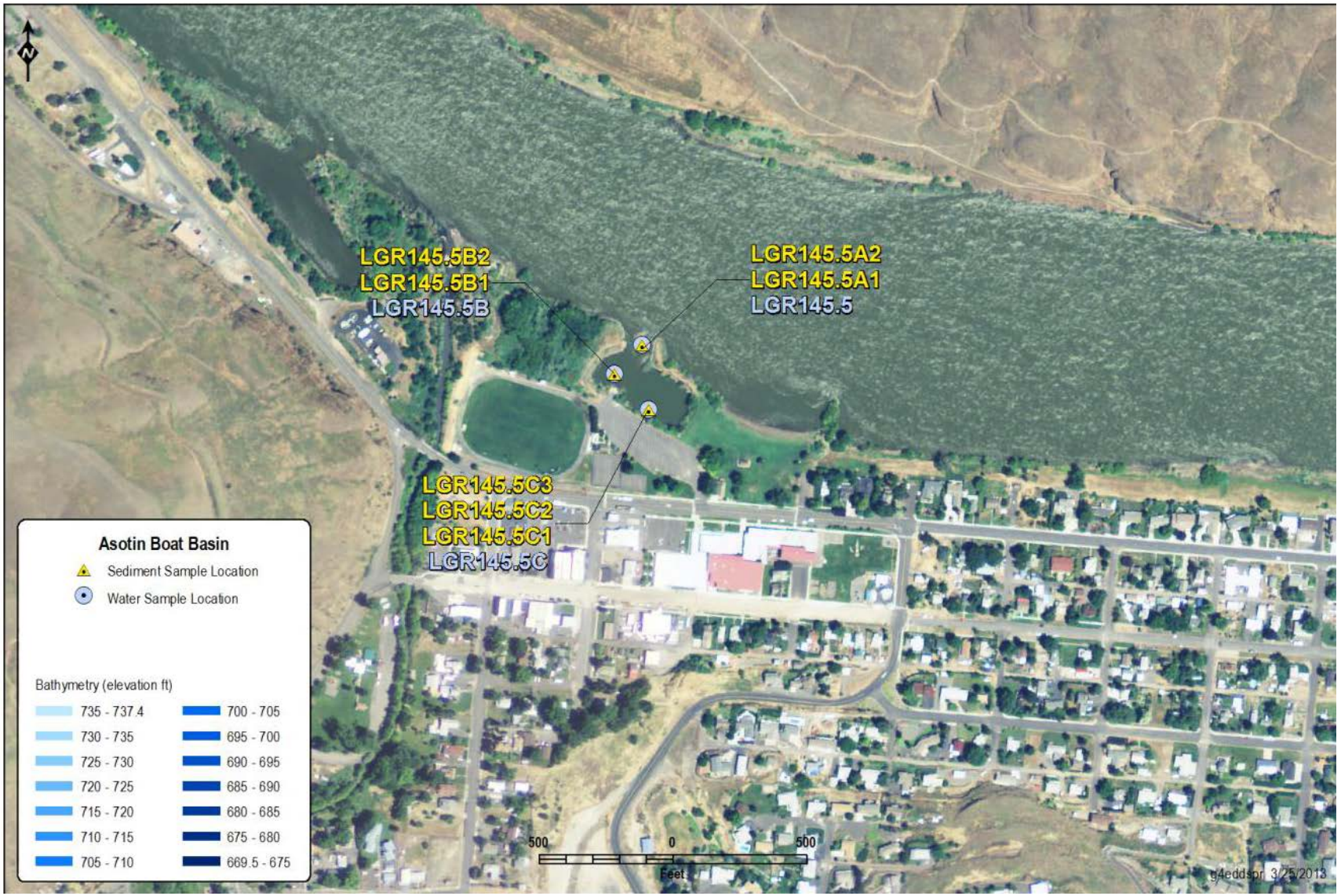

Figure 2. 2008 Bathymetry and Proposed Dredge Plan

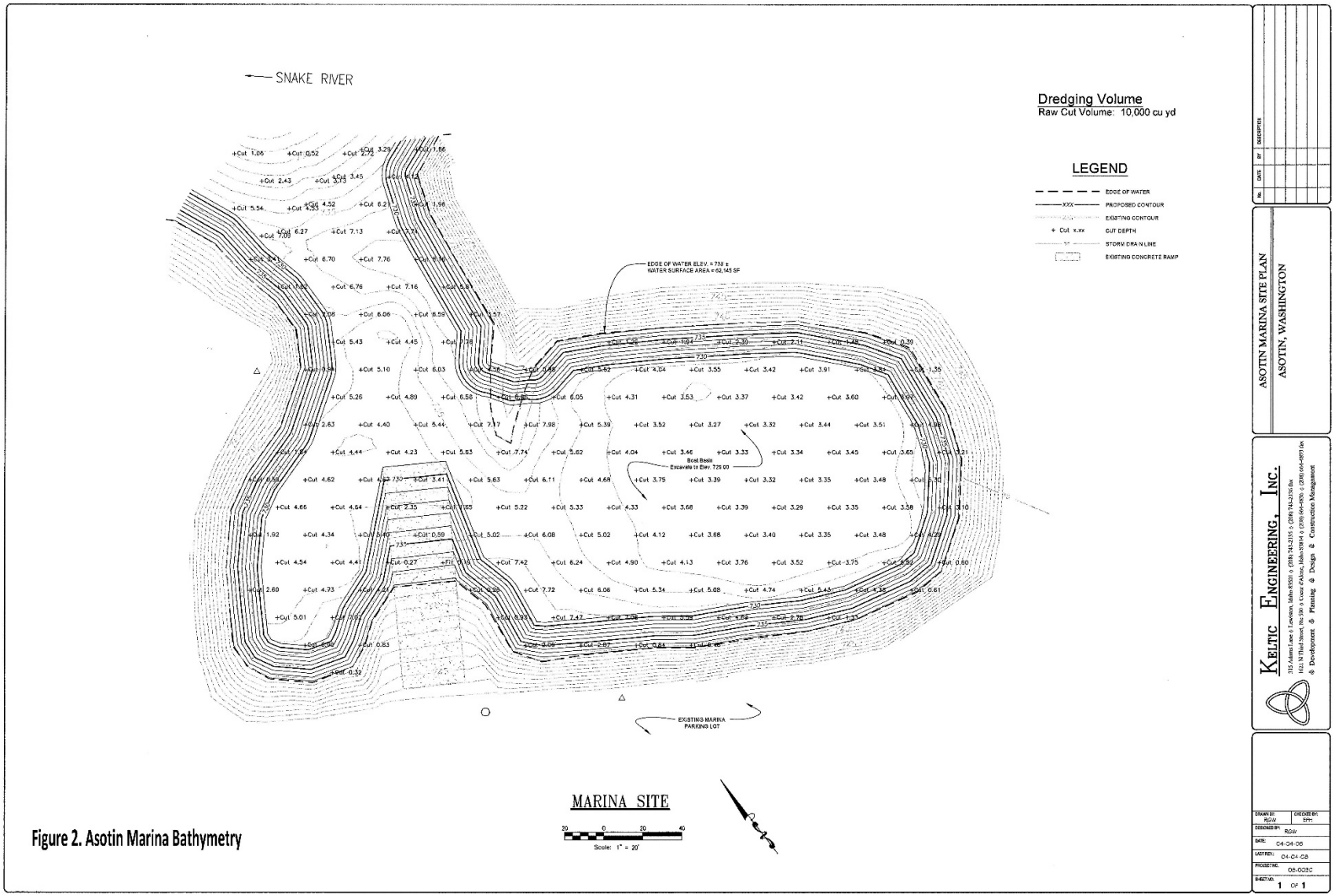

Figure 2. Asotin Marina Bathymetry

Figure 3. 2011 Bathymetry