

**SUBJECT: DETERMINATION OF THE SUITABILITY OF THE PROPOSED DREDGED MATERIAL AT THE GRE GOLDEN TIDES MARINA, SEATTLE, WASHINGTON (2005-00744) AS EVALUATED UNDER SECTION 404 OF THE CLEAN WATER ACT FOR PLACEMENT AT A PSSDA UNCONFINED OPEN-WATER DISPOSAL SITE.**

1. The following summary reflects the consensus determination of the Agencies that comprise the regional Dredged Material Management Program (DMMP) for the State of Washington. The agencies include the Corps of Engineers, Department of Ecology, Department of Natural Resources, and the Environmental Protection Agency. The agencies are charged with determining the suitability of the proposed 1,336 cy of dredged material from the GRE Golden Tides Marina, LLC Project, located near Shilshole Bay, Seattle, Washington for open-water disposal at the Elliott Bay disposal site.
2. The project initially proposed to dredge 1,336 cy of dredged material (-7 to -10 ft MLLW: project design depth: - 9 ft with 1 ft of allowable overdepth) and dispose the material at an approved upland site. Under DMMP review (25 August 2005 MFR) the DMMP agencies requested verification that the newly exposed surface after dredging would be in compliance with the Washington State antidegradation standard (Attachment 1). The applicant then elected to change the project disposal location from upland to open-water and elected to undergo DMMP characterization.
3. The project was ranked high for testing purposes, and two core sampling locations were occupied and composited for one surface Dredged Material Management Unit (DMMU) and underlying Z samples were collected and archived representing the top 1 foot of the proposed new surface after dredging is completed. The samples were collected by an Impact Corer. Due to sample collection difficulty during collection a third proposed core sampling location was abandoned with the approval of the DMMO. Figure 1 shows the vicinity map, Figure 2 shows the plan view locations of the two proposed and actual core sample stations within the proposed dredging prism, and Figure 3 shows the cross-sections of the dredging prism.
3. Relevant dates for regulatory tracking purposes are included in Table 1.

**Table 1. Regulatory Tracking Information and Dates**

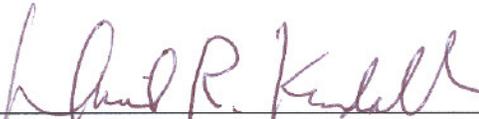
Corps Permit #:	2005-00744
Final SAP submittal date:	November 15, 2005
SAP approval letter date:	December 21, 2005
Sampling date(s):	January 18, 2006
Sediment data characterization report submittal date:	April 10, 2006
Volume Tested (# DMMUs), Sampling Method:	1,336 cy (2 samples/ 1 DMMUs), Impact Corer
DAIS Tracking Number	GREGT-1-A-F-223
<b>Recency Determination Date: High (2 years)</b>	January 2008

4. The Sampling and Analysis Plan was originally submitted to the DMMP agencies on November 15, 2005, and approved on December 21, 2005. The quality assurance/quality control guidelines specified by the PSSDA Users Manual were generally complied with. The data gathered were deemed sufficient and acceptable for decision-making by the DMMP agencies based on best professional judgment.

5. Table 2 provides a complete analysis summary of the results of the conventional and chemical analyses for the single composited DMMU. Chemical analysis of the DMMU indicated that from a DMMP and SMS perspective there were no SL exceedances of DMMP chemicals of concern Guidelines, and no SQS exceedances of SMS Criteria (see Table 2 for complete chemical testing summary. Based on the chemical testing conducted no biological testing was required for this DMMU.
6. The results of the one composited DMMU indicated that all 1,336 cy of proposed dredged material from the GRE Golden Tides Marina dredged material is suitable for either open-water disposal or for an appropriate beneficial use. Because there were no SL or SQS exceedances analysis of the archived Z-samples were not required.
7. This memorandum documents the suitability of material proposed for dredging from the GRE Golden Tides Marina Project, for open-water disposal. 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.

Concur:

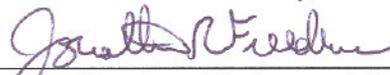
18 May 06  
Date

  
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David Kendall, Ph.D., Seattle District Corps of Engineers

18 MAY 06  
Date

 FOR  
\_\_\_\_\_  
Loree Randall/Helen Pressley, Washington Department of Ecology

18 May 2006  
Date

  
\_\_\_\_\_  
Jonathan Freedman, Environmental Protection Agency, Region 10

May 19, 2006  
Date

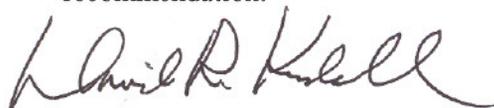
  
\_\_\_\_\_  
Peter Leon, Washington Department of Natural Resources

**Copies Furnished:**

Corps Regulatory Project Manager  
Jonathan Freedman/John Malek, EPA  
Loree Randall/Helen Pressley, Ecology  
Grant Yang, Ecology Toxics Cleanup Program  
Peter Leon, DNR  
DMMO File

SUBJECT: DMMP DETERMINATION ON THE SEDIMENT QUALITY OF THE EXPOSED SEDIMENT SURFACE AFTER DREDGING TO VERIFY COMPLIANCE WITH THE WASHINGTON STATE ANTIDegradation POLICY FOR THE GRE GOLDEN TIDES LLC PROJECT (2005-00744).

1. The DMMP agencies evaluated the background information pertaining to this project, including data from two Puget Sound Ambient Monitoring Program Stations in the near field vicinity of the proposed project. The DMMP agencies have determined that testing of the surface exposed (e.g., Z-sample horizon: top 1 foot of newly exposed surface) will be required before dredging of 1,640 cy of material from the project area, to verify the sediment quality.
2. The testing of the new surface (Z-sample) underlying the proposed dredged material will be evaluated by a representative core sample of the top 3 feet of the proposed new sediment surface for compliance with the Sediment Management Standards' antidegradation policy. The DMMP agencies will require that a Z-sample be obtained before initiating the proposed dredging.
3. The following sampling and analysis protocol will apply: A 3-foot core sample of the new surface will be collected and sectioned into 0-1 ft, 1-2 ft, and 2-3 ft samples. The 0-1 ft section sample will be analyzed for DMMP COC of concern. If the analysis results show the new surface (0-1 ft) meets the antidegradation policy for Washington State, no additional testing is required. However, if the results come back demonstrating degraded sediment quality, the next section will be analyzed (e.g., 1-2 ft), and examined accordingly. If the results show a degraded sediment the next core section (2-3 ft) will be analyzed.
4. After the DMMP examines the testing results for compliance with the antidegradation policy, if the results show that the surface sediment quality is still degraded, after examining all three sections, then additional dredging of the contaminated new surface material (0-3 ft) will be required after completing the proposed dredging of 1,640 cy, and then backfilled with 2-3 feet of clean material to enhance "natural attenuation" until the Ecology Toxics Cleanup Program can evaluate the site for further attention/action.
5. This pre-construction Z-sample analysis and review/approval by the DMMP is required before dredging is initiated under the Corps Section 404/10 permit. The technical information will be coordinated by the DMMP with the Ecology Toxics Cleanup Program.
6. This determination was reviewed by the DMMP agency representatives and all concurred with this recommendation.



David R. Kendall, Ph.D.  
Chief, Dredged Material Management Office

Copies Furnished:

Suzanne Skadowski, Corps Regulatory Branch Project Manager

John Malek, EPA

Jonathan Freedman, EPA

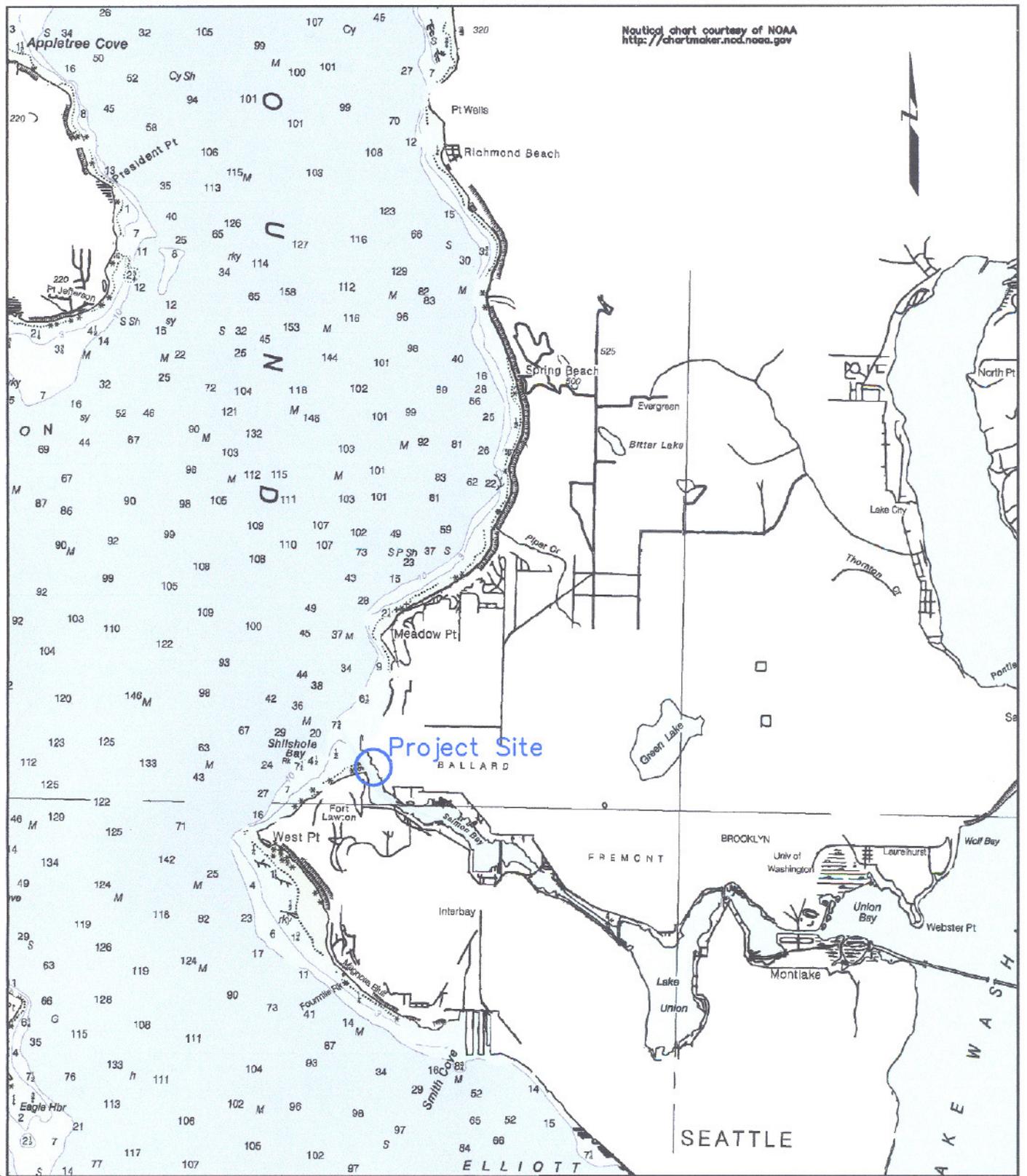
Grant Yang, Ecology Toxics Cleanup Program

Cinde Donoghue, Ecology

Peter Leon, DNR

DMMO File

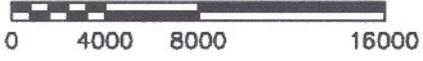
Nautical chart courtesy of NOAA  
<http://chartmaker.nod.noaa.gov>



SECTION 5, TOWNSHIP 25 NORTH  
 RANGE 3 EAST, W.M. IN THE CITY  
 OF SEATTLE, KING COUNTY, WA

LATITUDE: 47° 40' 22"  
 LONGITUDE: 122° 24' 26"

APPROXIMATE SCALE IN FEET



Project Vicinity

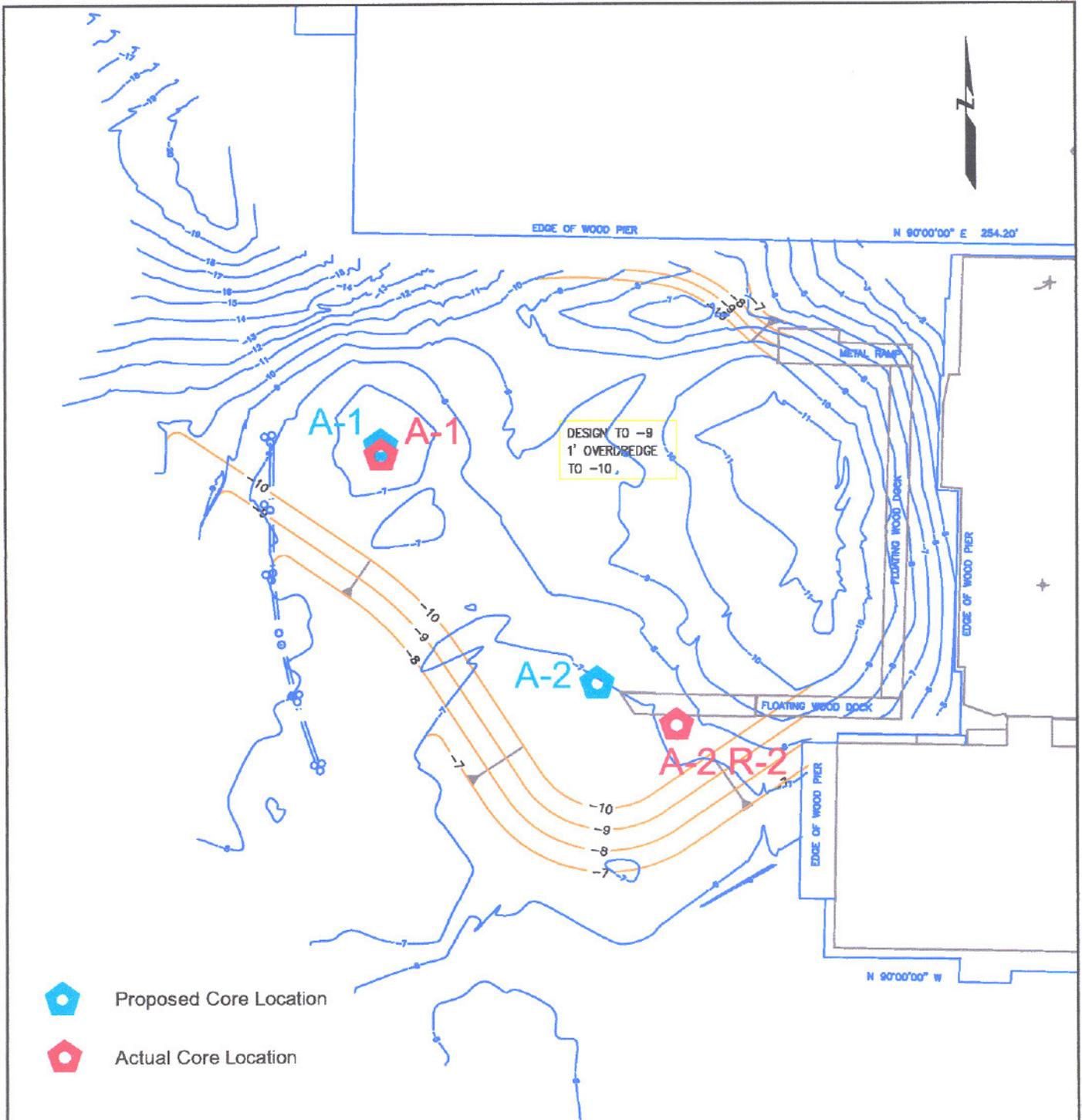
For GRE Golden Tides, LLC  
 Seattle, WA

By: GSM	Date: 3-13-06	Project No. 012230
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Figure 1

Golden Tides Marina Vicinity Map.dwg

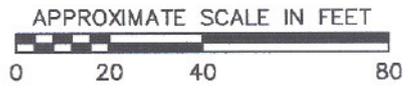


-  Proposed Core Location
-  Actual Core Location

**DATUMS:**  
 HORIZONTAL DATUM: NAD-83 GRID  
 VERTICAL DATUM: MEAN LOWER LOW WATER

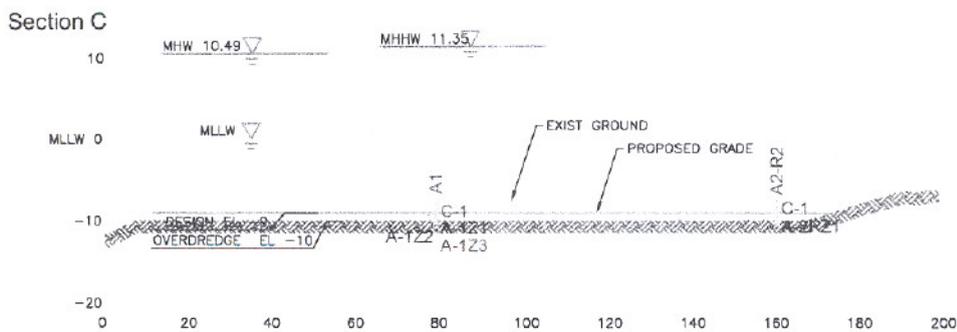
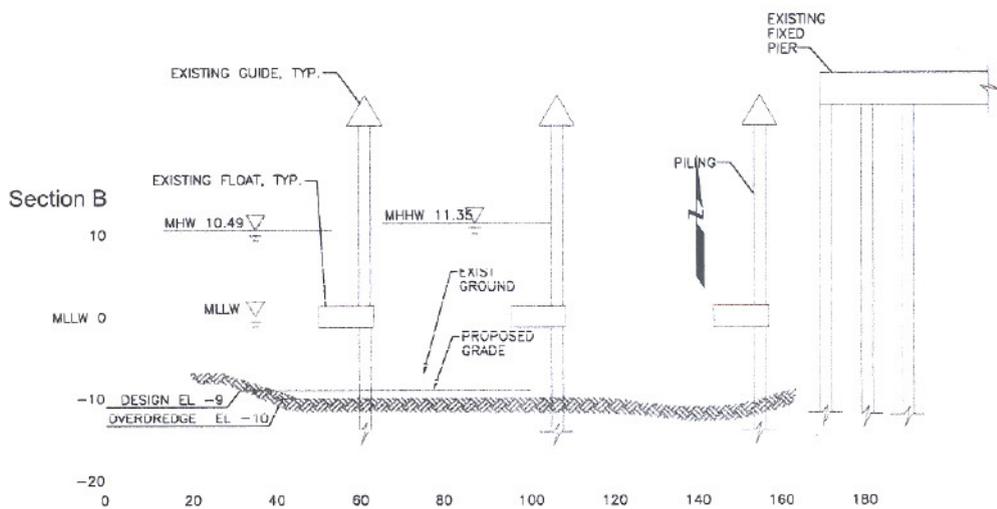
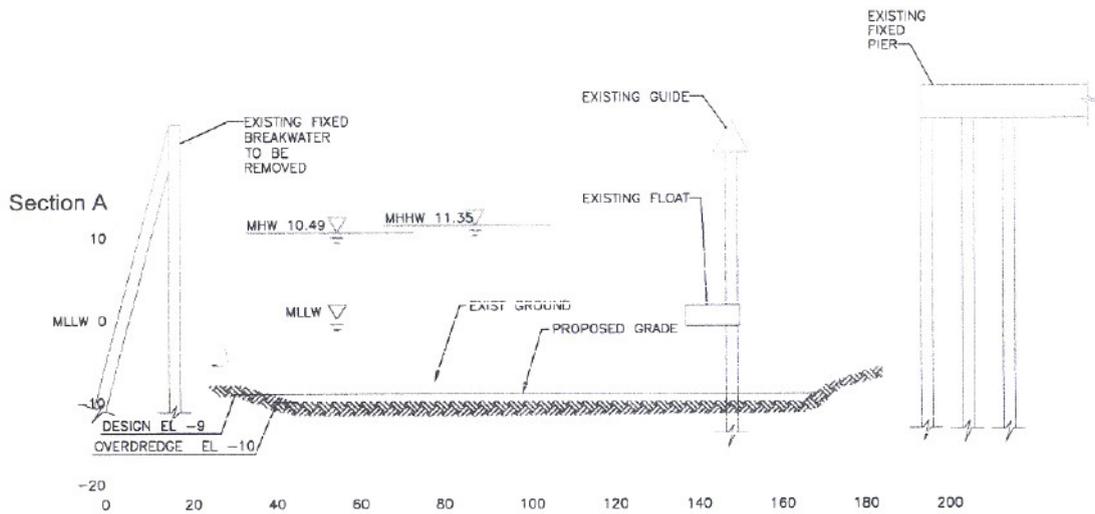
**TIDE LEVELS:**  
 EXTREME HIGH = 14.80  
 MEAN HIGHER HIGH WATER (MHHW) = 11.35  
 MEAN HIGH WATER = 10.49  
 MEAN LOWER LOW WATER = 0.0  
 EXTREME LOW WATER = -4.6

**DREDGE QUANTITIES:**  
 CUT: 1,182 CU YDS  
 + 15% Contingency  
 1,336 cu. yd.



<p>Planned and Actual Sediment Coring Locations</p> <p>GRE Golden Tides, LLC Seattle, WA</p>		
By: GSM	Date: 3-8-06	Project No. 012230
 <b>Geomatrix</b>		<p>Figure 2</p>

Project: Golden Tides Dredging.dwg



Cross Sections		
GRE Golden Tides, LLC Seattle, WA		
By: GSM	Date: 3-27-06	Project No: 012230
Geomatrix		Figure 3

Table 2. GRE Golden Tides Marina DMMP/SMS Characterization Summary

CHEMICAL NAME	DMMU ID:								DMMU-S1	
	DMMP				SMS			mg/kg-dry wgt	mg/kg-OC	VQ
	Units	SL	BT	ML	Units	SQS	CSL	DMMP	SMS	
Antimony		150		200				6.0		UJ
Arsenic	mg/kg	57	0.5071	700	mg/kg	57	93	6.0		
Cadmium	mg/kg	5	11.3	14	mg/kg	5.1	6.7	0.20		U
Chromium	mg/kg	(2)	267	(2)	mg/kg	260	270	18.3		
Copper	mg/kg	390	1,027	1,300	mg/kg	390	390	12.6		
Lead	mg/kg	450	975	1,200	mg/kg	450	530	6.0		
Mercury	mg/kg	0.41	1.5	2.3	mg/kg	0.41	0.59	0.05		U
Nickel	mg/kg	140	370	370	mg/kg	--	--	26.0		
Selenium	mg/kg	(2)	3	(2)	mg/kg	--	--	0.2		U
Silver	mg/kg	6.1	6.1	8.4	mg/kg	6.1	6.1	0.4		U
Zinc	mg/kg	410	2,783	3,800	mg/kg	410	960	31.4		
TBT ion (porewater)	ug/L	0.15	0.15		ug/L	0.05	0.35	NA		
Naphthalene	ug/kg	2,100		2,400	mg/kg-OC	99	170	19.00	1.54	U
Acenaphthylene	ug/kg	560		2,000	mg/kg-OC	66	66	19.00	1.54	U
Acenaphthene	ug/kg	500		2,000	mg/kg-OC	16	57	19.0	1.54	U
Fluorene	ug/kg	540		3,600	mg/kg-OC	23	79	19.0	1.54	U
Phenanthrene	ug/kg	1,500		2,100	mg/kg-OC	100	480	18.0	1.46	
Anthracene	ug/kg	560		13,000	mg/kg-OC	220	1,200	19.00	1.54	U
2-Methylnaphthalene	ug/kg	670		1,900	mg/kg-OC	38	64	19.0	1.54	U
<b>Total LPAH</b>	ug/kg	5,200		29,000	mg/kg-OC	370	780	18.0	1.46	
Fluoranthene	ug/kg	1,700	4,600	30,000	mg/kg-OC	160	1,200	130.0	10.6	
Pyrene	ug/kg	2,600	11,980	16,000	mg/kg-OC	1,000	1,400	150.0	12.2	
Benzo(a)anthracene	ug/kg	1,300		5,100	mg/kg-OC	110	270	54.0	4.39	
Chrysene	ug/kg	1,400		21,000	mg/kg-OC	110	460	120.0	9.76	
Total Benzo(b+h)fluoranthenes	ug/kg	3,200		9,900	mg/kg-OC	230	450	1,090.0	88.6	
Benzo(a)pyrene	ug/kg	1,600		3,600	mg/kg-OC	99	210	51.00	4.15	
Indeno(1,2,3-cd)pyrene	ug/kg	600		4,400	mg/kg-OC	34	88	33.00	2.68	
Dibenzo(a,h)anthracene	ug/kg	230		1,900	mg/kg-OC	12	33	19.00	1.54	u
Benzo(g,h,i)perylene	ug/kg	670		3,200	mg/kg-OC	31	78	37.0	3.01	
<b>Total HPAH</b>	ug/kg	12,000		69,000	mg/kg-OC	960	5,300	1,665.0	135.4	
1,3-Dichlorobenzene	ug/kg	170			mg/kg-OC	2.3	2.3	19.0	1.54	u
1,4-Dichlorobenzene	ug/kg	110		120	mg/kg-OC	3.1	9	19.0	1.54	u
1,2-Dichlorobenzene	ug/kg	35		110	mg/kg-OC	2.3	2.3	19.0	1.54	u
1,2,4-Trichlorobenzene	ug/kg	31		64	mg/kg-OC	0.81	1.8	19.0	1.54	u
Hexachlorobenzene (HCB)	ug/kg	22	168	230	mg/kg-OC	0.38	2.3	19.0	1.54	u
Dimethylphthalate	ug/kg	71			mg/kg-OC	53	53	19.0	1.54	u
Diethylphthalate	ug/kg	200		1,200	mg/kg-OC	61	110	19.0	1.54	u
Di-n-butylphthalate	ug/kg	1,400		5,100	mg/kg-OC	220	1,700	59.0	4.80	
Butylbenzylphthalate	ug/kg	63		970	mg/kg-OC	4.9	64	19.0	1.54	u
Bis(2-ethylhexyl)phthalate	ug/kg	1,300		8,300	mg/kg-OC	47	78	16.0	1.30	
Di-n-octylphthalate	ug/kg	6,200		6,200	mg/kg-OC	58	4,500	19.0	1.54	u
Phenol	ug/kg	420		1,200.00	ug/kg	420	1,200	19.0		u
2-Methylphenol	ug/kg	63		77	ug/kg	63	63	19.0		u
4-Methylphenol	ug/kg	670		3,600	ug/kg	67	67	19.0		u
2,4-Dimethylphenol	ug/kg	29		210	ug/kg	29.0	29.0	19.0		u
Pentachlorophenol	ug/kg	400		690	ug/kg	36.0	69.0	96.0		u
Benzyl alcohol	ug/kg	57		87	ug/kg	57	73	19.0		u
Benzoic acid	ug/kg	650		760	ug/kg	650	650	190.0		u
Dibenzofuran	ug/kg	540		1,700	mg/kg-OC	15	58	19.0	1.54	u
Hexachloroethane	ug/kg	600		1,600	mg/kg-OC			19.0	1.54	u
Hexachlorobutadiene	ug/kg	29		270	mg/kg-OC	3.9	6.2	19.0	1.54	u
N-Nitrosodiphenylamine	ug/kg	280		130	mg/kg-OC	11	11	19	1.54	u
Trichloroethene	ug/kg	160		1,600	ug/kg	--	--	1.0		u
Tetrachloroethene	ug/kg	57		210	ug/kg	--	--	1.0		u
Ethylbenzene	ug/kg	10		50	ug/kg	--	--	1.0		u
Total Zylene (sum of o-,m-,p-)	ug/kg	40		160	ug/kg	--	--	1.0		u
Total DDT (sum of 4,4'-DDD, 4,4'-DDE and 4,4'-DDT)	ug/kg	6.9	50	69		--	--	2.0		u
Aldrin	ug/kg	10				--	--	0.98		u
Chlordane	ug/kg	10	37			--	--	0.98		u
Dieldrin	ug/kg	10				--	--	2.0		u
Heptachlor	ug/kg	10				--	--	0.98		u
Alpha-BHC	ug/kg		10			--	--	0.98		u
Gamma-BHC (Lindane)	ug/kg	10				--	--	0.98		u
Total PCBs	ug/kg	130	38***	3,100.0	mg/kg-OC	12	65	19.0	1.54	u
Total Solids	%							84.3		
Total Volatile Solids	%							1.3		
Total Organic Carbon	%							1.2		
Total Ammonia	mg/kg							0.3		J
Total Sulfides	mg/kg							19.0		J
Gravel	%							22.9		
Sand	%							69.7		
Silt	%							5.9		
Clay	%							1.5		
Fines (percent silt + clay)	%							7.4		
Bioassay Determination: (P/F)								NA		
BTs exceeded:								NO		
Bioaccumulation conducted:								NO		
ML Rule exceeded:								NO		
PSDDA Determination:								PASS		
DMMU Volume:	cy							1,336		
Rank								H		
Mean Core sampling depth (includes Z-sample)	ft							3.9		
Maximum sampling depth (mudline) includes Z-sample								4.1		
DMMU ID:								DMMU-S1		

**Legend:**  
**SL = Screening Level exceedance**  
**BT = Bioaccumulation Trigger exceedance**  
**P = Pass (Suitable for UCOWD)**  
**F(B) = Failure (UCOWD Unsuitable w/o biological testing)**  
**SQS = Sediment Quality Standards exceedance (SMS)**  
**CSL = Cleanup Screening Level exceedance (SMS)**

VQ = Validation Qualifier  
 UCOWD = Unconfined open-water disposal  
 U = undetected at the reported concentration  
 J = Estimated Concentration (< reporting limit)