

APPENDIX N
2008 AND 2009 WATER QUALITY
MONITORING REPORTS (2008, 2009)

2008 ANNUAL WATER QUALITY SELF MONITORING REPORT

Sacramento and Stockton Deep Water Ship Channels Operation and Maintenance Dredging



Final

Prepared by



**US Army Corps
of Engineers** ®
Sacramento District

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1.0 Introduction

The U.S. Army Corps of Engineers (USACE) conducted maintenance dredging for the Sacramento and Stockton Deep Water Ship Channels (DWSC). Ross Island Sand and Gravel Co. (Ross Island) under contract with the USACE performed the maintenance dredging including the water quality self monitoring. The information contained in this annual report was presented via email to both the USACE and the Central Valley Regional Water Quality Board (CVRWQCB) on a weekly basis during the dredging operations by Ross Island. The annual report serves as a compilation and summary of the field reports.

1.1 Data Summary

Turbidity, dissolved oxygen, pH and temperature monitoring was performed up current of the dredge at a station termed River (R1) that is uninfluenced by the presence of the dredge and at River (R2), a station that is down current of the dredge, therefore, within its influence. These measurements were collected at five feet below the water surface and at a point approximately 2/3 of the distance to the bottom of the channel. Appendix A contains summary tables prepared by Ross Island of the field reports.

Samples for Total Suspended Solid (TSS) were collected and analyzed throughout the maintenance dredging activities. Methyl Mercury samples were collected for all disposal sites on the Stockton DWSC. At each disposal site, four samples were taken at the start of the discharge and then four were taken before spilling occurred. Both TSS and Mercury results are summarized in Appendix B.

Appendix C contains a CD with all the daily and weekly field reports along with the analytical test results.

2.0 Dredging Activities

2.1 Sacramento DWSC

In accordance with General Order No 5-01-116, maintenance dredging activities for the Sacramento DWSC began August 1, 2008 and concluded September 6, 2008. A summary of maintenance dredging activities are contained in Table 1.

Table 1: 2008 Sacramento DWSC Maintenance Dredging				
Station	Qty (cy)	DMPS	Date	Description of Event
1791+00 to 1736+25	42,844	S-31	8/1/08 to 8/7/08	• Fish screen worked well • Fisheries community sampling in the river caught 3 each delta smelt (8/2/08) • S-31 Disposal site was percolating and drying as expected. There was no effluent discharge.
546+00 to 530+00	14,910	Rio Vista	8/10/08 to 8/13/08	• Fisheries community sampling was performed • The Rio Vista disposal site had sufficient boards to contain the dredge slurry without effluent discharge.
440+00 to 430+00	4,578	Decker Is	8/18/08 to 9/6/08	• All material was placed at the lower end of Decker Island placement site with no effluent discharge. • Dredge did not operate (8/30, 8/31, 9/1) for public safety watch.
390+00 to 375+00	14,171			
350+00 to 318+00	48,810			

2.2 Stockton DWSC

In accordance with General Order No R5-2004-0061, maintenance dredging activities for the Stockton DWSC began September 11, 2008 and concluded November 26, 2008. A summary of maintenance dredging activities are contained in Table 2.

Table 2: 2008 Stockton DWSC Maintenance Dredging				
Station	Qty (cy)	DMPS	Date	Description of Event
290+00 to 327+00	51,384	Scour Pond	9/11/08 to 9/28/08	• Prior to dredging, repair work was done to the interior and exterior toes

Table 2: 2008 Stockton DWSC Maintenance Dredging				
Station	Qty (cy)	DMPs	Date	Description of Event
442+00 to 502+00	28,006			- of the site levees. • Methyl Mercury samples were taken per CVRWQCB requirements. • Effluent samples were collected and remained in compliance.
579+00 to 599+00	29,202	McCormack	10/1/08 to 10/5/08	• Methyl Mercury samples were taken per CVRWQCB requirements. • Effluent samples were collected and remained in compliance.
710+00 to 726+00	18,000	Bradford	10/7/08 to 10/13/08	• No effluent discharge into the river
1939+00 to 2030+00	107,460	Roberts Is	10/16/08 to 11/26/08	• Continued to build disposal site as needed to pond water. • Analytical samples taken prior to effluent discharge.

2.3 Fisheries Monitoring

All dredging activities were supported by SWCA, Inc. for monitoring the fisheries resources. Sampling was conducted on alternating days both upland and in-water. Upland sampling was comprised of discharging dredge sediment and water to a separate, smaller disposal cell and screening the influent for all species. In-water sampling was comprised of towing a net in the vicinity of the dredge above and below to ascertain the species which would exist in the waters at that point in time. In addition to the fisheries monitoring performed in water, a fish entrainment methodology known as a collection basket was used throughout the dredging activities.

3.0 Conclusion

The USACE conducted maintenance dredging for Stockton DWSC under the Notice of Applicability (NOA) amendment No R5-2004-0061-L dated 26 February 2008 and NOA amendment No R5-2004-0061-M dated 23 July 2008. The Spud Island reach (RM 31.65 to 32.20), station 1671+00 to 1700+00, which was originally listed in NOA amendment No R5-2005-0061-L was not dredged due to the fisheries window end date. Also, the USACE received approval from the CVRWQCB on a Sample and Analysis Plan (SAP) amendment dated 2 September 2008 for a Sherman Island reach (RM 11.65 to 12.22), station 615+00 to 646+00, in the Stockton DWSC. The reach was sampled, but due to the fisheries window end date an Notice of Intent (NOI) was not submitted during this dredging season. Both reaches will be evaluated for maintenance dredging in 2009.

The water quality self-monitoring conducted by Ross Island for maintenance dredging activities in the Sacramento and Stockton DWSC has been reviewed and found to be acceptable with no major discrepancies by the USACE.

Appendix A

Summary Tables - Turbidity, Dissolved Oxygen, pH, Temperature

Ross Island Sand & Gravel Co.*Dredging Operations*

W91238-06-D-0026 - Task Order No. 0006

Sacramento Deep Water Ship Channel**Monthly Water Quality Data Summary Report - 8/1/08 to 8/28/08**

	Time	1330hrs	1340hrs	1255hrs	1100hrs	1145hrs	1350hrs	1400hrs			1735hrs	1100hrs	1345hrs	1630hrs
R1 @ 5'	8/1/2008	8/2/2008	8/3/2008	8/4/2008	8/5/2008	8/6/2008	8/7/2008	8/8/2008	8/9/2008	8/10/2008	8/11/2008	8/12/2008	8/13/2008	8/14/2008
Turbidity, NTU	109.00	107.00	108.00	151.00	114.00	124.00	114.00			78.60	79.80	84.00	76.10	
Temp., °C	22.70	22.10	22.00	23.00	22.29	22.18	22.40	No Dredging	No Dredging	22.10	22.18	21.80	21.80	No Dredging
pH	8.05	8.01	7.85	8.01	8.28	8.06	8.28			6.86	7.04	7.04	7.31	
Total Suspended Solids (Composite), mg/L	-	-	22.00	-	-	-	20.00			9.00	-	-	-	
R1 @ 2/3 Depth														
Turbidity, NTU	128.00	106.00	110.00	149.00	140.00	137.00	118.00			83.80	77.10	81.20	78.40	
Temp., °C	22.40	22.30	22.00	22.80	22.29	22.10	22.28			21.67	22.83	21.70	21.20	
pH	7.98	7.97	7.91	8.10	8.48	8.29	8.31			7.34	7.18	7.18	7.08	
Dissolved Oxygen, mg/L	6.33	6.67	6.34	6.12	5.32	5.18	5.35			6.95	7.18	7.21	7.42	
Total Suspended Solids (Composite), mg/L	-	-	22.00	-	-	-	20.00			9.00	-	-	-	
R2 @ 5'														
Turbidity, NTU	116.00	111.00	114.00	148.00	123.00	132.00	121.00			79.00	76.80	84.30	79.10	
Temp., °C	22.40	23.10	21.80	23.10	22.34	22.49	22.31			22.36	22.41	21.90	22.00	
pH	8.18	7.94	7.92	8.17	8.15	8.18	8.10			7.16	7.09	7.21	7.20	
Total Suspended Solids (Composite), mg/L	-	-	23.00	-	-	-	16.00			7.00	-	-	-	
R2 @ 2/3 Depth														
Turbidity, NTU	117.00	100.00	108.00	155.00	152.00	136.00	126.00			79.70	83.00	86.80	79.30	
Temp., °C	22.30	22.70	22.10	23.00	22.28	22.13	22.34			22.58	22.31	21.30	21.80	
pH	8.07	7.84	7.91	8.15	8.40	8.31	8.21			7.46	7.10	7.24	7.28	
Dissolved Oxygen, mg/L	6.68	6.61	6.51	6.18	5.18	5.20	5.31			7.62	7.03	7.08	7.08	
Total Suspended Solids (Composite), mg/L	-	-	23.00	-	-	-	16.00			7.00	-	-	-	

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I have compared the information to the specified water quality requirements and that any discrepancies have been identified and explained. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature _____

Ross Island Sand & Gravel Co.*Dredging Operations*

W91238-06-D-0026 - Task Order No. 0006

Sacramento Deep Water Ship Channel**Monthly Water Quality Data Summary Report - 8/1/08 to 8/28/08**

<i>Time</i>				1630hrs	1255hrs	1735hrs	1700hrs	1155hrs	1220hrs	1350hrs	1550hrs	1325hrs	1710hrs	1645hrs
R1 @ 5'	8/15/2008	8/16/2008	8/17/2008	8/18/2008	8/19/2008	8/20/2008	8/21/2008	8/22/2008	8/23/2008	8/24/2008	8/25/2008	8/26/2008	8/27/2008	8/28/2008
Turbidity, NTU				83.40	77.40	73.60	71.30	74.80	75.30	71.60	72.10	76.70	82.90	88.30
Temp., °C	No Dredging	No Dredging	No Dredging	21.00	21.30	21.40	21.10	21.90	21.70	21.30	21.90	22.00	21.90	22.60
pH				7.08	7.42	7.31	7.36	7.42	7.30	7.21	7.31	7.23	7.38	7.30
Total Suspended Solids (Composite), mg/L				-	-	-	12.00	-	-	-	6.00	-	-	11.00
R1 @ 2/3 Depth														
Turbidity, NTU				79.80	79.20	75.20	73.00	76.10	76.10	73.40	72.40	79.30	86.40	89.20
Temp., °C				21.20	21.00	21.80	22.00	21.70	21.40	21.10	21.70	22.10	22.30	22.20
pH				7.23	7.35	7.20	7.29	7.31	7.38	7.25	7.30	7.30	7.29	7.22
Dissolved Oxygen, mg/L				7.21	7.30	7.28	7.41	7.34	7.18	7.30	7.28	7.34	7.30	7.43
Total Suspended Solids (Composite), mg/L				-	-	-	12.00	-	-	-	6.00	-	-	11.00
R2 @ 5'														
Turbidity, NTU				79.10	78.10	76.10	72.80	73.90	78.20	74.20	74.10	77.60	81.30	92.60
Temp., °C				21.30	21.20	21.60	21.10	21.30	21.40	21.40	22.10	22.30	22.30	22.50
pH				7.14	7.36	7.25	7.24	7.36	7.37	7.27	7.30	7.28	7.27	7.21
Total Suspended Solids (Composite), mg/L				-	-	-	13.00	-	-	-	8.00	-	-	9.00
R2 @ 2/3 Depth														
Turbidity, NTU				77.90	76.30	77.00	72.60	75.50	77.10	74.10	72.90	79.90	86.60	90.10
Temp., °C				21.20	21.60	21.40	21.60	21.60	21.30	21.10	21.90	21.80	21.90	22.50
pH				7.30	7.38	7.29	7.26	7.41	7.31	7.30	7.34	7.31	7.29	7.49
Dissolved Oxygen, mg/L				7.38	7.18	7.30	7.43	7.34	7.26	7.26	7.31	7.36	7.46	7.28
Total Suspended Solids (Composite), mg/L				-	-	-	13.00	-	-	-	8.00	-	-	9.00

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I have compared the information to the specified water quality requirements and that any discrepancies have been identified and explained. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature _____

Ross Island Sand & Gravel Co.

Dredging Operations

W91238-06-D-0026 - Task Order No. 0006

Sacramento Deep Water Ship Channel

Week Ending September 4, 2008

Time	1530hrs								1620hrs		1535hrs		1720hrs	
R1 @ 5'	8/29/2008		8/30/2008		8/31/2008		9/1/2008		9/2/2008		9/3/2008		9/4/2008	
Turbidity, NTU	84.80								85.00		84.60		83.90	
Temp., °C	22.40		No Dredging		No Dredging		No Dredging		22.10		22.20		22.60	
pH	7.40								7.36		7.42		7.31	
Total Suspended Solids (Composite), mg/L	-								-		-		5.00	
R1 @ 2/3 Depth														
Turbidity, NTU	86.30								84.30		83.90		81.40	
Temp., °C	21.80								21.80		22.00		22.40	
pH	7.42								7.31		7.37		7.34	
Dissolved Oxygen, mg/L	7.50								7.39		7.29		7.28	
Total Suspended Solids (Composite), mg/L	-								-		-		5.00	
R2 @ 5'														
Turbidity, NTU	86.70								86.40		85.70		86.10	
Temp., °C	22.60								22.00		22.40		22.50	
pH	7.36								7.37		7.39		7.33	
Total Suspended Solids (Composite), mg/L	-								-		-		5.00	
R2 @ 2/3 Depth														
Turbidity, NTU	87.40								87.70		84.10		84.60	
Temp., °C	21.70								22.00		22.10		22.50	
pH	7.37								7.42		7.40		7.36	
Dissolved Oxygen, mg/L	7.48								7.40		7.33		7.34	
Total Suspended Solids (Composite), mg/L	-								-		-		5.00	

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Signature

Randall H. Steed
Dredge Project Manager

September/October																																	
time	1501	2300	700	1501	2301	710	1516	2300	701	1510	2300	710	1515	2301	705	1501	2310	705	1505	2310	709	1500	2301	701	1501	2304	701	1501	2301	700	1530	2310	
R1 @ 5'	11-Sep			12-Sep			13-Sep			14-Sep			15-Sep			16-Sep			17-Sep			18-Sep			19-Sep			20-Sep			21-Sep		
Turbidity, NTU		37	28.1	36	29	34	31	27	29	26	31	21	36	29	27	31	30	27	31	27	29	39	37	39	31	27	34	30	34	34	30	29	37
DO, mg/l																																	
Temp., °C		23.1	22.1	23.1	23.4	21.4	32.1	22.9	22.1	23.8	23.1	23.1	23.4	22.1	22.2	22.4	21.1	23.1	23.1	22.4	21.2	21.4	22.3	22.1	22.1	21.9	22.1	21.9	22.1	21.7	23.1	22.9	21.9
pH		7.14	7.14	7.66	7.66	7.45	7.51	7.46	7.51	7.61	7.64	7.46	7.44	7.61	7.51	7.41	7.47	7.54	7.46	7.51	7.46	7.61	7.47	7.61	7.64	7.51	7.31	7.64	7.17	7.44	7.66		7.64

<u>time</u>	1504	2301	703	1504	2303	710	1515	2304	710	1511	2301	711	1516	2304	706	1502	2312	706	1506	2311	710	1501	2303	704	1502	2305	702	1501	2302	701	1531	2311	
R1 @ 2/3 deep	11-Sep			12-Sep			13-Sep			14-Sep			15-Sep			16-Sep			17-Sep			18-Sep			19-Sep			20-Sep			21-Sep		
Turbidity, NTU		34	29.1	29	29	31	30	26	30	29	30	24	37	30	28	32	30	26	30	26	31	39	37	38	30	29	34	31	36	36	32	29	36
DO, mg/l		8.14	7.99	8.11	8.01	8.11	8.01	7.97	7.76	7.99	8.01	7.99	7.84	7.94	7.66	7.94	7.84	7.88	7.86	7.84	7.91	7.91	8.01	7.99	7.91	7.97	8.01	7.91	7.69	7.99	7.96	7.69	7.21
Temp., °C		23.1	23.1	23.4	23.1	21.7	23.1	22.3	22.3	23.9	23.1	23.1	23.4	22.1	22.2	22.3	21.2	23.1	23.1	22.4	21.3	21.3	22.3	22.1	22.1	21.9	22.1	21.9	22.3	21.9	23.1	22.8	21.9
pH		7.14	7.13	7.66	7.61	7.45	7.51	7.46	7.61	7.14	7.44	7.44	7.21	7.66	7.47	7.61	7.61	7.55	7.46	7.54	7.64	2.66	7.44	7.64	7.66	7.54	7.21	7.11	7.14	7.46	7.64		7.61

<u>time</u>	1510	2312	710	1515	2315	715	1520	2310	717	1503	2310	717	1524	2310	715	1510	2317	712	1510	2319	715	1509	2315	711	1510	2312	710	1510	2310	707	1540	2312	
R2 @ 5'	11-Sep			12-Sep			13-Sep			14-Sep			15-Sep			16-Sep			17-Sep			18-Sep			19-Sep			20-Sep			21-Sep		
Turbidity, NTU		23	29.1	35	28	34	34	26	30	28	32	23	31	30	25	30	29	27	31	27	30	37	36	38	31	28	36	27	36	36	30	31	36
pH																																	
Turbidity, NTU		23.4	22.1	23.1	23.4	21.4	23.0	22.1	23.1	24.1	22.9	22.9	23.1	22.1	22.1	22.3	21.1	22.1	22.4	22.4	21.4	21.4	22.1	21.2	22.3	21.9	21.9	21.9	22.3	21.9	23.4	22.8	21.9
pH		7.27	7.21	7.64	7.44	7.44	7.44	7.44	7.66	7.61	7.61	7.31	7.24	7.64	7.41	7.64	7.45	7.55	7.66	7.54	7.61	7.64	7.46	7.64	7.64	7.51	7.33	7.17	7.21	7.47	7.66		7.47

<u>time</u>	1512	2313	712	1516	2316	716	1521	2314	718	1506	2312	719	1525	1111	716	1511	2319	713	1511	2321	716	1510	2316	713	1511	2313	711	1511	2311	710	1541	2319										
R2 @ 2/3 deep	11-Sep			12-Sep			13-Sep			14-Sep			15-Sep			16-Sep			17-Sep			18-Sep			19-Sep			20-Sep			21-Sep											
Turbidity, NTU		33	29.2		37	29	32		31	24	31		28	29	21	39	31	28		27	31	29		31	29	27		39	36	39		32	28	33		31	34	36		31	27	37
DO, mg/l		8.01	8.01		8.01	8.04	8.11		8.02	7.96	7.74		7.91	7.99	8.01	7.88	7.91	2.71		7.96	7.81	7.84		7.81	7.84	7.99		8.01	8.01	7.99		7.91	7.99	8.09		7.49	7.97	8.01		7.96	7.21	7.76
Temp., °C		23.4	22.4		23.4	23.7	21.4		23.1	22.1	32.1		24.1	22.9	22.9	23.2	22.3	22.1		22.3	21.4	22.1		22.1	22.1	21.3		21.4	22.3	21.1		22.1	21.7	22.1		22.1	22.3	21.9		23.1	22.7	22.1
pH		7.31	7.24		7.54	7.47	7.46		7.46	7.41	7.64		7.66	7.41	7.44	7.41	7.64	7.51		7.66	7.56	7.54		7.61	7.46	7.46		7.59	7.51	7.44		7.64	7.46	7.34		7.14	7.46	7.47		7.61		7.66

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I have compared the information to the specified water quality requirements and that any discrepancies have been identified and explained. I am aware that there significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature_____

Date_____

September																																	
time	716		700	1500	2307	700	1511		701	1510	2312	701	1510	2302	714	1507	2306	711	1504	2305	700	1501	2300	710	1515	2300	706	1500	2300				
R1 @ 5'	22-Sep		23-Sep			24-Sep			25-Sep			26-Sep			27-Sep			1-Oct			2-Oct			3-Oct			4-Oct						
Turbidity, NTU	31			30	27	29	31	29		31	29	27	29	24	34	31	29	21	31	29	32	26	30	26	37	30	26	31	26	26			
DO, mg/l																																	
Temp., °C	22.1			19.7	20.1	21.1	23.1	23.1		23.1	22.9	22.9	22.1	22.4	22.1	19.1	19.2	19.4	20.2	20.1	20.3	20.9	20.9	21.9	21.1	22.1	21.1	22.1	22.1	22.5			
pH	7.41			7.64	7.44	7.44	7.44	7.24		7.61	7.66	7.44	7.41	7.51	2.41	7.64	7.44	7.56	7.44	7.27	7.12	7.54	7.61	7.61	7.56	7.01	7.14	7.61	7.47	7.46			

<u>time</u>	717	702	1504	2309	707	1513	703	1515	2313	702	1511	2303	715	1509	2307	713	1505	2306	701	1502	2301	711	1516	2301	709	1501	2301						
R1 @ 2/3 deep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	1-Oct	2-Oct	3-Oct	4-Oct																							
Turbidity, NTU	30			30	29	30	30	28		30	29	26	29	25	35	30	27	21	30	28	32	27	31	26	36	31	26	30	26	29			
DO, mg/l	7.96			7.96	7.84	7.99	7.97	8.01		7.96	7.96	7.64	7.14	7.99	6.97	7.47	7.66	7.64	7.66	7.99	7.97	7.61	7.71	7.67	7.97	7.84	7.91	7.64	7.71	7.71			
Temp., °C	22.1			19.9	20.1	21.1	23.1	23.1		23.1	22.7	22.9	22.3	22.4	22.1	19.1	19.2	19.4	20.2	20.2	20.3	20.9	20.9	21.9	21.1	22.3	21.4	22.2	22.3	22.4			
pH	7.46			7.44	7.21	7.43	7.46	7.41		7.46	7.66	7.41	7.44	7.54	7.51	7.14	7.41	7.47	7.46	7.37	7.13	7.54	7.61	7.64	7.47	7.09	7.17	7.66	7.46	7.51			

<u>time</u>	720	710	1515	2319	715	1519	715	1525	2321	710	1519	2315	720	1311	2311	718	1509	2312	706	1510	2310	721	1520	2308	715	1510	2315								
R2 @ 5'	22-Sep	23-Sep			24-Sep		25-Sep			26-Sep			27-Sep			1-Oct			2-Oct			3-Oct			4-Oct										
Turbidity, NTU	32				31	30	27	31	29			30	29	27	29	25	34	31	28	22	31	29	31	26	30	27	36	29	27	30	27	26			
pH																																			
Turbidity, NTU	22.1				20.1	20.2	20.9	23.1	23.4			23.2	22.9	22.9	22.4	22.4	22.3	19.4	19.2	19.5	20.1	20.2	20.4	21.1	21.0	21.9	21.2	22.2	21.1	22.1	22.3	22.4			
pH	7.45				7.41	7.37	7.37	7.13	7.44			7.59	7.64	7.61	7.46	7.54	7.43	7.11	7.46	7.41	7.51	7.46	7.23	7.56	7.54	7.66	7.51	7.14	7.16	7.66	7.44	7.47			

<u>time</u>	721	711	1520	2321	714	1521	716	1526	2322	715	1520	2316	721	1512	2312	719	1510	2313	708	1511	2311	722	1521	2310	716	1512	2316						
R2 @ 2/3 deep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	1-Oct	2-Oct	3-Oct	4-Oct																							
Turbidity, NTU	30			29	31	29	30	29		29	30	27	27	25	23	32	29	21	30	30	34	27	31	28	37	29	26	30	26	26			
DO, mg/l	7.97			7.99	7.97	8.01	8.01	8.04		7.94	7.94	7.77	7.14	7.94	6.66	7.61	7.64	7.71	7.64	7.64	7.94	7.64	7.71	7.64	7.86	7.86	7.96	7.66	7.69	7.77			
Temp., °C	22.2			20.1	20.2	20.9	23.4	23.3		23.2	22.9	23.1	22.1	22.4	23.1	19.3	19.1	19.5	20.1	20.1	20.1	21.1	21	21.9	21.1	22.3	21.4	22.1	22.4	22.5			
pH	7.51			7.51	7.34	7.39	7.27	7.47		7.64	7.66	7.46	7.41	7.47	7.44	7.14	7.41	7.44	7.52	7.44	7.24	7.54	7.54	7.64	7.54	7.16	7.11	7.67	7.44	7.57			

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Signature_____

Date_____

September																																	
<u>time</u>	900	951	910	1005	910	850	914	915	1010	1001																							
DMD	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	1-Oct	2-Oct	3-Oct																							
Turbidity, NTU	27	30	27	19	13	17	13	24	17	23																							
DO, mg/l	6.11	6.61	6.99	6.99	6.91	6.96	6.77	7.11	6.69	6.96																							
Temp., °C	19.4	19.1	19.1	18.7	19.1	19.1	19.1	19.1	19.1	19.1																							
pH	7.41	7.46	7.46	7.41	7.44	7.44	2.46	7.66	7.46	7.14																							

<u>time</u>		921	940	1010	2315	1010	910	947	1025	1110																					
R3 AG		22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	2-Oct	3-Oct																					
Turbidity, NTU		21	31	26	20	13	17	13		16	31																				
DO, mg/l		6.81	6.41	6.14	6.71	6.69	6.94	6.97		6.17	6.87																				
Temp., °C		19.6	19.1	19.2	19.1	19.1	19.1	19.1		18.9	19.1																				
pH		7.44	7.44	7.47	7.44	7.46	7.46	7.44		7.46	7.46																				

<u>time</u>		927	944	1015	2319	1014	915	956	1051	1115																												
R4 AG		22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	2-Oct	3-Oct																												
Turbidity, NTU		20	30	27	17	12	16	12		16	30																											
pH		6.87	6.44	6.11	6.66	6.71	6.99	7.01		6.14	6.91																											
Turbidity, NTU		19.4	19.2	19.3	19.1	19.1	19.1	19.2		19.1	19.2																											
pH		7.57	7.46	7.44	7.46	7.44	7.41	7.41		7.46	7.44																											

<u>time</u>																															
Turbidity, NTU																															
DO, mg/l																															
Temp., °C																															
pH																															

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Signature_____

Date_____

October																																				
time	706	1501	2313	700	1500	2315	708	1501	724+10						2310	700						701	1500	2301	700	1509	2314	701	1512	2307	701	1501	2314	700	1521	2301
R1 @ 5'	8-Oct			9-Oct			10-Oct			11-Oct			12-Oct			13-Oct			16-Oct			17-Oct			18-Oct			19-Oct			20-Oct					
Turbidity, NTU	36	30	27	21	25	21	21	27	20	Down	Down	Down	Down	Down	31	37	Mob	Mob	31	27	21	31	27	20	20	30	30	21	21	31	39	31	34			
DO, mg/l										Down	Down	Down	Down	Down			Mob	Mob																		
Temp., °C	21.4	21.4	21.4	21.1	22.9	22.1	22.1	22.1	22.4	Down	Down	Down	Down	Down	23.1	22.1	Mob	Mob	21.1	22.1	23.1	21.1	22.1	21.4	21.1	21.2	23.1	21.1	22.1	22.1	18.1	17.6	18.1			
pH	7.37	7.26	7.51	7.14	7.44	7.51	7.46	7.21	7.54	Down	Down	Down	Down	Down		7.46	Mob	Mob	7.46	7.51	7.51	7.64	7.57	7.66	7.46	7.14	7.64	7.41	7.51	7.46	7.46	7.57	7.61			

<u>time</u>	707	1501	2315	704	1504	2316	710	1504							2312	701							704	1501	2304	701	1512	2317	707	1515	2309	703	1504	2316	701	1522	2305
R1 @ 2/3 deep	8-Oct			9-Oct			10-Oct			11-Oct			12-Oct			13-Oct			16-Oct			17-Oct			18-Oct			19-Oct			20-Oct						
Turbidity, NTU	36	31	29	20	26	20	20	26	21	Down	Down	Down	Down	Down	30	31	Mob	Mob	30	26	20	30	26	21	24	31	30	22	20	32	38	32	34				
DO, mg/l	7.96	7.96	7.64	7.96	7.94	7.94	7.88	7.84	7.99	Down	Down	Down	Down	Down	7.96	8.69	Mob	Mob	7.64	7.66	7.64	7.96	7.96	7.99	7.64	7.66	7.64	7.66	7.42	7.44	7.31	7.37	7.57				
Temp., °C	21.4	21.3	21.3	21.1	21.9	22.3	22.1	21.9	22.4	Down	Down	Down	Down	Down	23.1	22.1	Mob	Mob	21.2	22.1	23.1	21.2	22.1	21.3	21.2	22.1	23.1	21.2	22.1	22.3	18.2	17.4	18.2				
pH	7.33	7.24	7.47	7.17	7.45	7.49	7.14	7.21	7.56	Down	Down	Down	Down	Down		7.44	Mob	Mob	7.44	7.47	7.54	7.66	7.54	7.41	7.47	7.13	7.66	7.42	7.51	7.46	7.61	7.54	7.64				

<u>time</u>	712	1510	2321	716	1510	2321	719	1515	720+60						2318	710						712	1510	2315	710	1519	2326	710	1520	2319	715	1512	2319	709	1531	2312
R2 @ 5'	8-Oct			9-Oct			10-Oct			11-Oct			12-Oct			13-Oct			16-Oct			17-Oct			18-Oct			19-Oct			20-Oct					
Turbidity, NTU	37	30	28	22	26	21	19	27	20	Down	Down	Down	Down	Down	32	37	Mob	Mob	32	27	22	30	26	21	22	32	31	23	20	32	39	32	35			
pH										Down	Down	Down	Down	Down			Mob	Mob																		
Turbidity, NTU	21.3	21.3	21.5	21.1	21.9	22.3	22.1	21.9	22.1	Down	Down	Down	Down	Down	23.1	22.1	Mob	Mob	21.2	22.1	23.1	21.2	22.1	21.3	21.2	22.2	23.1	21.2	22.1	22.3	18.2	17.4	18.1			
pH	7.24	7.27	7.64	7.21	7.46	7.49	7.21	7.24	7.51	Down	Down	Down	Down	Down		7.46	Mob	Mob	7.46	7.47	7.54	7.64	7.66	7.42	7.42	7.14	7.64	7.46	7.52	7.46	7.64	7.54	7.61			

<u>time</u>	714	1512	2323	717	1511	2322	721	1517						2320	711		715	1516	2316	713	1521	2329	711	1522	2320	717	1513	2321	711	1532	2313		
R2 @ 2/3 deep	8-Oct			9-Oct			10-Oct			11-Oct			12-Oct			13-Oct			16-Oct			17-Oct			18-Oct			19-Oct			20-Oct		
Turbidity, NTU	34	32	29	20	24	20	22	28	20	Down	Down	Down	Down	Down	31	36	Mob	Mob	30	27	21	31	27	20	24	33	34	23	20	31	37	31	34
DO, mg/l	7.99	7.66	7.91	7.91	7.96	7.99	7.89	7.87	7.94	Down	Down	Down	Down	Down	7.94	8.66	Mob	Mob	7.66	7.64	7.69	7.94	7.94	7.94	7.61	7.64	7.61	7.41	7.46	7.41	7.21	7.34	7.54
Temp., °C	21.3	21.3	21.5	21.1	22.1	22.4	22.1	22.1	22.1	Down	Down	Down	Down	Down	23.2	22.3	Mob	Mob	21.2	22.1	23.2	21.4	21.9	21.4	21.2	22.1	23.2	21.2	22.1	22.4	17.9	17.5	18.2
pH	7.14	7.41	7.66	7.17	7.44	7.51	7.24	7.37	7.46	Down	Down	Down	Down	Down		7.47	Mob	Mob	7.46	7.45	7.55	7.66	7.64	7.46	7.43	7.14	7.64	7.46	7.54	7.46	7.66	7.56	7.66

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Signature_____

Date_____

October																																		
time		1010																																
DMD		12-Oct																																
Turbidity, NTU		12																																
DO, mg/l		7.66																																
Temp., °C		24.1																																
pH		7.64																																

time		1020																																
R3 AG		12-Oct																																
Turbidity, NTU		12																																
DO, mg/l																																		
Temp., °C		23.9																																
pH		7.64																																

time		1022																																
R4 AG		12-Oct																																
Turbidity, NTU		12																																
pH		7.14																																
Turbidity, NTU		23.9																																
pH		7.66																																

time		1030																																
R-3 Comp		12-Oct																																
Turbidity, NTU		13																																
DO, mg/l																																		
Temp., °C		23.9																																
pH		7.54																																

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October																																
time		1501 2301 710 1500 2303										1519 2307										1511 2301 713 1510 2301										
R1 @ 5'	21-Oct	22-Oct		23-Oct		24-Oct		25-Oct		26-Oct		27-Oct		28-Oct		29-Oct		30-Oct		31-Oct												
Turbidity, NTU	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	42	41	34	29	37	Down	Down	Down	Down	24	30	Down	Down	Down	Down	30	29	34	32	37
DO, mg/l	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down						Down	Down	Down	Down			Down	Down	Down	Down					
Temp., °C	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	17.1	17.2	17.4	17.6	17.1	Down	Down	Down	Down	17.5	17.9	Down	Down	Down	Down	17.1	17.1	17.4	17.6	17.1
pH	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	7.56	7.66	7.14	7.21	7.24	Down	Down	Down	Down	7.66	7.56	Down	Down	Down	Down	7.61	7.57	7.61	7.57	7.46

time		1505 2304 715 1504 2305												1521 2310												2313 2302 715 1515 2304							
R1 @ 2/3 deep	21-Oct	22-Oct		23-Oct		24-Oct		25-Oct		26-Oct		27-Oct		28-Oct		29-Oct		30-Oct		31-Oct													
Turbidity, NTU	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	43	40	31	29	36	Down	Down	Down	Down	24	31	Down	Down	Down	Down	30	29	34	30	40
DO, mg/l	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	7.65	7.59	7.94	7.64	7.91	Down	Down	Down	Down	7.61	7.64	Down	Down	Down	Down	7.64		7.01	7.11	7.14
Temp., °C	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	17.1	17.3	17.8	17.6	17.2	Down	Down	Down	Down	17.6	17.9	Down	Down	Down	Down	17.2	17.1	17.4	17.4	16.9
pH	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	7.51	7.61	7.14	7.21	7.27	Down	Down	Down	Down	7.57	7.54	Down	Down	Down	Down	7.64	7.57	7.64	7.54	7.44

time		1513 2315 721 1515 2311															1531 2319					1525 2309 721 1527 2315										
R2 @ 5'		21-Oct		22-Oct		23-Oct		24-Oct		25-Oct		26-Oct		27-Oct		28-Oct		29-Oct		30-Oct		31-Oct										
Turbidity, NTU		Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	43	42	30	30	39	Down	Down	Down	Down	25	30	Down	Down	Down	Down	31	30	36	30	40
pH		Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down						Down	Down	Down	Down			Down	Down	Down	Down					
Turbidity, NTU		Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	17.2	17.3	17.8	17.6	17.3	Down	Down	Down	Down	17.6	17.8	Down	Down	Down	Down	17.3	17.1	17.4	17.1	16.9
pH		Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	7.54	7.64	7.11	7.19	7.26	Down	Down	Down	Down	7.54	7.56	Down	Down	Down	Down	7.59	7.54	7.63	7.61	7.46

time		1517 2316 726 1517 2313												1534 2321				1526 2313 723 1529 2317														
R2 @ 2/3 deep	21-Oct	22-Oct		23-Oct		24-Oct		25-Oct		26-Oct		27-Oct		28-Oct		29-Oct		30-Oct		31-Oct												
Turbidity, NTU	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	40	41	31	30	38	Down	Down	Down	Down	23	30	Down	Down	Down	Down	30	30	34	31	41
DO, mg/l	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	7.66	7.61	7.66	7.66	7.94	Down	Down	Down	Down	7.64	7.66	Down	Down	Down	Down	7.61	7.52	7.01	7.14	7.1
Temp., °C	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	17.2	17.3	17.6	17.6	17.4	Down	Down	Down	Down	17.4	17.8	Down	Down	Down	Down	17.4	17.2	17.6	17.1	17.1
pH	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	7.57	7.61	7.13	7.14	7.23	Down	Down	Down	Down	7.55	7.56	Down	Down	Down	Down	7.54	7.54	7.61	7.57	7.41

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Signature_____

Date_____

November																																	
time	715	1501	2310	711	1500	2300	700	1505	2315	659	1500	2304	701	1505	2301	701	1501	2315	700	1515	2306							704	1501	2300	701	1501	2315
R1 @ 5'	1-Nov			2-Nov			3-Nov			4-Nov			5-Nov			6-Nov			7-Nov			8-Nov			9-Nov			10-Nov			11-Nov		
Turbidity, NTU	37	42	30	24	21	29	31	38	34	29	34	37	34	39	36	31	34	29	30	37	39	Mob	Mob	Mob	Mob	Mob	Mob	29	29	34	21	24	20
DO, mg/l																						Mob	Mob	Mob	Mob	Mob	Mob						
Temp., °C	17.1	16.9	17.1	17.2	17.3	17.1	16.2	16.4	16.1	16.2	16.4	16.1	16.1	16.2	16.3	16.2	16.1	16.2	16.1	16.2	16.1	Mob	Mob	Mob	Mob	Mob	Mob	15.9	15.9	15.1	15.1	15.1	15.3
pH	7.46	7.24	7.19	7.61	7.56	7.64	7.61	7.57	7.31	7.61	7.61	7.47	7.41	7.51	7.46	7.47	7.61	7.57	7.31	7.76	7.57	Mob	Mob	Mob	Mob	Mob	Mob	7.64	7.54	7.59	7.61	7.56	7.47

time	717	1504	2315	713	1502	2304	704	1509	2316	704	1501	2309	704	1510	2304	704	1504	2317	702	1517	2310							709	1504	2301	710	1504	2317
R1 @ 2/3 deep	1-Nov			2-Nov			3-Nov			4-Nov			5-Nov			6-Nov			7-Nov			8-Nov			9-Nov			10-Nov			11-Nov		
Turbidity, NTU	37	42	32	24	20	30	30	39	34	29	34	36	34	40	36	30	34	30	30	36	40	Mob	Mob	Mob	Mob	Mob	Mob	29	30	32	21	23	19
DO, mg/l	7.13	7.16	7.16	7.66	7.64	7.71	7.84	7.66	7.66	7.97	7.96	7.99	7.69	7.71	7.91	7.14	7.14	7.14	7.14	7.17	7.14	Mob	Mob	Mob	Mob	Mob	Mob	8.14	7.99	8.01	8.14	8.01	7.99
Temp., °C	17.1	16.9	17.6	17.4	17.3	17.4	16.2	16.4	16.1	16.2	16.4	16.2	16.1	16.2	16.3	16.1	16.1	16.2	16.1	16.2	15.9	Mob	Mob	Mob	Mob	Mob	Mob	15.4	15.9	15.1	15.3	15.1	15.5
pH	7.51	7.21	7.17	7.47	7.54	7.64	7.64	7.66	7.22	7.53	7.64	7.41	7.41	7.54	7.46	7.47	7.63	7.57	7.34	7.61	7.59	Mob	Mob	Mob	Mob	Mob	Mob	7.66	7.47	7.59	7.64	7.56	7.46

<u>time</u>	721	1510	2321	721	1510	2315	712	1512	2320	710	1509	2320	712	1515	2310	710	1515	2324	710	1525	2320											712	1512	2309	715	1510	2320
R2 @ 5'	1-Nov			2-Nov			3-Nov			4-Nov			5-Nov			6-Nov			7-Nov			8-Nov			9-Nov			10-Nov			11-Nov						
<u>Turbidity, NTU</u>	34	43	32	25	21	30	32	40	35	27	35	36	33	40	34	32	36	30	31	37	40	Mob	Mob	Mob	Mob	Mob	Mob	30	31	33	20	24	19				
<u>pH</u>																						Mob	Mob	Mob	Mob	Mob	Mob										
<u>Turbidity, NTU</u>	17.2	17.2	17.4	17.5	17.3	17.5	16.2	16.3	16.1	16.2	16.4	16.2	16.2	16.2	16.3	16.2	16.1	16.1	16.2	16.2	15.9	Mob	Mob	Mob	Mob	Mob	Mob	15.5	15.9	15.1	15.3	15.2	15.3				
<u>pH</u>	7.46	7.19	7.17	7.51	7.51	7.66	7.66	7.61	7.24	7.56	7.57	7.46	7.44	7.54	7.41	7.57	7.57	7.57	7.56	7.59	7.61	Mob	Mob	Mob	Mob	Mob	Mob	7.67	7.49	7.54	7.61	7.54	7.46				

<u>time</u>	724	1515	2327	724	1512	2319	713	1513	2321	713	1511	2324	715	1517	2314	712	1517	2325	713	1526	2324							714	1513	2312	716	1512	2312
R2 @ 2/3 deep	1-Nov			2-Nov			3-Nov			4-Nov			5-Nov			6-Nov			7-Nov			8-Nov			9-Nov			10-Nov			11-Nov		
<u>Turbidity, NTU</u>	37	44	31	24	22	31	30	37	36	28	34	37	31	38	35	31	34	31	32	37	39	Mob	Mob	Mob	Mob	Mob	Mob	28	30	34	20	25	19
<u>DO, mg/l</u>	7.14	7.14	7.14	7.64	7.61	7.69	7.97	7.64	7.96	7.94	7.94	7.96	7.66	7.74	7.94	7.11	7.11	7.14	7.11	7.14	7.11	Mob	Mob	Mob	Mob	Mob	Mob	8.14	7.97	8.11	8.14	8.01	7.94
<u>Temp., °C</u>	17.1	17.2	17.3	17.3	17.4	17.5	16.3	16.4	16.1	16.2	16.4	16.2	16.2	16.3	16.3	16.1	16.2	16.1	16.1	16.2	15.9	Mob	Mob	Mob	Mob	Mob	Mob	15.5	15.8	15.2	15.4	15.2	15.3
<u>pH</u>	7.43	7.26	7.14	7.54	7.54	7.64	7.64	7.46	7.14	7.47	7.56	7.44	7.41	7.41	7.46	7.45	7.54	7.64	7.47	7.49	7.66	Mob	Mob	Mob	Mob	Mob	Mob	7.59	7.46	7.61	7.66	7.59	7.44

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Signature_____

Date_____

November																															
time	1000	912	900	840	905	925	810	1010	1040	1015																					
DMD	2-Nov	3-Nov	4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov																					
Turbidity, NTU	21	19	20	19	21	21	27	31	27	30																					
DO, mg/l	7.1	7.61	7.41	7.61	7.14	7.11	7.11	7.04	7.14	7.14																					
Temp., °C	16.9	16.9	17.1	16.7	17.1	16.9	16.4	16.7		15.9																					
pH	7.61	7.47	7.44	7.41	7.11	7.46	7.14	7.46		7.66																					
time																															
R3 AG																															
Turbidity, NTU																															
DO, mg/l																															
Temp., °C																															
pH																															
time																															
R4 AG																															
Turbidity, NTU																															
pH																															
Turbidity, NTU																															
pH																															
time																															
R-3 Comp																															
Turbidity, NTU																															
DO, mg/l																															
Temp., °C																															
pH																															
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Date _____

November																																	
<u>time</u>		1640	1515	1630	1610	1530	1610	1050	1400																								
R-3 @ 5'		4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov																								
Turbidity, NTU		30	34	31	31	29	34	29	32																								
DO, mg/l																																	
Temp., °C		16.2	16.2	16.1	16.4	16.4	16.1	15.1	15.4																								
pH		7.46	7.64	7.41	7.44	7.11	7.61	7.64	7.64																								

<u>time</u>		1645	1517	1640	1615	1534	1612	1055	1404																								
R-3 @ 2/3		4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov																								
Turbidity, NTU		30	33	29	30	30	33	30	30																								
DO, mg/l		8.11	7.91	7.11	7.14	7.01	7.11	8.01	8.14																								
Temp., °C		16.2	16.2	16.2	16.1	16.5	16.1	15.2	15.1																								
pH		7.46	7.56	7.14	7.57	7.13	7.57	7.67	7.67																								

<u>time</u>		1655	1610	1710	1626	1539	1620	1106	1410																								
R-4 @ 5'		4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov																								
Turbidity, NTU		31	34	30	30	30	33	30	30																								
pH																																	
Turbidity, NTU		16.3	16.2	16.2	16.1	16.5	16.1	15.2	15.1																								
pH		7.51	7.51	7.13	7.44	7.34	7.54	7.66	7.59																								

<u>time</u>		1657	1615	1715	1627	1541	1623	1110	1412																								
R-4 @ 2/3		4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov																								
Turbidity, NTU		29	33	30	31	31	34	31	31																								
DO, mg/l		8.14	7.96	7.14	7.11	7.14	7.14	8.01	8.09																								
Temp., °C		16.2	16.2	16.2	16.2	16.5	16.1	15.2	15.1																								
pH		7.51	7.46	7.14	7.45	7.37	7.49	7.64	7.54																								

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Signature_____

Date_____

November																																	
time	701	1440	2300	700	1515	2330	700	1520	2305	715	1500	2305	705	1500	2310	710	1500	2305	700	1510	2317	701	1520	2300	700	1500	2330	701	1501	2310	701	1501	2300
R1 @ 5'	12-Nov			13-Nov			14-Nov			15-Nov			16-Nov			17-Nov			18-Nov			19-Nov			20-Nov			21-Nov			22-Nov		
Turbidity, NTU	34	29	21	24	26	27	28	30	30	28	29	29	26	27	26	31	32	30	21	31	39	20	19	21	39	30	21	21	21	19	39	29	29
DO, mg/l																																	
Temp., °C	15.6	15.5	15.7	15.5	15.6	15.5	15.3	15.5	15.4	15.4	15.8	15.4	15.4	15.5	15.4	15.3	15.2	15.2	15.1	15.2	15.1	15.3	15.9	15.9	14.9	15.6	15.9	14.9	14.9	15.1	14.9	15.4	15.5
pH	7.57	7.55	7.51	7.39	7.40	7.42	7.48	7.51	7.50	7.51	7.50	7.48	7.44	7.48	7.47	7.47	7.48	7.41	7.41	7.46	7.49	7.47	7.27	7.51	7.61	7.57	7.46	7.61	7.54	7.46	7.61	7.61	7.59

time	704	1441	2301	704	1520	2334	703	1525	2310	719	1503	2310	710	1505	2315	714	1503	2310	704	1512	2318	707	1521	2304	704	1504	2331	704	1507	2311	707	1509	2302
R1 @ 2/3 deep	12-Nov			13-Nov			14-Nov			15-Nov			16-Nov			17-Nov			18-Nov			19-Nov			20-Nov			21-Nov			22-Nov		
Turbidity, NTU	33	28	26	23	26	28	28	29	29	27	28	28	26	27	27	33	34	29	22	30	39	21	18	22	39	31	20	20	20	18	40	30	30
DO, mg/l	8.17	8.11	8.21	8.08	8.01	8.04	8.20	8.15	8.17	8.14	8.10	8.08	8.10	8.12	8.11	8.40	8.36	8.37	8.01	7.99	7.94	7.96	7.79	7.81	7.71	7.74	7.69	7.97	7.71	7.74	7.74	7.69	7.71
Temp., °C	15.9	15.4	15.6	15.4	15.6	15.4	15.3	15.5	15.5	15.6	15.6	15.5	15.3	15.5	15.5	15.3	15.3	15.2	15.1	15.2	15.2	15.3	15.9	15.8	14.9	15.7	15.9	14.9	14.9	15.1	15.2	15.4	15.9
pH	7.54	7.61	7.57	7.41	7.40	7.46	7.49	7.50	7.48	7.50	7.53	7.50	7.46	7.46	7.47	7.48	7.43	7.44	7.47	7.41	7.49	7.46	7.27	7.54	7.51	7.54	7.46	7.64	7.54	7.41	7.64	7.64	7.54

time	710	1451	2309	710	1525	2338	707	1529	2315	723	1510	2315	714	1510	2320	717	1510	2315	710	1520	2321	710	1529	2310	715	1519	2321	710	1514	2313	710	1510	2308
R2 @ 5'	12-Nov			13-Nov			14-Nov			15-Nov			16-Nov			17-Nov			18-Nov			19-Nov			20-Nov			21-Nov			22-Nov		
Turbidity, NTU	33	29	21	25	29	28	27	30	31	28	29	30	25	27	26	32	33	30	21	32	40	22	19	21	40	30	21	20	20	18	40	30	30
pH																																	
Turbidity, NTU	15.9	15.8	15.6	15.4	15.5	15.7	15.4	15.6	15.4	15.4	15.6	15.4	15.4	15.6	15.5	15.3	15.1	15.3	15.1	15.2	15.2	15.4	15.9	15.9	15.1	15.4	15.9	15.1	14.9	15.1	15.2	15.4	15.9
pH	7.81	7.67	7.46	7.42	7.38	7.45	7.50	7.52	7.49	7.53	7.51	7.49	7.45	7.45	7.46	7.44	7.45	7.46	7.51	7.56	7.47	7.46	7.34	7.56	7.54	7.57	7.47	7.49	7.47	7.44	7.66	7.66	7.59

time	712	1452	2310	712	1530	2340	710	1535	2320	725	1515	2320	718	1515	2325	720	1515	2319	715	1520	2322	715	1531	2312	716	1520	2323	713	1516	2319	715	1515	2310
R2 @ 2/3 deep	12-Nov			13-Nov			14-Nov			15-Nov			16-Nov			17-Nov			18-Nov			19-Nov			20-Nov			21-Nov			22-Nov		
Turbidity, NTU	34	27	22	23	27	28	28	28	30	29	27	29	28	26	27	31	33	31	22	30	38	20	20	20	39	29	22	21	19	19	39	29	29
DO, mg/l	8.14	8.14	8.22	8.04	8.10	8.05	8.17	8.16	8.18	8.13	8.10	8.10	8.15	8.14	8.10	8.31	8.32	8.35	8.01	7.96	7.81	7.94	7.79	7.84	7.69	7.71	7.74	7.94	7.74	7.76	7.71	7.74	7.69
Temp., °C	15.9	15.8	15.7	15.4	15.4	15.6	15.3	15.6	15.6	15.4	15.7	15.4	15.3	15.5	15.4	15.3	15.1	15.2	15.2	15.2	15.2	15.4	15.4	15.4	15.1	15.9	15.4	15.1	14.9	14.9	15.2	15.4	15.4
pH	7.76	7.64	7.44	7.40	7.40	7.44	7.52	7.49	7.50	7.51	7.49	7.49	7.45	7.44	7.45	7.46	7.46	7.45	7.54	7.51	7.46	7.31	7.31	7.51	7.56	7.49	7.41	7.59	7.51	7.46	7.64	7.64	7.44

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Signature_____

Date_____

November																																	
<u>time</u>	1010	730	1330	1320	1330	900	1040	1000	1004	815	810																						
DMD	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov																						
<u>Turbidity, NTU</u>	31	30	33	32	34	36	20	19	13	19	19																						
<u>DO, mg/l</u>	7.91	7.81	7.84	7.61	8.07	8.14	7.66	7.14	7.61	7.14	7.14																						
<u>Temp., °C</u>	15.1	15.4	15.1	15.4	15.3	15.4	15.9	15.1	14.9	15.1	15.4																						
<u>pH</u>	7.41	7.38	7.42	7.48	7.47	7.54	7.64	7.41	7.61	7.64	7.61																						

time																																
R3 AG																																
Turbidity, NTU																																
DO, mg/l																																
Temp., °C																																
pH																																

time																																
R4 AG																																
Turbidity, NTU																																
pH																																
Turbidity, NTU																																
pH																																

time																																
R-3 Comp																																
Turbidity, NTU																																
DO, mg/l																																
Temp., °C																																
pH																																

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Signature_____

Date_____

November

<u>time</u>	1450	1135	1015	1045	1115	1045	1610	1615	1617	901	1540																
R-3 @ 5'	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov																
<u>Turbidity, NTU</u>	26	24	26	24	26	23	30	20	13	13	27																
<u>DO, mg/l</u>																											
<u>Temp., °C</u>	15.8	15.6	15.8	15.6	15.6	15.5	15.4	15.9	15.4	14.9	15.1																
<u>pH</u>	7.82	7.48	7.67	7.64	7.61	7.61	7.64	7.64	7.64	7.64	7.67																

<u>time</u>	1451	1140	1020	1050	1120	1050	1612	1616	1619	910	1546																
R-3 @ 2/3	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov																
<u>Turbidity, NTU</u>	27	24	26	24	24	22	31	21	13	12	26																
<u>DO, mg/l</u>	8.01	8.1	8.08	8.12	8.01	8.40	7.99	7.71	7.76	7.11	7.69																
<u>Temp., °C</u>	15.8	15.6	15.7	15.7	15.7	15.5	15.5	16.1	15.3	14.9	15.1																
<u>pH</u>	7.56	7.52	7.70	7.61	7.64	7.63	7.64	7.61	7.67	7.66	7.64																

<u>time</u>	1455	1145	1025	1055	1124	1055	1619	1619	1621	919	1552																
R-4 @ 5'	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov																
<u>Turbidity, NTU</u>	27	26	25	23	25	24	30	20	14	13	26																
<u>pH</u>																											
<u>Turbidity, NTU</u>	15.7	15.5	15.8	15.7	15.8	15.5	15.5	16.1	15.3	14.9	15.1																
<u>pH</u>	7.59	7.50	7.71	7.67	7.62	7.60	7.61	7.57	7.64	7.61	7.64																

<u>time</u>	1456	1150	1030	1100	1128	1100	1620	1620	1622	917	1554																
R-4 @ 2/3	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov																
<u>Turbidity, NTU</u>	26	24	27	25	23	23	31	19	12	13	26																
<u>DO, mg/l</u>	8.11	8.14	8.10	8.10	8.10	8.38	7.94	7.61	7.71	7.01	7.91																
<u>Temp., °C</u>	15.7	15.7	15.8	15.6	15.6	15.5	15.5	16.1	15.4	15.1	15.2																
<u>pH</u>	7.64	7.52	7.69	7.64	7.63	7.60	7.59	7.54	7.65	7.64	7.61																

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November																																		
time	701	1510	2320	718	1514	2301	700	1507	2300																									
R1 @ 5'	23-Nov			24-Nov		25-Nov		26-Nov		27-Nov		28-Nov		29-Nov		30-Nov																		
Turbidity, NTU	24	41	39	21	27	24	31	27	21	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done										
DO, mg/l										Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done									
Temp., °C	15.4	15.1	15.3	14.5	14.9	15.1	15.4	15.9	15.6	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done									
pH	7.51	7.54	7.61	7.11	7.21	7.51	7.61	7.59	7.47	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done									

<u>time</u>	703	1512	2324	720	1516	2305	709	1509	2302																												
R1 @ 2/3 deep	23-Nov			14-Nov		25-Nov			26-Nov			27-Nov			28-Nov			29-Nov			30-Nov																
<u>Turbidity, NTU</u>	25	40	38	20	27	25	30	26	20	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done													
<u>DO, mg/l</u>	7.61	7.66	7.71	7.49	7.46	7.51	7.96	7.94	7.89	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done												
<u>Temp., °C</u>	15.4	15.1	15.3	14.6	14.9	15.1	15.4	15.9	15.6	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done												
<u>pH</u>	7.46	7.57	7.66	7.14	7.24	7.54	7.64	7.59	7.61	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done												

time	715	1517	2337	724	1521	2312	715	1520	2309																												
R2 @ 5'	23-Nov			24-Nov			25-Nov			26-Nov			27-Nov			28-Nov			29-Nov			30-Nov															
Turbidity, NTU	24	41	39	20	28	24	31	26	20	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done													
pH										Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done												
Turbidity, NTU	15.4	15.1	15.3	14.7	14.8	14.9	15.4	15.9	15.6	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done												
pH	7.47	7.54	7.64	7.14	7.21	7.57	7.61	7.54	7.57	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done												

<u>time</u>	717	1519	2339	729	1522	2314	720	1522	2312																								
R2 @ 2/3 deep	23-Nov			24-Nov			25-Nov			26-Nov			27-Nov			28-Nov			29-Nov			30-Nov											
<u>Turbidity, NTU</u>	26	40	39	21	27	25	30	27	20	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done										
<u>DO, mg/l</u>	7.64	7.64	7.74	7.67	7.11	7.14	7.99	7.87	7.84	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done									
<u>Temp., °C</u>	15.4	15.1	15.3	14.7	14.9	14.9	15.4	15.8	15.6	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done									
<u>pH</u>	7.41	7.57	7.61	7.19	7.24	7.56	7.46	7.54	7.57	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done	Done									

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I have compared the information to the specified water quality requirements and that any discrepancies have been identified and explained. I am aware that there significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature_____

Date_____

November																																		
<u>time</u>	1310	940	905	840	1012	840	840	1019																										
DMD	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov																										
<u>Turbidity, NTU</u>	17	21	13	12	13	12	12	13																										
<u>DO, mg/l</u>	7.11	7.14	7.11	7.01	6.91	6.41	6.11	6.14																										
<u>Temp., °C</u>	15.1	15.4	16.1	14.9	14.1	14.9	14.3	14.3																										
<u>pH</u>	7.64	7.66	7.14	7.61	7.61	7.14	7.61	7.64																										

time																																
R3 AG																																
Turbidity, NTU																																
DO, mg/l																																
Temp., °C																																
pH																																

time																																
R4 AG																																
Turbidity, NTU																																
pH																																
Turbidity, NTU																																
pH																																

time																																
R-3 Comp																																
Turbidity, NTU																																
DO, mg/l																																
Temp., °C																																
pH																																

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Signature_____

Date_____

November

<u>time</u>	1615	1050	1510	1010	1340	1016	1240	1140																				
R-3 @ 5'	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov																				
Turbidity, NTU	30	20	19	21	17	12	13	12																				
DO, mg/l																												
Temp., °C	14.9	14.9	15.4	15.1	14.9	14.9	15.1	14.9																				
pH	7.64	7.61	7.27	7.43	7.64	7.66	7.41	7.61																				

<u>time</u>	1616	1057	1512	1012	1341	1019	1244	1144																				
R-3 @ 2/3	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov																				
Turbidity, NTU	30	19	19	20	16	13	12	11																				
DO, mg/l	7.91	7.99	7.79	7.14	7.01	7.14	7.14	7.14																				
Temp., °C	14.9	15.1	15.4	14.9	14.6	14.9	14.9	14.9																				
pH	7.66	7.64	7.26	7.42	7.66	7.59	7.46	7.64																				

<u>time</u>	1618	1101	1520	1015	1349	1024	1255	1159																				
R-4 @ 5'	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov																				
Turbidity, NTU	30	20	19	20	16	12	12	11																				
pH																												
Turbidity, NTU	14.8	15.1	15.4	14.9	14.7	14.1	14.9	14.1																				
pH	7.64	7.61	7.19	7.42	7.67	7.59	7.61	7.64																				

<u>time</u>	1620	1102	1521	1017	1352	1025	1257	1201																				
R-4 @ 2/3	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov																				
Turbidity, NTU	31	20	19	20	17	11	12	12																				
DO, mg/l	7.81	8.01	7.96	7.27	7.11	7.96	7.21	7.21																				
Temp., °C	15.1	15.1	15.4	15.1	14.7	15.1	14.7	14.1																				
pH	7.61	7.66	7.14	7.42	7.61	7.61	7.64	7.61																				

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I have compared the information to the specified water quality requirements and that any discrepancies have been identified and explained. I am aware that there significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature_____

Date_____

Appendix B

Summary Tables - Total Suspended Solids, Metals

Analytical Results

Date 16-Aug 31-Aug 15-Sep 12-Sep 2-Oct 27-Oct 2-Nov

<i>Rio Vista S-16 (Time)</i>	1330
<i>Mercury (ug/L)</i>	0.047
<i>Methyl Mercury (ng/L)</i>	6.68

<i>Travel Blank (Time)</i>	1330
<i>Mercury (ug/L)</i>	0.0004
<i>Methyl Mercury (ng/L)</i>	0.0129

<i>Decker Island (Time)</i>		1230
<i>Mercury (ug/L)</i>		0.013
<i>Methyl Mercury (ng/L)</i>		0.131

<i>Travel Blank (Time)</i>		1230
<i>Mercury (ug/L)</i>		0.0004
<i>Methyl Mercury (ng/L)</i>		0.0153

<i>Scour Hole 1 (Time)</i>			1345
<i>Mercury (ug/L)</i>			0.11
<i>Methyl Mercury (ng/L)</i>			0.206

<i>Scour Hole 2 (Time)</i>			1349
<i>Mercury (ug/L)</i>			0.14
<i>Methyl Mercury (ng/L)</i>			0.199

<i>Scour Hole 3 (Time)</i>			1347
<i>Mercury (ug/L)</i>			0.12
<i>Methyl Mercury (ng/L)</i>			0.196

<i>Travel Blank (Time)</i>			1355
<i>Mercury (ug/L)</i>			0.0004
<i>Methyl Mercury (ng/L)</i>			0.0124

<i>AG Ditch (Time)</i>			1409
<i>Mercury (ug/L)</i>			0.0043
<i>Methyl Mercury (ng/L)</i>			0.116

<i>Time</i>				1148
<i>Mercury (ug/L)</i>				0.012
<i>Methyl Mercury (ng/L)</i>				0.294

<i>Time</i>				1155
<i>Mercury (ug/L)</i>				0.012
<i>Methyl Mercury (ng/L)</i>				0.274

<i>Time</i>				1204
<i>Mercury (ug/L)</i>				0.013
<i>Methyl Mercury (ng/L)</i>				0.4

Analytical Results

Date	16-Aug	31-Aug	15-Sep	12-Sep	2-Oct	27-Oct	2-Nov
Time				1210			
Mercury (ug/L)				0.011			
Methyl Mercury (ng/L)				0.295			
Time				1215			
Mercury (ug/L)				0.0003			
Methyl Mercury (ng/L)				ND			
McCormack A (Time)					950		
Mercury (ug/L)					0.03		
Methyl Mercury (ng/L)					0.395		
McCormack B (Time)					1000		
Mercury (ug/L)					0.024		
Methyl Mercury (ng/L)					0.25		
McCormack C (Time)					1010		
Mercury (ug/L)					0.037		
Methyl Mercury (ng/L)					0.875		
McCormack D (Time)					1010		
Mercury (ug/L)					0.04		
Methyl Mercury (ng/L)					0.578		
Travel Blank					N/A		
Mercury (ug/L)					ND		
Methyl Mercury (ng/L)					ND		
D-1 Roberts II Site A (Time)						710	
Mercury (ug/L)						0.014	
Methyl Mercury (ng/L)						0.0598	
D-1 Roberts II Site B (Time)						720	
Mercury (ug/L)						0.012	
Methyl Mercury (ng/L)						0.0374	
D-1 Roberts II Site C (Time)						730	
Mercury (ug/L)						0.014	
Methyl Mercury (ng/L)						0.0339	
D-1 Roberts II Site D (Time)						740	
Mercury (ug/L)						0.014	
Methyl Mercury (ng/L)						0.0491	
Travel Blank (Time)						1300	
Mercury (ug/L)						0.0004	
Methyl Mercury (ng/L)						ND	
D-1 DMD Roberts II (Time)							1610

Analytical Results

Date	16-Aug	31-Aug	15-Sep	12-Sep	2-Oct	27-Oct	2-Nov
Mercury (ug/L)							0.0032
Methyl Mercury (ng/L)							0.261
D-1 DMD Roberts II (Time)							1615
Mercury (ug/L)							0.0053
Methyl Mercury (ng/L)							0.125
D-1 DMD Roberts II (Time)							1620
Mercury (ug/L)							0.0042
Methyl Mercury (ng/L)							0.141
D-1 DMD Roberts II (Time)							1625
Mercury (ug/L)							0.0044
Methyl Mercury (ng/L)							0.165
Travel Blank (Time)							1015
Mercury (ug/L)							0.0004
Methyl Mercury (ng/L)							ND

[illegible][illegible]

DMD D-1 (Time)				2345		1915	645	1915	645	1540	710		710	610
TSS (mg/L)				22.0		15.0	14.0	8.0	6.0	18.0	6.0		13.0	14.0

[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]

R-1 Composite (Time)				1010					1040	1410		1715	700
<i>TSS (mg/L)</i>				15.0					17.0	7.00		6.00	14.0
<i>Calcium (mg/L)</i>									42				
<i>Hardness as (CaCO3) mg/L</i>									200				
<i>Magnesium (mg/L)</i>									22				

R-2 Composite (Time)				1015					1057	1425		1730	708
<i>TSS (mg/L)</i>				16.0					9.00	8.00		7.00	5.00
<i>Calcium (mg/L)</i>									41				
<i>Hardness as (CaCO3) mg/L</i>									190				
<i>Magnesium (mg/L)</i>									22				

[illegible][illegible]

R-3 AG (Time)				1140		1020							
TSS (mg/L)				43.0									
Barium ($\mu\text{g}/\text{L}$)						105							

[illegible][illegible][illegible][illegible][illegible][illegible]

[illegible]

Date	3-Nov	4-Nov	5-Nov	8-Nov	9-Nov	10-Nov	11-Nov	18-Nov	19-Nov	20-Nov
------	-------	-------	-------	-------	-------	--------	--------	--------	--------	--------

Date	3-Nov	4-Nov	5-Nov	8-Nov	9-Nov	10-Nov	11-Nov	18-Nov	19-Nov	20-Nov
------	-------	-------	-------	-------	-------	--------	--------	--------	--------	--------

[illegible]

R-2 Compoite (Time)			1415						1021
<i>TSS (mg/L)</i>			8.00						5.00
<i>Calcium (mg/L)</i>									
<i>Hardness as (CaCO3) mg/L</i>									
<i>Magnesium (mg/L)</i>									

[illegible][illegible]

R-3 AG (Time)									
TSS (mg/L)									
Barium ($\mu\text{g}/\text{L}$)									

R-4 AG (Time)								
TSS (mg/L)								
Barium ($\mu\text{g/L}$)								

Scour Hole Prior to Spill (Time)								
TSS (mg/L)								
Calcium (mg/L)								
Hardness as (CaCO ₃) mg/L								
Magnesium (mg/L)								
Barium (µg/L)								

Scour Hole #1 (Time)								
TSS (mg/L)								

Scour Hole #2 (Time)								
TSS (mg/L)								

Scour Hole #3 (Time)								
TSS (mg/L)								

Scour Hole #4 (Time)								
TSS (mg/L)								
Barium ($\mu\text{g/L}$)								

D-1 McCormack Pit A (Time)								
<i>TSS (mg/L)</i>								
<i>Barium (µg/L)</i>								

Date	3-Nov	4-Nov	5-Nov	8-Nov	9-Nov	10-Nov	11-Nov	18-Nov	19-Nov	20-Nov
------	-------	-------	-------	-------	-------	--------	--------	--------	--------	--------

D-1 McCormack Pit B (Time)										
<i>TSS (mg/L)</i>										
<i>Barium (µg/L)</i>										

D-1 McCormack Pit C (Time)										
<i>TSS (mg/L)</i>										
<i>Barium (µg/L)</i>										

D-1 McCormack Pit D (Time)										
<i>TSS (mg/L)</i>										

D-1 McCormack Pit E (Time)										
<i>TSS (mg/L)</i>										

D-1 McCormack Pit (Time)										
<i>TSS (mg/L)</i>										
<i>Barium (µg/L)</i>										

Bradford Is. R-1 (Time)										
<i>TSS (mg/L)</i>										

Bradford Is. R-2 (Time)										
<i>TSS (mg/L)</i>										

Roberts II "E" (Time)										
<i>Barium (µg/L)</i>										

Roberts II "F" (Time)										
<i>Barium (µg/L)</i>										

Roberts II "G" (Time)										
<i>Barium (µg/L)</i>										

Roberts II "N" (Time)										
<i>TSS (mg/L)</i>										
<i>Barium (µg/L)</i>										

DMD Roberts II (Time)	1730	1745	1510	1730	1715	1345	1825	1619	1545	715
<i>TSS (mg/L)</i>	11.0	8.00	7.00	9.00	11.0	13.0	12.0	6.00	9.00	5.00

R-3 Composite (Time)						1415				814
<i>TSS (mg/L)</i>						10.0				8.00

R-4 Composite (Time)						1425				827
<i>TSS (mg/L)</i>						14.0				5.00

Appendix C

CD – Field Logs, Daily Reports, Analytical Data

2009 ANNUAL WATER QUALITY SELF MONITORING REPORT

Sacramento and Stockton Deep Water Ship Channels Operation and Maintenance Dredging



Final

Prepared by



**US Army Corps
of Engineers**

Sacramento District

March 2009

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Appendices

Appendix A	Summary Tables - Turbidity, Dissolved Oxygen, pH, Temperature, TSS, Metals
Appendix B	CD – Field Logs, Daily Reports, Analytical Data, Methyl Mercury Report

1.0 Introduction

As part of the annual maintenance dredging project for the Sacramento and Stockton Deep Water Ship Channels (DWSC), water quality was monitored in accordance with the General Order and the Monitoring and Reporting Program. Ross Island Sand and Gravel Co. (Ross Island) under contract with the U.S. Army Corps of Engineers (USACE) performed the maintenance dredging including the water quality self monitoring. The information contained in this annual report was presented via email to both the USACE and the Central Valley Regional Water Quality Board (CVRWQCB) on a weekly basis during the dredging operations by Ross Island. The annual report serves as a compilation and summary of the field reports.

In addition to the standard monitoring, samples were collected and analyzed at the dredged material placement sites for methylmercury. The procedures for the methylmercury sampling were outlined in the Notice of Applicability. The sampling was conducted by Applied Marine Sciences, Inc., a subcontractor to Ross Island. The methylmercury report has already been presented to the CVRWQCB. The accompanying CD contains the report along with the analytical reports.

1.1 Data Summary

Turbidity, dissolved oxygen, pH and temperature monitoring was performed up current of the dredge at Station (R1) that is uninfluenced by the presence of the dredge and at Station (R2), a station that is down current of the dredge, therefore, within its influence. These measurements were collected at five feet below the water surface and at a point approximately 2/3 of the distance to the bottom of the channel.

For receiving water monitoring for discharge from the Dredge Material Placement Sites (DMPS), two grab samples taken at similar depths as stated above were composited to form one sample from each station. Station (R-3) taken up current of the discharge location and undisturbed by the effluent discharge from the DMPS, not to exceed 300 ft

from the point of discharge. Station (R-4) taken within 300 ft down current of the discharge point and on the same side of the river as the discharge point.

Samples for Total Suspended Solid (TSS), total hardness, calcium and magnesium were collected and analyzed throughout the maintenance dredging activities. Appendix A contains summary tables prepared by Ross Island for the required water quality self monitoring data.

Appendix B contains a CD with all the daily and weekly field reports along with the analytical test results.

2.0 Dredging Activities

2.1 Sacramento DWSC

In accordance with General Order No 5-01-116, maintenance dredging activities for the Sacramento DWSC began August 16, 2009 and concluded August 25, 2009. A summary of maintenance dredging activities are contained in Table 1.

Table 1: 2009 Sacramento DWSC Maintenance Dredging				
Station	Qty (cy)	DMPS	Date	Description of Event
1735+00 to 1630+00	~70,000	S-31	8/16/09 to 8/25/09	• S-31 Disposal site was percolating and drying as expected. There was no effluent discharge. • All fish monitoring was performed as required. Trawling was performed every other day above and below the dredge. The fish screen was used for entrainment on alternate days.

2.2 Stockton DWSC

After maintenance dredging activities were completed in the Sacramento DWSC, equipment and personnel were mobilized to the Stockton DWSC. In accordance with General Order No R5-2004-0061, maintenance dredging activities for the Stockton DWSC began August 30, 2009 with demobilization completed on October 30, 2009. A summary of maintenance dredging activities are contained in Table 2.

Table 2: 2009 Stockton DWSC Maintenance Dredging				
Station	Qty (cy)	DMPS	Date	Description of Event
465+00 to 470+00	~ 4,500	Scour	8/30/09 to 8/30/09	• Methyl Mercury samples were taken per CVRWQCB requirements. • There was no effluent discharge from Scour Pond DMPS. • All fish monitoring was performed as required. The fish screen was not used since there was only one day of dredging.
615+00 to 645+00	~35,800	McCormack	9/1/09 to 9/5/09	• Methyl Mercury samples were taken per CVRWQCB requirements. • Effluent samples were collected and remained in compliance. • All fish monitoring was performed as required. Trawling was performed

Table 2: 2009 Stockton DWSC Maintenance Dredging				
Station	Qty (cy)	DMPS	Date	Description of Event
				every other day above and below the dredge. The fish screen was used for entrainment on alternate days.
1671+00 to 1900+00	~140,000	Roberts II	9/12/09 to 10/5/09	• Methyl Mercury samples were taken per CVRWQCB requirements • Effluent samples were collected and remained in compliance. • All fish monitoring was performed as required. Trawling was performed every other day above and below the dredge. The fish screen was used for entrainment on alternate days.
1900+00 to 2076+00	~61,300	Roberts I	10/6/09 to 10/30/09	• Methyl Mercury samples were taken per CVRWQCB requirements • Effluent samples were collected and remained in compliance. • All fish monitoring was performed as required. Trawling was performed every other day above and below the dredge. The fish screen was used for entrainment on alternate days.

2.3 Fisheries Monitoring

All dredging activities were supported by Mari-Gold Environmental Consulting Inc., for monitoring the fisheries resources. Sampling was conducted on alternating days both upland and in-water. A fish entrainment methodology was used throughout dredging activities for upland sampling which was comprised of discharging dredge sediment and water through a fish screen for entrapment. In-water sampling was comprised of towing a net in the vicinity of the dredge above and below to ascertain the species which would exist in the waters at that point in time.

3.0 Conclusion

The USACE conducted maintenance dredging for both the Sacramento and Stockton DWSC in accordance with the Notice of Intent and Notice of Applicability issues for this seasons dredging project. The water quality self-monitoring conducted by Ross Island for maintenance dredging activities in the Sacramento and Stockton DWSC has been reviewed and found to be acceptable with no major discrepancies by the USACE.

Appendix A

Summary Tables - Turbidity, Dissolved Oxygen, pH, Temperature, TSS and Metals

2009 August Sacramento Channel

<u>time</u>	1127	2:05	1:40	1:55	1555	1645	1140	1200	1150	1220	1157	13:30	22:59
R1 @ 5'	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	28-Aug	31-Aug
Turbidity, NTU	47.6	53.4	51.1	47.1	47.9	48	48.6	47.7	62	96	87	37	46
DO, mg/l	7.11	7.11	7.01	7.01	7.03	7.04	7.01	7.07	7.01	7.01	7.41	8.14	8.57
Temp., °C	23.6	23.6	23.1	22.8	23	23.2	23.3	23.1	23.1	22.9	24.1	22.9	22.1
pH	7.14	7.01	7.76	7.66	7.58	7.58	7.6	7.59	7.59	7.41	7.41	7.71	7.56
tss/harness COMPOSITED	TSS 35				TSS 9								

<u>time</u>	1129	2:07	1:41	1:56	1600	1650	1143	1204	1152	1222	1159	13:31	23:01
R1 @ 2/3 deep													
Turbidity, NTU	48	53.4	52.1	46.7	47.7	48	48.3	48	63	94	89	37	47
DO, mg/l	7.09	7.14	7.07	7	7.01	7.11	7	7.11	7.27	7.08	7.46	8.1	8.59
Temp., °C	23.7	23.4	23.2	22.9	22.8	23	23	22.8	23.2	22.9	23.9	22.9	22.2
pH	7.14	7.09	7.57	7.41	7.55	7.57	7.61	7.61	7.61	7.46	7.43	7.69	7.57

<u>time</u>	1122	2:10	1:44	1:59	1605	1635	1150	1208	1159	1241	1202	13:40	23:09
R2 @ 5'													
Turbidity, NTU	46	53.2	52.1	47.6	48.1	47.8	48.7	47.9	64	94	87	37	46
pH	7.1	7.11	7.04	7.09	7.04	7.03	7.03	7.05	7.21	7.01	7.44	8.1	8.54
Temp., °C	23.5	23.4	23.4	23.2	22.9	23.3	23.1	23.3	22.9	23.1	24.1	22.4	22.1
pH	7.11	7.07	7.01	7.46	7.54	7.59	7.58	7.61	7.49	7.44	7.27	7.64	7.55
tss/harness COMPOSITED	TSS 37				TSS 8								

<u>time</u>	1123	2:12	1:46	2:00	1610	1638	1155	1210	1201	1244	1204	13:42	23:10
R2 @ 2/3 deep													
Turbidity, NTU	47	53.2	52.3	47.1	47.6	48.2	48.6	47.8	62	96	88	36	46
DO, mg/l	7.01	7.09	7.09	7.09	7.03	7.04	7.01	7.06	7.24	7.04	7.41	8.19	8.55
Temp., °C	23.6	23.5	23.3	23.1	23	23	23	23.1	23.1	23.1	24.1	22.4	22.4
pH	7.19	7.41	7.41	7.64	7.57	7.61	7.57	7.62	7.54	7.49	7.51	7.66	7.54

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Signature	<u>Date</u>											
	<u>18-Aug</u>	<u>R-1</u>	<u>R-2</u>	<u>20-Aug</u>	<u>R-1</u>	<u>R-2</u>	<u>24-Aug</u>	<u>R-1</u>	<u>R-2</u>	<u>26-Aug</u>	<u>R-1</u>	<u>R-2</u>
TOTAL HARNESS		160	160		74	70		120	120		120	120
CALCIUM		17	18		17	16		13	14		14	14
MAGNESIUM		28	29		7.6	7.1		22	20		21	20
TSS		35	37		9	8		36	34		35	36

August/ September 2009																																
time	1330	2130	536	2259	700	1510	2301	712	1512	2310	701	1514	2310	700	1501	2305	701	1530	2309	2301	740	1510	2305	805	1504	2310	720	1510	2300	706	1520	2317
R1 @ 5'	28-Aug			31-Aug	1-Sep				2-Sep				3-Sep				4-Sep				5-Sep				11-Sep	12-Sep		13-Sep		14-Sep		15-Sep
Turbidity, NTU	37	41	37	46	41	64	47	47	51	47	46	39	54	41	37	46	41	34	41	11	13	10	10	19	13	12	21	14	18	17	13	21
DO, mg/l	8.14	8.14	8.04	8.57	8.14	8.34	8.24	8.01	8.57	8.47	9.01	9.27	9.54	8.14	8.51	8.81	7.97	8.41	7.66	8.41	8.14	8.55	8.27	8.61	8.71	8.14	7.96	8.01	8.11	8.14	8.49	8.16
Temp., °C	22.9	23.1	23.1	22.1	22.2	22.4	22.4	22.1	23.1	23.9	22.1	22.4	22.1	21.4	22.1	21.4	22.1	24.1	22.3	23.4	24.1	24.2	23.4	23.9	23.4	24.1	23.1	22.9	22.9	22.9	23.1	23.1
pH	7.71	7.64	7.71	7.56	7.14	7.54	7.59	7.57	7.31	7.11	7.67	7.65	7.44	7.17	7.37	7.43	7.46	7.42	7.61	7.46	7.61	7.44	7.24	7.54	7.46	7.46	7.46	7.61	7.64	7.41	7.51	7.71
time	1331	2131	537	2301	702	1512	2302	713	1514	2313	704	1516	2306	703	1503	2307	707	1534	2313	2309	742	1519	2309	807	1506	2312	722	1512	2309	707	1524	2321
R1 @ 2/3 deep																																
Turbidity, NTU	37	41	36	47	42	61	49	46	52	46	47	38	55	40	36	44	42	32	40	12	14	10	10	17	14	12	20	13	16	16	13	20
DO, mg/l	8.1	8.11	8.09	8.59	8.27	8.37	8.31	8.08	8.17	8.76	9.77	9.19	9.51	8.21	8.76	8.82	8.14	8.51	7.79	7.79	8.12	8.54	8.46	8.64	8.70	8.24	7.94	8.19	8.16	8.26	8.47	8.14
Temp., °C	22.9	23.1	23.1	22.2	22.3	22.4	22.6	22.3	23.2	23.7	22.3	22.3	22.4	21.3	22.3	21.4	22.3	24.2	22.1	23.4	24.1	24.2	23.6	23.4	22.4	23.9	23.2	22.7	23.2	22.4	23.2	23.1
pH	7.69	7.66	7.71	7.57	7.61	7.61	7.41	4.47	7.31	7.14	7.59	7.64	7.57	7.14	7.44	7.17	7.61	7.71	7.66	7.41	7.66	7.49	7.16	7.53	7.44	7.42	7.51	7.66	7.51	7.44	7.54	7.69
time	1340	2137	538	2309	709	1515	2310	718	1520	2319	710	1521	2315	710	1510	2310	710	1540	2317	2315	755	1521	2312	810	1510	2319	735	1516	2315	714	1529	2334
R2 @ 5'																																
Turbidity, NTU	37	41	37	46	41	62	47	46	52	46	46	39	55	40	38	45	40	32	41	11	14	11	9	19	13	13	20	14	16	17	12	2
DO, mg/l	8.1	8.13	8.08	8.54	8.24	8.49	8.37	8.04	8.49	8.69	9.09	9.24	9.47	8.37	8.91	8.76	8.24	8.47	7.71	8.14	8.14	8.56	8.51	8.71	8.64	8.19	7.99	8.07	8.11	8.46	8.51	8.21
Temp., °C	22.4	23.1	22.3	22.1	22.4	22.1	22.7	22.4	23.4	22.9	22.4	22.4	22.3	21.2	22.1	21.3	22.4	24.1	22.1	23.2	23.9	24.1	23.4	23.4	23.4	24.3	23.1	22.7	23.2	22.1	23.4	23.2
pH	7.64	7.64	7.76	7.55	7.54	7.66	7.52	7.61	7.47	7.13	7.61	7.66	7.54	7.27	7.45	7.24	7.44	7.56	7.59	7.54	7.61	7.49	7.44	7.52	7.49	7.46	7.54	7.64	7.54	7.45	7.56	7.7
time	1342	2139	541	2310	710	1518	2312	719	1521	2320	712	1524	2319	712	1511	2312	712	1545	2319	2318	759	1524	2314	812	1512	2321	737	1519	2317	715	1531	2336
R2 @ 2/3 deep																																
Turbidity, NTU	36	42	39	46	43	63	47	46	53	46	47	37	54	42	38	44	41	34	41	11	13	10	9	18	13	12	20	14	16	17	13	21
DO, mg/l	8.19	8.27	8.19	8.55	8.17	8.19	8.34	8.14	8.91	8.64	9.14	9.61	9.61	8.49	8.84	8.73	8.17	8.49	7.74	7.91	8.2	8.59	8.44	8.64	8.64	8.23	8.14	8.09	8.14	8.44	0.54	8.61
Temp., °C	23.1	22.3	23.1	22.4	22.5	22.4	22.6	22.1	24.1	23.4	22.5	22.3	22.4	21.4	22.4	21.3	22.3	24.2	22.4	23.3	23.7	24.1	23.2	23.9	24.1	24.3	23.1	22.7	23.1	22.6	23.1	23.1
pH	7.66	7.69	7.61	7.54	7.51	7.64	7.46	7.59	7.59	7.13	7.74	7.47	7.54	7.41	7.52	7.13	7.45	7.64	7.46	7.32	7.54	7.51	7.46	7.41	7.42	7.41	7.51	7.69	7.51	7.46	7.61	7.61

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Signature _____

Date _____

	28-Aug	R-1	R-2	1-Sep	R-1	R2	2-Sep	R1	R2	4-Sep	R1	R2	5-Sep	R1	R2	12-Sep	R1	R2	14-Sep	R1	R2	15-Sep	Trip Blank	R1	R2	
Calcium		14	14		14	15		12	12		12	12		12	12		18	18		19	19		ND	ND	24	25
Total Hardness		110	110		110	120		100	100		100	100		95	93		88	88		88	89		4.7	4.6	110	110
Magnesium		19	19		19	19		17	17		17	17		16	15		10	10		10	10		1.1	1.1	13	12
TSS		6	7		6	5		17	17		15	16		8	8		5	4		3	5		ND	ND	4	4

September 2009

time	McCormack																							
	1010	810	715	910	1010	1020	1410																	
D-1	2-Sep	3-Sep	4-Sep	5-Sep	6-Sep	7-Sep	8-Sep																	
Turbidity, NTU	96	47	46	39	21	17	19																	
DO, mg/l	7.14	7.74	7.01	6.74	6.11	6.01	6.01																	
Temp., °C	25.1	24.7	24.1	24.1	25.2	25.1	25.2																	
pH	7.67	7.46	7.13	7.61	7.47	7.61	7.41																	

<u>time</u>	1015	815	745	925	1029	1040	1425																
R3-AG																							
<u>Turbidity, NTU</u>	49	41	41	37	20	16	19																
<u>DO, mg/l</u>	7.11	7.46	6.76	6.14	6.14	6.01	6.61																
<u>Temp., °C</u>	25.2	24.9	24.3	24.1	25.1	24.9	24.2																
<u>pH</u>	7.47	7.59	7.47	7.46	7.61	7.64	7.14																

<u>time</u>	1017	817	749	931	1041	1055	1431																	
R4-AG																								
Turbidity, NTU	47	42	41	37	21	17	17																	
DO, mg/l	7.14	7.14	6.91	6.14	7.01	6.00	6.01																	
Temp., °C	25.4	24.3	24.1	24.1	25.1	25.1	24.1																	
pH	7.64	7.61	7.51	7.61	7.47	7.61	7.61																	

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Signature _____

Date _____

	1-Sep	D-1	2-Sep	D-1	3-Sep	D-1	R-3	R-4	4-Sep	D-1	5-Sep	D-1	R-3	R-4	6-Sep	D-1	R-3	R-4	7-Sep	D-1
Calcium		43		24		23	24	23		26		23	23	24		27	26	27		16
Total Hardness		280		160		160	160	150		170		150	150	150		170	170	170		110
Magnesium		42		24		24	24	23		26		22	23	23		25	25	25		18
TSS		63		25		24	26	24		31		20	50	51		29	21	27		4

September 2009																										
time	706	1540	2331	714	1510	2310	700	1515	2311	717	1540	2301	715	1515	2300	714	1500	2315	719	1515	2310	800	1610	2400	1602	2400
R1 @ 5'	16-Sep		17-Sep		18-Sep		19-Sep		20-Sep		21-Sep		22-Sep		23-Sep		24-Sep									
Turbidity, NTU	17	24	31	36	34	37	34	37	39	32	41	37	41	37	34	41	37	34	41	37	34	40	37	42	39	47
DO, mg/l	8.76	8.71	8.46	8.14	8.49	8.24	8.27	8.10	8.61	8.76	8.19	8.31	8.14	8.49	8.17	8.27	8.46	8.26	8.46	8.01	8.41	7.14	7.14	7.64	6.95	8.29
Temp., °C	23.4	23.4	22.9	25.1	24.9	25.1	25.1	24.6	25.1	25.4	25.1	24.6	25.6	26.1	24.6	24.7	24.9	24.7	24.1	24.2	24.1	25.1	25.1	25.1	24.7	22.4
pH	7.27	7.57	7.64	7.14	7.41	7.49	7.64	7.54	7.54	7.21	7.46	7.94	7.46	7.64	7.73	7.51	7.55	7.66	7.14	7.44	7.44	7.64	7.65	7.61	7.23	7.59
time	707	1541	2332	716	1512	2312	703	1517	2313	718	1542	2309	717	1519	2302	717	1504	2317	721	1517	2312	801	1615	2402	1607	2401
R1 @ 2/3 deep																										
Turbidity, NTU	18	24	30	37	34	37	35	37	38	34	40	36	41	37	35	40	37	32	40	37	35	40	37	42	41	49
DO, mg/l	8.74	8.44	8.71	8.17	8.19	8.26	8.43	8.14	8.64	8.71	8.27	8.14	8.04	8.44	8.24	8.24	8.47	8.24	8.47	8.04	8.44	7.11	7.15	7.66	6.60	8.31
Temp., °C	23.5	23.1	22.9	25.4	24.9	25.1	25.1	24.1	25.2	25.4	25.1	24.1	25.4	26.1	24.6	24.7	24.9	24.7	24.1	24.2	24.1	25.1	25.2	25.4	24.6	22.7
pH	7.41	7.46	7.69	7.21	7.46	7.46	7.61	7.64	7.54	7.21	7.44	7.96	7.51	7.71	7.91	7.54	7.59	7.46	7.26	7.46	7.41	7.71	7.57	7.54	7.27	7.56
time	710	1547	2340	725	1517	2331	710	1521	2319	721	1557	2315	724	1527	2310	724	1515	2321	714	1530	2317	810	1620	2410	1613	2410
R2 @ 5'																										
Turbidity, NTU	18	25	31	36	34	38	35	36	38	33	39	37	40	36	36	41	36	34	41	36	34	40	36	42	40	47
DO, mg/l	8.61	8.52	8.69	8.46	8.46	8.29	8.19	8.11	8.61	8.74	8.24	8.26	8.17	8.46	8.31	8.17	8.41	8.17	8.51	8.11	8.45	7.14	7.74	7.64	7.69	8.39
Temp., °C	23.2	23.2	22.9	25.2	25.1	25.4	25.1	24.2	24.9	25.4	24.9	24.2	25.1	25.9	24.6	24.6	24.9	24.2	24.2	24.2	24.2	25.1	25.3	26.1	24.7	22.7
pH	7.64	7.64	7.71	7.31	7.41	7.41	7.66	7.69	7.47	7.14	7.46	7.19	7.55	7.71	7.87	7.56	7.59	7.43	7.24	7.51	7.55	7.74	7.54	7.55	7.38	7.52
time	715	1549	2344	727	1518	2338	712	1524	2320	724	1554	2316	727	1529	2315	726	1516	2322	712	1534	2319	812	1621	2415	1615	2412
R2 @ 2/3 deep																										
Turbidity, NTU	18	24	32	37	35	37	34	37	39	34	40	37	41	37	36	41	35	31	40	37	34	41	37	41	41	47
DO, mg/l	8.47	8.47	8.74	8.49	8.19	8.29	8.46	8.19	8.57	8.61	8.24	8.22	8.29	8.49	8.46	8.14	8.45	8.41	8.54	8.12	8.45	7.16	7.67	7.41	6.73	8.34
Temp., °C	23.7	23.4	23.1	25.1	25.1	25.6	24.7	24.4	24.9	25.1	24.9	24.1	25.4	25.9	24.7	24.7	24.9	24.1	241	24.2	24.1	25.1	24.4	25.4	24.6	22.6
pH	7.6	7.66	7.46	7.41	7.46	7.41	7.59	7.66	7.44	7.19	7.61	7.16	7.54	7.76	7.84	7.54	7.61	7.71	7.41	7.46	7.54	7.61	7.56	7.54	7.33	7.46

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Signature _____

Date _____

Date	17-Sep	R1	R2	20-Sep	R1	R2
Calcium		24	24		25	24
Total Hardness		110	110		110	110
Magnesium		12	13		12	12
TSS		3	4		3	4

September 2009

Roberts II

time

815 1541 1015 942
21-Sep 22-Sep 23-Sep 24-Sep

Turbidity, NTU	64	79	120	142															
DO, mg/l	8.14	8.14	6.96	6.45															
Temp., °C	26.1	26.4	26.9	24.7															
pH	7.56	7.46	7.67	7.17															

time

1540 1210 1630

Turbidity, NTU		33	41	40															
DO, mg/l		8.74	7.69	8.13															
Temp., °C		24.2	25.1	25.3															
pH		7.57	7.41	7.5															

*R3 values for 9.22.09 and 9.23.09 are Composites

time

1631

Turbidity, NTU				40															
DO, mg/l				7.48															
Temp., °C				25.2															
pH				7.45															

time

1547 1215 1633

Turbidity, NTU		34	4	40															
DO, mg/l		8.76	7.74	7.91															
Temp., °C		24.1	25.1	25.4															
pH		7.66	7.56	7.44															

*R4 values for 9.22.09 and 9.23.09 are Composites

time

1635

Turbidity, NTU				40															
DO, mg/l				7.48															
Temp., °C				25.2															
pH				7.45															

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Signature _____

Date _____

	1-Sep	D-1	2-Sep	D-1	3-Sep	D-1	R-3	R-4	4-Sep	D-1	5-Sep	D-1	R-3	R-4	6-Sep	D-1	R-3	R-4	7-Sep	D-1
Calcium		43		24		23	24	23		26		23	23	24		27	26	27		16
Total Hardness		280		160		160	160	150		170		150	150	150		170	170	170		110
Magnesium		42		24		24	24	23		26		22	23	23		25	25	25		18
TSS		63		25		24	26	24		31		20	50	51		29	21	27		4

September/October 2009

<u>time</u>	810	0023	830	1603	0035	800	1607	0005	1541	0015	815	1629	2320	813	1600	2345	811	1613	2320	1522	2320	820	1546	2315	800	1601	752	1554	751	1520	0020	
R1 @ 5'	27-Sep		29-Sep			30-Sep			1-Oct		2-Oct			3-Oct			4-Oct	5-Oct		6-Oct		7-Oct		8-Oct		9-Oct		10-Oct				
Turbidity, NTU	40	36	18	12	17	47	15	17	13	18	13	11	10	10	11	10	10	8	14	16	16	19	13	9	10	11	16	19	16	10	18	
Temp. °C	25.1	25.4	24.1	23.9	29.1	22.6	23.2	22.7	22.9	23.7	22.9	22.7	23.4	21.4	21.7	21.3	20.9	20.1	21.3	19.4	19.6	19.1	18.9	19.5	18.9	19.2	18.4	18.9	18.4	19.1	18	
pH	7.61	7.57	7.64	7.18	7.56	7.41	7.47	7.36	7.23	7.14	7.32	7.45	7.34	7.42	7.41	7.49	7.52	7.54	7.26	7.29	7.27	7.39	7.25	7.27	7.66	7.51	7.57	7.37	7.51	7.61	7.62	

time	814	0027	831	1606	0037	804	1608	0006	1543	0018	816	1630	2325	814	1601	2350	812	1615	2324	1524	2325	822	1547	2320	803	1607	755	1555	752	1522	0020	
R1 @ 2/3 deep																																
Turbidity NTU	40	34	17	14	18	49	18	17	16	17	11	15	12	11	12	10	9	8	12	19	17	25	10	9	18	21	28	21	26	11	18	
DQ mg/l	6.77	6.79	6.79	6.69	6.91	8.39	6.83	6.79	6.64	6.74	6.89	6.62	6.98	6.91	7.16	6.87	7.45	8.1	7.71	8.54	8.24	8.33	8.83	8.44	7.96	8.91	8.84	8.74	8.84	8.27	8.49	
Temp. °C	25.2	25.4	24.2	23.9	29.2	22.5	23.2	22.7	22.4	23.7	22.8	22.4	23.2	21.4	21.5	21.4	21.0	20.0	21.4	18.8	19.6	18.6	18.9	18.5	18.6	18.6	19.4	18.3	18.2	18.3	19.2	18.8
pH	7.59	7.64	7.61	7.21	7.65	7.52	7.47	7.21	7.3	7.14	7.29	7.35	7.36	7.32	7.39	7.42	7.45	7.46	7.53	7.31	7.34	7.51	7.44	7.40	7.45	7.68	7.64	7.67	7.76	7.52	7.64	7.64

<u>time</u>	815	0029	837	1612	0039	807	1610	0009	1549	0025	821	1641	2329	819	1602	2355	816	1620	2328	1527	2335	825	1552	2325	809	1610	801	1559	755	1529	0025		
R2 @ 5'																																	
Turbidity, NTU	39	37	18	14	18	47	16	19	12	18	15	13	9	11	12	12	11	11	14	16	17	16	11	9	12	9	16	19	16	10	17		
Temp., °C	25.4	25.4	24.2	24.0	29.2	22.4	23.3	22.6	22.9	23.7	22.8	22.5	23.4	21.4	21.6	21.5	20.7	20.1	21.5	19.5	19.6	19.0	20.0	19.5	18.7	18.1	18.4	18.9	18.4	19.1	18.8		
pH	7.54	7.66	7.64	7.29	7.58	7.46	7.49	7.49	7.28	7.43	7.36	7.35	7.34	7.31	7.39	7.39	7.43	7.56	7.34	7.63	7.52	7.48	7.50	7.52	7.54	7.62	7.67	7.4	7.55	7.61	7.63		

<u>time</u>	819	0036	840	1614	0042	810	1611	0010	1550	0030	822	1642	2332	820	1603	2359	817	1621	2332	1528	2340	828	1554	2330	810	1615	804	1601	756	1531	0023	
R2 @ 2/3 deep																																
Turbidity, NTU	40	37	18	15	17	49	18	18	17	21	12	15	13	14	16	12	8	12	15	20	16	27	12	8	20	17	28	21	28	11	17	
DO, mg/l	6.97	6.99	6.97	6.48	6.97	8.34	6.75	6.73	6.53	6.68	6.78	6.93	6.87	7.02	7.12	7.16	7.39	8.18	7.83	8.75	8.34	8.29	8.9	8.45	7.96	8.73	8.75	8.94	8.75	8.76	8.42	
Temp, °C	25.4	25.4	24.2	24.0	29.1	22.5	23.3	22.4	22.5	23.8	22.6	22.4	23.2	21.5	21.5	21.5	20.9	20.0	21.5	18.9	19.3	19.0	18.8	18.9	18.7	18.9	18.3	18.3	18.3	19.2	18.6	
pH	7.54	7.61	7.57	7.29	7.59	7.47	7.7	7.42	7.30	7.35	7.31	7.44	7.35	7.37	7.4	7.42	7.51	7.54	7.33	7.64	7.95	7.75	7.51	7.68	7.55	7.61	7.68	7.71	7.51	7.56	7.67	7.33

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I have compared the information to the specified water quality requirements and that any discrepancies have been identified and explained. I am aware that there significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature _____

Date _____

[illegible]

September/October 2009

	Roberts II										Roberts I													
time	1010	1234	930	930	1030	1030	1041	945	1121	900	1601	800												
D-1	27-Sep	28-Sep	29-Sep	30-Sep	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	8-Oct	9-Oct	10-Oct												
Turbidity, NTU	70	60	60	61	120	68	110	106	72	119	65	80												
DO, mg/l	6.14	6.55	6.14	6.97	6.19	6.18	6.42	6.32	6.40	6.18	6.62	6.15												
Temp., °C	25.4	25.1	24.1	16.1	19.5	20.2	17.1	16.8	18.7	22.3	16.6	16.3												
pH	7.66	7.27	7.41	7.3	7.16	7.05	7.20	7.17	7.23	7.35	7.47	7.46												

time	1530	1200	941	1556	1132	1653	1336	1107	1544	831	834													
R3 @ 5'																								
Turbidity, NTU	40	38	18	16	12	13	10	9	9		11	15												
Temp., °C	25.3	24.9	24.2	23.1	22.6	22.3	22.0	21.2	20.8		19.0	18.8												
pH	7.14	7.33	7.21	7.43	7.19	7.49	7.40	7.15	7.36		7.66	7.68												

time	1531	1201	942	1558	1134	1654	1337	2308	1545	832	835													
R3 @ 25'																								
Turbidity, NTU	41	42	18	17	15	10	13	13	10		8	17												
DO, mg/l	7.08	6.75	7.21	6.97	6.64	6.42	6.89	7.57	7.38		7.82	7.7												
Temp., °C	24.4	24.8	24.2	23.0	22.8	22.3	21.9	21.2	20.7		19.0	18.8												
pH	7.27	7.27	7.27	7.42	7.23	7.47	7.41	7.28	7.37		7.59	7.66												

time	1539	1204	947	1603	1143	1657	1339	2312	1547	835	838													
R4 @ 5'																								
Turbidity, NTU	40	40	18	16	12	13	11	9	8		9	15												
Temp., °C	24.9	24.8	24.7	23.2	22.6	22.3	22.0	20.7	20.7		19.0	18.8												
pH	7.11	7.36	7.16	7.46	7.43	7.47	7.37	7.14	7.29		7.52	7.61												

time	1540	1205	948	1603	1144	1658	1340	2313	1548	836	839													
R4 @ 25'																								
Turbidity, NTU	40	42	19	15	14	10	13	8	8		8	17												
DO, mg/l	6.77	6.77	7.11	6.90	6.56	6.41	6.94	7.65	7.42		7.62	7.76												
Temp., °C	24.9	24.8	24.2	23.2	22.6	22.4	22.1	21.0	20.7		19.0	18.8												
pH	7.14	7.31	7.26	7.45	7.46	7.43	7.31	7.21	7.27		7.51	7.61												

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I have compared the information to the specified water quality requirements and that any discrepancies have been identified and explained. I am aware that there significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature_____

Date_____

	27-Sep	D1	28-Sep	D1	29-Sep	D1	R3	R4	30-Sep	D1	1-Oct	D1	R3	R4	2-Oct	D1	3-Oct	D1	4-Oct	D1	5-Oct	D1	7-Oct	D1	8-Oct	D1	9-Oct	D1	R3	R4
TSS		52		90		19	6	3		75		56	11	9		9		50		48		38		72		25		41	4	5

October 2009																					
D-1	<u>time</u>	Roberts I																			
		1110	900	1430	1000	1015	1054	1515	1051	800	850	1410	855	1550	1012	1010	1010				
		11-Oct	12-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct				
	Turbidity, NTU	120	105	47	25	64	41	29	57	31	30	31	29	27	29	21	12				
	DO, mg/l	7.75	7.41	6.97	6.14	6.11	6.04	6.11	6.01	6.01	6.01	6.14	6.01	6.01	6.09	6.10	5.61				
	Temp., °C	20.2	19.6	16.9	16.2	16.1	16.7	16.7	18.1	18.4	18.1	18.1	17.4	17.9	17.4	16.9	16.9				
pH	7.5	7.45	7.41	7.41	7.41	7.74	7.44	7.46	7.51	7.25	7.77	7.61	7.41	7.42	7.54	7.51					
R3 @ 5'	<u>time</u>	842	1513	901	907	745	1140	1540	1210	840	1015	1615	1510	1415	1557	952	1510				
		16	8	9	6	10	10	11	10	10	12	11	11	10	12	10	11				
	Turbidity, NTU	18.1	18.7	17.9	18.0	17.7	18.1	18.1	18.4	19.1	20.1	19.1	19.1	18.7	18.1	17.9	17.1				
	Temp., °C	7.56	7.48	7.61	7.38	7.51	7.61	7.61	7.44	7.71	7.27	7.11	7.64	7.51	7.41	6.86	7.61				
	pH																				
R3 @ 25'	<u>time</u>	844	1514	902	908	749	1142	1541	1211	841	1018	1616	1511	1416	1600	953	1512				
		16	10	10	5	11	9	12	9	10	12	12	9	10	13	8	12				
	Turbidity, NTU	7.91	7.53	8.15	8.68	8.91	8.47	8.76	8.46	8.14	8.91	8.71	7.71	8.71	8.47	9.40	8.14				
	DO, mg/l	18.7	18.6	17.9	17.9	17.6	18.2	18.2	19.1	20.1	19.1	19.2	18.7	18.2	17.9	17.1					
	Temp., °C	7.53	7.50	7.61	7.39	7.54	7.66	7.57	7.45	7.64	7.35	7.27	7.64	7.54	7.17	6.87	7.66				
	pH																				
R4 @ 5'	<u>time</u>	839	1517	904	910	800	1155	1545	1220	849	1025	1620	1515	1420	1610	956	1520				
		15	8	9	4	10	9	11	10	9	11	11	10	11	12	8	11				
	Turbidity, NTU	18.5	18.7	17.9	18.0	17.7	18.1	18.4	18.4	19.2	20.1	19.2	19.1	18.9	18.2	17.9	17.2				
	Temp., °C	7.60	7.53	7.65	7.33	7.56	7.47	7.49	7.71	7.62	7.54	7.24	7.67	7.47	7.14	6.87	7.71				
	pH																				
R4 @ 25'	<u>time</u>	840	1518	905	912	801	1156	1546	1221	850	1027	1622	1516	1421	1612	957	1522				
		16	11	9	6	10	10	10	10	10	12	12	10	10	12	8	11				
	Turbidity, NTU	8.01	7.4	8.25	8.65	8.74	8.52	8.77	8.17	8.17	8.97										

Date _____

	14-Oct	D1	R3	R4	15-Oct	D1	16-Oct	D1	17-Oct	D1	18-Oct	D1	19-Oct	D1	R3	R4	20-Oct	D1	21-Oct	D1	22-Oct	D1	R3	R4	23-Oct	D1
TSS		41	3	4		79		41		86		44		32	5	3		23		5		3	5	3		3
	24-Oct	D1	25-Oct	D1	R3	R4	26-Oct	D1	27-Oct	D1	Rinsate	Blank														
TSS		44			42	4	3		62		11	*Tested for: Cu, Hg, Zinc, Ca, Hardness,Mg, TSS. All found to be "ND"														

Appendix B

CD – Field Logs, Daily Reports, Analytical
Data, Methyl Mercury Report