

Appendix B

Water Quality Monitoring Data During Construction of Reaches 10B (2012) and 6 (2011)

Contents:

- Table 1 – Reach 10B (2012)
- Table 2 – Reach 6, Virginia Street Diversion (2011)
- Table 3 – Reach 6, North End Diversion (2011)

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Reach 10B Water Quality Monitoring Results—September 8-21, 2012

Date	Upstream										Downstream									
	Time of Day	Flow (cfs) ^a	pH	Conductivity	Turbidity (NTU) ^b	DO (mg/L) ^c	Temp °C	Salinity	TDS	TSS	Time of Day	Flow (cfs) ^a	pH	Conductivity	Turbidity (NTU) ^b	DO (mg/L) ^c	Temp °C	Salinity	TDS	TSS
Sept 8	AM	-	-	-	-	-	-	-	-	-	AM	-	-	-	-	-	-	-	-	-
	PM	-	7.0	-	7.0	8.5	23.8	-	-	-	PM	-	7.2	-	6.4	7.9	23.1	-	-	-
Sept 9	AM	-	6.8	-	8.9	7.12	21.2	-	-	-	AM	-	6.8	-	5.0	7.2	20.9	-	-	-
	PM	-	7.8	-	9.1	7.2	23.6	-	-	-	PM	-	8.8	-	6.0	8.15	23.2	-	-	-
Sept 10	AM	-	7.7	-	5.1	7.36	20.9	-	-	-	AM	-	7.8	-	5.5	7.55	21.0	-	-	-
	PM	-	7.8	-	5.0	8.39	23.2	-	-	-	PM	-	7.9	-	6.2	9.1	23.9	-	-	-
Sept 11	AM	-	7.4	-	5.5	7.4	21.2	-	-	-	AM	-	7.7	-	6.0	7.2	21.1	-	-	-
	PM	-	7.8	-	5.0	7.9	23.3	-	-	-	PM	-	7.8	-	4.2	8.15	23.1	-	-	-
Sept 12 ^d	AM	-	7.6	-	4.2	7.32	21.4	-	-	-	AM	-	7.9	-	5.3	7.8	21.3	-	-	-
	PM	11	6.77	0.51	9.7	10.83	21.99	0.2	0.33	0.0	PM	11	7.18	0.48	9.1	8.27	21.34	0.2	0.31	0.0
Sept 13	AM	11	7.86	0.46	8.2	8.79	20.57	0.2	0.30	0.0	AM	11	8.09	0.44	11.1	10.3	21.12	0.2	0.29	0.0
	PM	11	8.18	0.44	9.6	10.48	24.33	0.2	0.29	0.0	PM	11	8.07	0.44	2.5	8.26	22.75	0.2	0.29	0.0
Sept 14	AM	11	8.03	0.44	8.5	8.79	20.40	0.2	0.28	0.0	AM	11	7.89	0.45	2.4	8.38	19.82	0.2	0.30	0.0
	PM	11	8.13	0.44	7.7	8.52	22.80	0.2	0.28	0.0	PM	11	8.09	0.46	3.1	8.37	22.2	0.2	0.26	0.0
Sept 15	AM	11	8.03	0.47	9.2	8.82	19.50	0.2	0.28	0.0	AM	11	7.89	0.46	1.9	8.84	19.3	0.2	0.30	0.0
	PM	11	8.27	0.45	8.1	8.57	22.80	0.2	0.28	0.0	PM	11	8.10	0.47	4.2	8.41	22.3	0.2	0.27	0.0
Sept 16	AM	11	8.03	0.45	9.2	9.67	19.20	0.2	0.29	0.0	AM	11	7.89	0.46	5.3	7.69	19.5	0.2	0.29	0.0
	PM	11	8.18	0.44	8.5	8.63	22.40	0.2	0.29	0.0	PM	11	8.13	0.43	3.6	8.51	22.3	0.2	0.26	0.0
Sept 17	AM	11	8.14	0.45	10.7	6.92	18.83	0.2	0.39	0.0	AM	11	8.07	0.46	1.1	5.74	18.55	0.2	0.30	0.0
	PM	11	8.27	0.44	2.9	8.82	21.72	0.2	0.28	0.0	PM	11	8.10	0.46	2.4	8.71	22.32	0.2	0.30	0.0
Sept 18	AM	11	8.10	0.45	8.1	8.20	18.80	0.2	0.29	0.0	AM	11	8.18	0.46	1.7	7.23	18.21	0.2	0.30	0.0
	PM	11	8.25	0.45	7.2	8.78	21.92	0.2	0.28	0.0	PM	11	8.14	0.44	1.6	7.05	22.11	0.2	0.29	0.0
Sept 19 ^e	AM	11	8.34	0.45	11.9	9.63	17.54	0.2	0.29	0.0	AM	11	8.28	0.45	17.7	9.29	16.69	0.2	0.29	0.0
	PM	11	8.42	0.44	19.4	8.66	21.58	0.2	0.29	0.0	PM	11	8.39	0.47	24.2	7.73	23.18	0.2	0.30	0.0
Sept 20	AM	11	8.53	0.45	9.8	8.05	17.7	0.2	0.29	0.0	AM	11	8.37	0.46	7.9	7.51	17.2	0.2	0.29	0.0
	PM	11	8.37	0.44	7.1	9.09	21.7	0.2	0.28	0.0	PM	11	8.20	0.45	5.0	8.04	23.7	0.2	0.29	0.0
Sept 21	AM	11	8.51	0.44	8.3	8.08	17.6	0.2	0.30	0.0	AM	11	8.43	0.45	6.1	7.83	17.1	0.2	0.29	0.0
	PM	11	8.33	0.43	6.4	8.71	22.9	0.2	0.28	0.0	PM	11	8.24	0.42	3.9	8.63	22.8	0.2	0.27	0.0
<i>Minimum</i>		--	6.77	0.43	2.90	6.92	17.54	--	0.28	--	--	--	7.18	0.42	1.10	5.74	16.69	--	0.26	--
<i>Maximum</i>		--	8.53	0.46	19.4	10.83	24.33	--	0.39	--	--	--	8.43	0.48	24.20	10.30	23.70	--	0.31	--
<i>Average</i>		--	7.95	0.45	8.97	8.84	20.75	--	0.29	--	--	--	8.09	0.45	6.04	8.15	20.66	--	0.29	--

Notes:

^a Stream flow (cfs) is estimated

^b Turbidity requirements:

- Upstream turbidity is between 0 and 50 NTUs, downstream turbidity cannot have an increase of more than 5 NTUs.
- Upstream turbidity is greater than 50 NTUs, downstream turbidity cannot have an increase of more than 10 percent.

^c DO requirements: minimum of 7.0 mg/L.

^d The measurements above the thick black line were conducted by MIE, Inc and the measurements below the line were conducted by Light, Air & Space Construction.

^e Re-watering the channel occurred on September 19, 2012.

**Table 2 Reach 6 Water Quality Monitoring Results
(Virginia Avenue Diversion)—2011**

Date	Upstream (Station 729+00)					Downstream (Station 725+50)			
	Time of Day	Temp °C	pH	Turbidity (NTU) ^b	DO (mg/L) ^c	Temp °C	pH	Turbidity (NTU) ^b	DO (mg/L) ^c
22 Jun	AM	24.3	7.89	25.5	6.43	24.4	7.98	26.5	5.81
	PM	24.6	8.05	24.8	8.55	24.6	8.08	29.6	8.67
23 Jun	AM	22.2	8.06	28.3	6.35	22.6	8.03	31.4	8.43
	PM	24.2	8.13	33.3	7.70	24.3	8.13	34.6	9.41
24 Jun	AM	20.8	8.05	28.0	6.47	20.8	7.93	31.2	9.01
	PM	23.6	8.21	32.7	8.14	23.3	8.18	32.2	6.97
27 Jun	AM	20.9	8.11	28.8	9.76	20.8	8.14	32.7	8.33
	PM	22.9	8.26	44.5	6.07	23.0	8.23	42.3	7.16
28 Jun	AM	21.1	8.10	40.4	7.01	20.8	8.39	39	9.23
	PM	21.9	8.15	31.7	8.52	--	--	--	--
29 Jun	AM	21.1	7.31	94.2	5.83	20.9	7.41	104	8.64
	PM	21.5	7.30	67.5	5.15	21.8	7.32	68.4	9.57
30 Jun	AM	20.2	7.87	36.2	6.55	19.7	7.82	38.3	8.87
	PM	22.1	8.08	51.5	6.20	22.1	8.07	46.5	8.47
1 Jul	AM	21.1	7.99	27.9	8.90	20.1	8.13	31.7	7.99
	PM	24.4	8.13	34.8	9.15	24.6	8.12	37.9	7.31
5 Jul	AM	22.6	8.02	35.0	7.61	22.8	8.28	33.9	6.98
	PM	25.5	8.18	35.3	6.66	25.7	8.14	31.8	7.34
6 Jul	AM	23.8	8.13	40.2	5.88	23.1	8.46	40.7	6.90
	PM	25.9	8.27	30.4	7.69	23.3	8.17	39.3	7.09
7 Jul	AM	23.3	8.17	39.3	7.09	23.6	8.15	39.8	6.89
	PM	26.2	8.32	37.6	7.21	26.1	8.38	40.4	6.71
8 Jul	AM	23.3	8.18	32.2	5.39	23.4	8.21	34.2	6.49
	PM	25.5	8.33	32.1	6.05	25.3	8.35	34	7.30
9 Jul	AM	21.8	8.25	36.2	8.28	22.4	8.23	39.4	7.63
	PM	24.9	8.41	30.7	8.47	24.8	8.40	33.8	6.76
11 Jul	AM	23.9	8.29	32.6	10.7	23.2	8.45	33.4	7.74
	PM	26.6	8.50	32.8	10.37	24.4	8.48	36	10.6
12 Jul	AM	20.6	8.44	33.8	9.08	21.3	8.32	38.5	7.15
	PM	23.4	8.36	40.0	9.43	23.4	8.41	41.1	6.41
13 Jul	AM	21.1	8.36	36.5	8.05	21.4	8.35	40.2	6.57
	PM	23.1	8.46	38.4	7.04	23.4	8.54	41.7	7.22
14 Jul	AM	20.3	8.38	33.3	7.05	20.4	8.38	36.2	8.52
	PM	22.3	8.34	30.6	8.12	22.4	8.49	34.3	7.11
15 Jul	AM	20.2	8.36	38.8	8.17	20.2	8.37	39.9	8.35
	PM	22.4	8.52	37.4	7.86	22.4	8.52	38.6	7.79
16 Jul	AM	21.2	8.42	37.6	6.49	20.2	8.48	36.6	9.26
	PM	23.1	8.59	37.8	8.73	22.6	8.58	37.3	8.92
18 Jul	AM	20.8	8.20	34.1	8.24	20.8	8.40	38.2	7.93
	PM	22.9	8.32	35.2	8.05	22.7	8.52	35.5	7.64
19 Jul	AM	21.2	8.55	31.8	9.22	21.4	8.39	35.1	9.20
	PM	23.2	8.32	41.7	8.61	23.4	8.30	44.4	8.74
20 Jul	AM	20.9	8.46	38.1	9.12	21.7	8.23	41.0	8.44
	PM	23.5	8.53	37.1	8.06	23.8	8.48	41.8	8.07
21 Jul	AM	21.6	8.60	36.6	8.82	22.4	8.48	40.4	8.67
	PM	24.6	8.37	35.1	7.06	24.6	8.15	39.4	6.10
22 Jul	AM	21.2	8.38	40.5	8.76	21.5	8.38	40.5	8.76
	PM	23.7	8.40	38.1	8.46	23.9	8.13	41.4	8.30
23 Jul	AM	22.9	8.82	36.9	8.85	21.8	8.57	39.7	8.86
	PM	24.9	8.70	32.6	9.40	24.4	8.49	31.0	7.76
25 Jul	AM	21.4	8.19	44.2	7.60	21.4	8.32	47.6	7.16
	PM	23.4	8.46	34.1	8.30	23.5	8.42	37.2	7.76
26 Jul	AM	21.5	8.42	40.5	7.89	21.7	8.42	37.6	7.36

**Table 2 Reach 6 Water Quality Monitoring Results
(Virginia Avenue Diversion)—2011**

Date	Upstream (Station 729+00)					Downstream (Station 725+50)			
	Time of Day	Temp °C	pH	Turbidity (NTU) ^b	DO (mg/L) ^c	Temp °C	pH	Turbidity (NTU) ^b	DO (mg/L) ^c
	PM	24.1	8.21	41.6	7.81	23.9	8.58	35.1	7.93
27 Jul	AM	20.9	8.56	38.3	7.61	21.6	8.55	41.0	7.01
	PM	23.6	8.54	36.9	7.31	23.7	8.66	36.4	7.69
28 Jul	AM	21.3	8.48	33.1	7.06	21.8	8.46	34.4	7.16
	PM	23.9	8.64	42.4	7.33	23.7	8.73	39.1	7.78
29 Jul	AM	21.6	8.39	40.4	7.82	21.8	8.40	40.1	7.61
	PM	23.6	8.72	37.5	7.95	23.6	8.62	37.6	8.11
30 Jul	AM	20.9	8.71	39.9	8.70	21.1	8.75	42.6	8.66
	PM	26.3	8.81	38.3	9.69	24.4	8.72	42.5	8.18

**Table 3 Reach 6 Water Quality Monitoring Results
(North End Diversion)—2011**

Date	Upstream (Station 721+00)					Downstream (Station 713+00)			
	Time of Day	Temp °C	pH	Turbidity (NTU) ^b	DO (mg/L) ^c	Temp °C	pH	Turbidity (NTU) ^b	DO (mg/L) ^c
6 Jul	AM	23.7	8.19	43.0	5.73	23.1	8.16	46.1	8.35
	PM	25.8	8.26	36.1	7.12	25.1	8.22	40.0	8.21
7 Jul	AM	23.8	8.19	49.9	6.14	22.8	8.02	46.8	6.22
	PM	26.1	8.31	49.6	7.49	26.4	8.23	52.0	5.57
8 Jul	AM	23.2	8.22	53.5	5.99	23.5	8.24	55.1	7.33
	PM	24.9	8.43	46.9	7.10	25.9	8.38	43.6	6.77
9 Jul	AM	22.1	8.22	41.7	8.30	22.6	8.27	40.6	7.99
	PM	24.6	8.42	37.2	7.63	25.8	8.64	35.8	7.33
11 Jul	AM	22.9	8.473	36.9	7.81	23.2	8.46	39.1	7.13
	PM	24.2	8.29	37.0	8.95	23.8	8.45	40.8	7.51
12 Jul	AM	21.0	8.31	44.7	8.80	20.8	8.37	44.6	8.27
	PM	23.4	8.3	40.9	6.59	23.9	8.54	42.8	9.28
13 Jul	AM	21.4	8.34	42.9	6.97	21.1	8.40	41.2	8.81
	PM	23.1	8.49	42.1	6.68	23.3	8.48	44.4	7.21
14 Jul	AM	20.2	8.43	37.0	7.98	20.8	8.45	34.9	7.96
	PM	22.3	8.5	37.3	8.41	22.7	8.58	36.9	9.28
15 Jul	AM	19.6	8.41	40.1	8.49	20.2	8.48	40.4	8.46
	PM	22.7	8.61	39.2	8.76	23.1	8.66	38.1	9.47
16 Jul	AM	20.5	8.44	40.3	7.54	20.6	8.46	41.1	9.22
	PM	22.8	8.55	42.0	8.24	23.0	8.65	44.0	8.21
18 Jul	AM	20.6	8.42	40.2	8.53	21.0	8.37	44.3	8.48
	PM	22.8	8.56	36.4	7.88	23.0	8.48	35.1	8.29
19 Jul	AM	21.4	8.43	36.5	7.02	21.4	8.41	35.8	7.33
	PM	23.2	8.46	46.8	7.36	23.7	8.51	50.6	7.48
20 Jul	AM	21.5	8.43	48.3	6.49	22.0	8.41	47.9	6.45
	PM	23.8	8.42	40.4	8.46	24.3	8.49	41.8	7.81
21 Jul	AM	22.6	8.42	42.0	8.71	22.7	8.41	46.4	9.12
	PM	24.7	8.54	40.5	7.93	21.6	8.12	42.4	6.49
22 Jul	AM	21.6	8.12	42.4	6.49	21.5	8.34	45.6	7.18
	PM	23.8	8.42	43.5	7.59	24.2	8.45	39.0	7.44
23 Jul	AM	21.4	8.45	41.8	7.93	20.9	8.53	41.5	7.34
	PM	24.4	8.66	32.1	7.68	24.4	8.33	35.6	7.54
25 Jul	AM	21.4	8.53	35.9	6.09	21.6	8.8	33.2	8.05

**Table 3 Reach 6 Water Quality Monitoring Results
(North End Diversion)—2011**

Date	Upstream (Station 721+00)					Downstream (Station 713+00)			
	Time of Day	Temp °C	pH	Turbidity (NTU) ^b	DO (mg/L) ^c	Temp °C	pH	Turbidity (NTU) ^b	DO (mg/L) ^c
26 Jul	PM	23.6	8.39	36.4	6.61	23.6	8.53	36.4	6.61
	AM	21.6	8.58	40.8	6.34	21.7	8.51	44.1	6.48
27 Jul	PM	24.6	8.43	50.0	8.66	24.4	8.86	45.9	8.73
	AM	21.3	8.67	39.6	8.61	21.6	8.39	44.2	7.44
28 Jul	PM	23.6	8.36	39.9	7.52	23.9	8.67	43.8	7.77
	AM	21.6	8.57	39.6	7.89	21.6	8.52	42.0	7.36
29 Jul	PM	24.1	8.60	46.7	8.11	23.9	8.63	47.1	7.75
	AM	23.8	8.54	39.9	7.32	22.1	8.31	42.4	7.25
30 Jul	PM	24.2	8.68	37.2	7.71	23.8	8.73	35.0	7.31
	AM	21.4	8.76	41.3	8.42	22.0	8.67	44.7	7.83
15 Aug	PM	24.3	8.96	35.2	7.65	24.1	8.82	32.5	7.35
	AM	20.4	9.13	46.7	7.27	21.2	8.97	49.9	7.82
16 Aug	PM	24.4	9.40	53.7	8.72	24.3	9.06	51.2	8.23
	AM	21.2	9.32	49.7	7.07	21.4	9.15	48.2	7.31
17 Aug	PM	23.6	9.31	50.9	8.28	23.3	9.10	49.8	7.35
	AM	21.8	9.09	50.8	7.49	21.8	9.18	47.6	7.76
18 Aug	PM	24.0	9.33	49.2	8.24	23.7	9.20	45.9	8.27
	AM	21.6	9.10	44.5	8.01	21.7	9.21	41.6	7.93
19 Aug	PM	23.7	9.34	36.6	8.43	23.8	9.15	34.8	8.25
	AM	20.8	9.15	50.6	8.81	20.6	9.16	48.3	8.51
20 Aug	PM	24.1	9.32	50.5	9.20	20.6	9.31	50.5	8.94
	AM	20.6	9.12	50.5	8.94	19.8	9.25	48.1	7.61
22 Aug	PM	23.8	9.47	47.6	8.32	24.0	9.27	51.1	8.43
	AM	20.9	9.01	47.4	9.30	20.9	9.05	52.4	8.38
23 Aug	PM	23.0	9.27	51.4	7.99	22.7	9.10	48.1	8.61
	AM	23.4	9.23	35.7	7.98	22.6	9.19	45.3	7.74
24 Aug	PM	24.4	9.19	41.3	7.64	23.7	9.28	39.2	8.21
	AM	22.1	9.19	45.3	7.74	22.4	9.27	48.7	8.56
25 Aug	PM	24.3	9.16	43.5	7.58	24.5	9.31	39.9	8.75
	AM	22.1	9.25	47.8	7.86	22.7	9.32	44.9	8.49
26 Aug	PM	24.1	9.15	37.0	8.14	24.4	9.26	36.0	8.28
	AM	21.4	9.26	41.1	7.32	22.7	9.41	40.4	8.82
27 Aug	PM	24.6	9.09	40.1	7.42	24.3	9.45	41.2	9.99
	AM	21.7	9.24	49.4	7.63	22.4	9.01	47.6	7.02
6 Sept	PM	24.1	9.19	31.5	7.90	23.8	9.21	31.7	8.42
	AM	19.8	9.04	52.6	7.57	20.7	8.92	48.5	8.36
7 Sept	PM	23.1	8.91	28.4	7.74	22.6	9.05	32.8	9.55
	AM	20.4	9.24	44.5	8.61	21.1	8.54	42.6	8.6
8 Sept	PM	23.6	9.09	39.6	7.95	23.2	9.37	35.2	8.31
	AM	22.0	9.18	42.0	8.6	21.9	8.69	46.7	9.32
9 Sept	PM	23.7	9.07	43.2	7.56	23.7	9.18	43.1	8.73
	AM	22.0	9.24	57.8	8.18	21.8	9.12	57.8	8.64
10 Sept	PM	24.8	9.21	39.5	7.15	24.1	9.02	36.3	9.66
	AM	20.7	9.36	48.3	7.54	22.1	9.03	46.6	7.16
12 Sept	PM	23.8	9.21	45.7	8.08	24.4	9.34	41.2	7.93
	AM	20.8	9.16	52.4	7.29	21.2	9.37	47.9	7.63
13 Sept	PM	23.7	8.92	37.6	7.94	23.3	9.07	41.0	8.55
	AM	21.9	9.28	49.5	7.18	21.9	8.90	47.6	8.01
14 Sept	PM	23.5	8.97	45.8	8.89	23.8	9.34	48.2	9.57
	AM	21.9	9.25	50.8	8.71	21.8	8.79	48.5	9.63
15 Sept	PM	23.2	9.06	34.1	8.78	23.2	9.38	34.2	9.30
	AM	21.1	9.28	49.8	8.03	21.3	9.01	47.2	8.53
16 Sept	PM	22.6	8.66	37.2	9.37	22.7	9.37	35.6	9.44
	AM	20.2	9.42	46.6	9.54	20.4	9.28	44.0	8.31
	PM	21.9	9.38	36.3	9.01	22.2	9.19	34.9	8.67

**Table 3 Reach 6 Water Quality Monitoring Results
(North End Diversion)—2011**

Date	Upstream (Station 721+00)					Downstream (Station 713+00)			
	Time of Day	Temp °C	pH	Turbidity (NTU) ^b	DO (mg/L) ^c	Temp °C	pH	Turbidity (NTU) ^b	DO (mg/L) ^c
17 Sept	AM	20.8	8.72	40.1	7.74	20.7	9.06	43.5	8.21
	PM	22.4	8.86	36.2	7.16	22.3	8.99	33.7	8.05
19 Sept	AM	19.7	8.63	41.1	7.85	20.2	8.85	40.5	8.78
	PM	22.5	9.32	34.8	8.13	22.2	9.33	33.3	9.20
20 Sept	AM	20.7	8.73	52.1	7.74	21.0	9.21	49.1	7.12
	PM	22.9	9.11	44.5	7.97	22.8	9.26	45.8	7.96
21 Sept	AM	21.4	8.77	62.6	7.43	21.5	9.13	61.6	8.13