

Table B1: Analytical Results for Nutrients in Surface Water

		E292898 ANCILLARY DISCHARGE		E305365 SW-1	
Laboratory ID	BCAWWQG ⁽²⁾	6111860-01	6111878-01	6111860-02	6111878-02
Sample ID		1-Weir	1-Weir	2-SW1	1-SW1
Date Sampled/Time		2016-11-24	2016-11-25	2016-11-24	2016-11-25
Physical Tests					
Colour, True (Colour Units)	15 ⁽⁴⁾ units absolute, or 5 units above background (30-day average)	<5	<5	<5	<5
Conductivity (uS/cm)	-	384	332	503	330
Hardness (as CaCO3)	-	126	104	172	116
pH	-	7.72	7.51	7.6	7.6
Total Suspended Solids (mg/L)	25 mg/L above background (24-hr during clear flow)	21	17	6	<2
Total Dissolved Solids (mg/L)	-	231	199	292	202
Turbidity (NTU)	8 NTU above background (24-hr during clear flow)				
	Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters	48.5	46.2	12.2	9.57
	Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters				
Anions and Nutrients mg/L					
Alkalinity Total (as CaCO3)	<10 high sensitivity to acid inputs 10-20 moderate sensitivity to acid inputs >20 low sensitivity to acid inputs	49	38	71	49
Acid Sensitivity		Low	Low	Low	Low
Chloride (Cl)	600 (instant max) 150 (30-day average)	36.7	34.5	57.4	25.3
Fluoride (F)	1.5 (instant max) 1.0 (30-day average)	<0.10	<0.10	<0.10	<0.10
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾	1.43	1.35	1.55	1.39
Nitrate (as N)	32.8 (instant maximum) 3.0 (30-day average)	0.321	0.256	0.579	0.525
Nitrite (as N) ⁽³⁾ Cl <2 mg/L	0.06 (max) 0.02 (30-day average)				
Cl 2 - <4 mg/L	0.12 (max) 0.04 (30-day average)				
Cl 4 - <6 mg/L	0.18 (max) 0.06 (30-day average)				
Cl 6 - <8 mg/L	0.24 (max) 0.08 (30-day average)				
Cl 8 - <10 mg/L	0.3 (max) 0.1 (30-day average)				
Cl ≥ 10 mg/L	0.6 (max) 0.2 (30-day average)	<0.010	<0.010	<0.010	<0.010
Sulfate (SO4) H 0-30 mg/L	128 (30-day average)				
H 31 - 75 mg/L	218 (30-day average)			87.8	65.4
H 76 - 180 mg/L	309 (30-day average)	63.2	56		
H 181 - 250 mg/L	429 (30-day average)				
H > 250 mg/L	TBD				

Notes: Refer to Table Endnotes (attached)

		E292898 ANCILLARY DISCHARGE		E305365 SW-1	
Laboratory ID	BCAWWQG ⁽²⁾	6111860-01	6111878-01	6111860-02	6111878-02
Sample ID		1-Weir	1-Weir	2-SW1	1-SW1
Date Sampled/Time		2016-11-24	2016-11-25	2016-11-24	2016-11-25
Physical Tests					
Background Hardness (as CaCO ₃) (mg/L)	-			30	30
Hardness (as CaCO ₃) (mg/L)	-	126	104	172	116
pH	-	7.72	7.51	7.6	7.6
Total Metals (mg/L)					
Aluminum (Al)-Total	-	2.42	2.36	0.484	0.345
Antimony (Sb)-Total	0.009	0.0003	0.0003	0.0003	0.0002
Arsenic (As)-Total	0.005	0.0006	0.0006	<0.0005	<0.0005
Barium (Ba)-Total	1.0	0.021	0.019	0.016	0.009
Beryllium (Be)-Total	0.00013	<0.0001	<0.0001	<0.0001	<0.0001
Boron (B)-Total	1.2	0.03	0.023	0.032	0.023
Cadmium (Cd)-Total	-	0.00001	0.00001	<0.00001	<0.00001
Calcium (Ca)-Total	-	41.5	35.3	58.8	39.4
Chromium (Cr)-Total Chromium	-	0.0053	0.0043	0.0012	0.0012
Chromium (Cr(III))	0.0089	0.0053	-	0.0012	-
Chromium (Cr(VI))	0.001	<0.001	-	<0.001	-
Cobalt (Co)-Total	0.004	0.0012	0.00115	0.0004	0.00024
Copper (Cu)-Total	Hardness-Dependent⁽⁷⁾	0.0057	0.0058	0.0024	0.0019
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (instant max)	0.0138	0.0118	0.0048	0.0048
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (30-d average)	0.0050	0.0042	0.0020	0.0020
Iron (Fe)-Total	1	2.57	2.48	0.53	0.36
Lead (Pb)-Total	Hardness-Dependent⁽⁷⁾	0.0014	0.0013	0.0003	0.0002
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (instant max)	0.1096	0.0858	0.0176	0.0176
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (30-d average)	0.0076	0.0067	0.0040	0.0040
Magnesium (Mg)-Total	-	7.53	6.66	9.71	6.35
Manganese (Mn)-Total	Hardness Dependent⁽⁷⁾	0.0407	0.0387	0.0192	0.0084
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (instant max)	1.9	1.7	0.9	0.9
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (30-d average)	1.2	1.1	0.7	0.7
Mercury (Hg)-Total	0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum (Mo)-Total	≤1 (instant max) 2 (30-d average)	0.0007	0.0006	0.0011	0.0008
Nickel (Ni)-Total	0.025 (Hardness-Dependent BCAWWQG to protect AW H<60mg/L) Calculated Hardness-Dependent BCAWWQG to protect AW 60≤H≤180 mg/L CaCO ₃	0.0042	0.0042	0.0014	0.001
Potassium (K)-Total	-	1.41	1.25	1.42	0.94
Selenium (Se)-Total	0.002	<0.0005	<0.0005	<0.0005	<0.0005
Silver (Ag)-Total	Hardness-Dependent⁽⁷⁾	<0.00005	<0.00005	<0.00005	<0.00005
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (instant max)	0.003	0.003	0.0001	0.0001
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (30-d average)	0.0015	0.0015	0.00005	0.00005
Sodium (Na)-Total	-	22.9	20	27.1	14.7
Thallium (Tl)-Total	0.0008 (30-day average, site-specific objective for lower Columbia River)	<0.00002	<0.00002	<0.00002	<0.00002
Uranium (U)-Total	0.0085	0.00046	0.00027	0.0007	0.00036
Zinc (Zn)-Total	Hardness Dependent⁽⁷⁾	0.009	0.008	<0.004	<0.004
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (instant max)	0.060	0.044	0.033	0.033
	Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (30-d average)	0.035	0.018	0.008	0.008
Dissolved Metals (mg/L)					
Aluminum (Al)-Dissolved	0.05 (30-day average where median pH > 6.5) 0.1 (maximum where instantaneous pH > 6.5) *** indicates pH-dependent maximum where instant pH ≤ 6.5	0.009	0.007	<0.005	0.097
Antimony (Sb)-Dissolved	-	0.0002	0.0002	0.0003	0.0002
Arsenic (As)-Dissolved	-	<0.0005	<0.0005	<0.0005	<0.0005
Barium (Ba)-Dissolved	-	0.007	0.006	0.013	0.007
Boron (B)-Dissolved	-	0.024	0.019	0.028	0.021
Cadmium (Cd)-Dissolved	Hardness-Dependent⁽⁷⁾	<0.00001	<0.00001	<0.00001	<0.00001
	Calculated Hardness-Dependent BCAWWQG to protect AW (short-term max) e ^[1.03 * ln(Hss) - 5.274] ug/L H<455mg/L	0.00075	0.00061	0.00017	0.00017
	Calculated Hardness-Dependent BCAWWQG to protect AW (long-term max) e ^[0.736 * ln(Hss) - 4.943] ug/L H<285mg/L	0.00025	0.00022	0.00009	0.00009
Calcium (Ca)-Dissolved	up to 4, highly sensitive to acid inputs 4 to 8, moderately sensitive over 8 low sensitivity	39	31.7	53.3	36.3
		Low	Low	Low	Low
Chromium (Cr)-Dissolved ⁽⁸⁾	-	0.0007	<0.0005	0.0008	0.0007
Copper (Cu)-Dissolved	-	0.0006	0.0006	0.0011	0.0015
Iron (Fe)-Dissolved	0.35	<0.010	<0.010	<0.010	0.01
Lead (Pb)-Dissolved	-	<0.0001	<0.0001	<0.0001	0.0001
Magnesium (Mg)-Dissolved	-	6.89	6	9.5	6.24
Manganese (Mn)-Dissolved	-	0.0016	0.0037	0.0027	0.0018
Mercury (Hg)-Dissolved	-	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	-	0.0006	0.0006	0.0011	0.0009
Potassium (K)-Dissolved	-	1.15	0.99	1.4	0.93
Selenium (Se)-Dissolved	-	<0.0005	<0.0005	<0.0005	<0.0005
Sodium (Na)-Dissolved	-	22.8	19.6	26.6	14.4
Uranium (U)-Dissolved	-	0.00041	0.00021	0.00067	0.00035
Zinc (Zn)-Dissolved	-	<0.004	<0.004	<0.004	<0.004

Notes: Refer to Table Endnotes (attached)

Table B3: Analytical Results for Volatile Organic Compounds (VOCs) in Surface Water

Laboratory ID		E292898 ANCILLARY DISCHARGE		E305365 SW-1	
		6111860-01	6111878-01	6111860-02	6111878-02
Sample ID	BCAWWQG ⁽²⁾	1-Weir	1-Weir	2-SW1	1-SW1
Date Sampled/Time		2016-11-24	2016-11-25	2016-11-24	2016-11-25
Volatile Organic Compounds (ug/L)					
Benzene	40	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	-	<1.0	<1.0	<1.0	<1.0
Bromoform	-	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	13.3	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	1.3	<1.0	<1.0	<1.0	<1.0
Chloroethane	-	<2.0	<2.0	<2.0	<2.0
Chloroform	1.8	2.3	2.3	2.3	2.3
Chloromethane	-	<2.0	<2.0	<2.0	<2.0
Dibromochloromethane	-	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	0.7	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	150	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	26	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	-	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	100	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	-	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	-	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	-	<1.0	<1.0	<1.0	<1.0
Methylene chloride	98.1	<3.0	<3.0	<3.0	<3.0
1,2-Dichloropropane	-	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	-	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	-	<1.0	<1.0	<1.0	<1.0
1,3-Dichloropropene (cis & trans)	-	-	-	-	-
Ethylbenzene	200	<1.0	<1.0	<1.0	<1.0
Methyl t-butyl ether (MTBE)	3400	<1.0	<1.0	<1.0	<1.0
Styrene	72	<1.0	<1.0	<1.0	<1.0
1,1,1,2-Tetrachloroethane	-	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	-	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	110	<1.0	<1.0	<1.0	<1.0
Toluene	0.5	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	-	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	-	<1.0	<1.0	<1.0	<1.0
Trichloroethene	21	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	-	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	-	<2.0	<2.0	<2.0	<2.0
Xylenes	30	<2.0	<2.0	<2.0	<2.0

Notes: Refer to Table Endnotes (attached)

Table B4: Analytical Results for Hydrocarbons, PAHs, and Glycols in Surface Water

		E292898 ANCILLARY DISCHARGE		E305365 SW-1	
Laboratory ID	BCAWWQG ⁽²⁾	6111860-01	6111878-01	6111860-02	6111878-02
Sample ID		1-Weir	1-Weir	2-SW1	1-SW1
Date Sampled/ Time		2016-11-24	2016-11-25	2016-11-24	2016-11-25
Hydrocarbons ug/L					
LEPH	-	<250	<250	<250	<250
HEPH	-	<250	<250	<250	<250
ug/l					
Acenaphthene	6	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	-	<0.20	<0.20	<0.20	<0.20
Acridine	3	<0.10	<0.10	<0.10	<0.10
Anthracene	4	<0.01	<0.01	<0.01	<0.01
Benz(a)anthracene	0.1	<0.01	<0.01	<0.01	<0.01
Benzo(a)pyrene	0.01	<0.01	<0.01	<0.01	<0.01
Benzo(b)fluoranthene	-	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	-	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	-	<0.05	<0.05	<0.05	<0.05
Chrysene	-	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	-	<0.05	<0.05	<0.05	<0.05
Fluoranthene	4	<0.03	<0.03	<0.03	<0.03
Fluorene	12	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	-	<0.05	<0.05	<0.05	<0.05
Naphthalene	1	<0.20	<0.20	<0.20	<0.20
Phenanthrene	0.3	<0.10	<0.10	<0.10	<0.10
Pyrene	0.02	<0.02	<0.02	<0.02	<0.02
Quinoline	3.4	<0.05	<0.05	<0.05	<0.05
Glycols mg/l					
Diethylene Glycol	-	<5	<5	<5	<5
Ethylene Glycol	192 ⁽⁶⁾	<5	<5	<5	<5
1,2-Propylene Glycol	500 ⁽⁶⁾	<5	<5	<5	<5

Notes: Refer to Table Endnotes (attached)

Analytical Table Footnotes: Analytical Results for Surface Water

- All concentrations in mg/L, except pH or as indicated.
- "<" less than the laboratory detection limit indicated.
- "-" means not analyzed or no standard or guideline applies.
- * RPDs are not normally calculated where one or more concentrations are less than five times MDL.
- (2) A Compendium of Approved and Working Water Quality Guidelines for BC (updated January 2010). Applicable water uses include Drinking Water (for toxicity, not odour/taste), and Freshwater Aquatic Life.
- (3) Nitrite BCAWWQG Guideline is Chloride dependent. Nitrite AW Standard is dissolved Chloride-dependent. The most conservative standard has been applied.
- (4) Guideline of 15 mg/L Pt for Drinking Water. Once background levels are established, colour should also not exceed 5 mg/L above background, to protect for Aquatic Life. This is considered a clearwater system (background less than 20 mg/L Pt.)
- (6) Working Water Quality Guidelines for Glycols
- (7) Standard is calculated based on the hardness dependent BCAWWQG formula, and has been calculated and shown for each individual result
- (8) Standards exist for Trivalent (III) and Hexavalent (VI) Chromium. As chromium results were not speciated, the most stringent standard has been applied.
- (9) Standard applies to all sites irrespective of water use.
- (10) pH-dependent maximum where instant pH < 6.5
- ** No hardness value was reported for the WTP Outlet sample from March 10, 2014. The Hardness value from the previous sampling event (3 March 14) has been used for calculating hardness-dependend guidelines.

BOLD, UNDERLINE

Laboratory Detection Limit exceeds one or more applicable Standard

BOLD, BLUE SHADING

Concentration greater than BCAWWQG Guideline

BOLD, BEIGE SHADING

Concentration greater than BCAWWQG Chronic Guideline