

Your Project #: 12-6744-1000
 Site Location: PICTOU COUNTY PIPLINE
 Your C.O.C. #: B 127511, B 127513

Attention: Scott McMillan

Dillon Consulting Limited
 Halifax
 137 Chain Lake Dr
 Suite 100
 Halifax, NS
 B3S 1B3

Report Date: 2012/11/06

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2G8884

Received: 2012/10/29, 15:58

Sample Matrix: Water
 # Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Carbonate, Bicarbonate and Hydroxide	17	N/A	2012/10/31	CAM SOP-00102	APHA 4500-CO2 D
Alkalinity	16	N/A	2012/11/01	ATL SOP 00013	Based on EPA310.2
Alkalinity	1	N/A	2012/11/05	ATL SOP 00013	Based on EPA310.2
Chloride	17	N/A	2012/11/01	ATL SOP 00014	Based on SM4500-Cl-
Colour	17	N/A	2012/11/01	ATL SOP 00020	Based on SM2120C
Conductance - water	17	N/A	2012/10/31	ATL SOP 00004/00006	Based on SM2510B
Hardness (calculated as CaCO3)	4	N/A	2012/11/02	ATL SOP 00048	Based on SM2340B
Hardness (calculated as CaCO3)	13	N/A	2012/11/05	ATL SOP 00048	Based on SM2340B
Metals Water Total MS	13	2012/10/31	2012/11/02	ATL SOP 00059	Based on EPA6020A
Metals Water Total MS	4	2012/11/01	2012/11/01	ATL SOP 00059	Based on EPA6020A
Ion Balance (% Difference)	17	N/A	2012/11/05		
Anion and Cation Sum	4	N/A	2012/11/02		
Anion and Cation Sum	13	N/A	2012/11/05		
Nitrogen Ammonia - water	5	N/A	2012/10/31	ATL SOP 00015	Based on USEPA 350.1
Nitrogen Ammonia - water	12	N/A	2012/11/01	ATL SOP 00015	Based on USEPA 350.1
Nitrogen - Nitrate + Nitrite	17	N/A	2012/11/02	ATL SOP 00016	Based on USGS - Enz.
Nitrogen - Nitrite	17	N/A	2012/11/01	ATL SOP 00017	Based on SM4500-NO2B
Nitrogen - Nitrate (as N)	17	N/A	2012/11/02	ATL SOP 00018	Based on ASTM D3867
pH	17	N/A	2012/10/31	ATL SOP 00003	Based on SM4500H+B
Phosphorus - ortho	17	N/A	2012/11/02	ATL SOP 00021	Based on USEPA 365.1
Sat. pH and Langelier Index (@ 20C)	17	N/A	2012/11/05		
Sat. pH and Langelier Index (@ 4C)	17	N/A	2012/11/05		
Reactive Silica	17	N/A	2012/11/01	ATL SOP 00022	Based on EPA 366.0
Sulphate	17	N/A	2012/11/02	ATL SOP 00023	Based on EPA 375.4
Total Dissolved Solids (TDS calc)	17	N/A	2012/11/05		
Organic carbon - Total (TOC)	17	N/A	2012/11/01	ATL SOP 00037	Based on SM5310C
Total Suspended Solids	15	N/A	2012/11/01	ATL SOP 00007	based on EPA 160.2
Total Suspended Solids	2	N/A	2012/11/02	ATL SOP 00007	based on EPA 160.2
Turbidity	17	N/A	2012/10/31	ATL SOP 00011	based on EPA 180.1

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

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CERTIFICATE OF ANALYSIS

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* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Keri Mackay, Project Manager - Bedford
Email: kmackay@maxxam.ca
Phone# (902) 420-0203 Ext:294

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Job #: B2G8884
 Report Date: 2012/11/06

 Dillon Consulting Limited
 Client Project #: 12-6744-1000
 Site Location: PICTOU COUNTY PIPLINE

RESULTS OF ANALYSES OF WATER

Maxxam ID		PK1792		PK1793			PK1794	PK1794		
Sampling Date		2012/10/25		2012/10/25			2012/10/25	2012/10/25		
COC Number		B 127511		B 127511			B 127511	B 127511		
	Units	RED 2013_1	RDL	RED 2013_3	RDL	QC Batch	RED 2013_5	RED 2013_5 Lab-Dup	RDL	QC Batch

Calculated Parameters										
Anion Sum	me/L	5.41	N/A	3.54	N/A	3018947	6.61		N/A	3018947
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	46	1.0	66	1.0	3018944	100		1.0	3018944
Calculated TDS	mg/L	313	1.0	200	1.0	3018953	367		1.0	3018953
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	ND	1.0	3018944	ND		1.0	3018944
Cation Sum	me/L	5.35	N/A	3.34	N/A	3018947	6.47		N/A	3018947
Hardness (CaCO3)	mg/L	83	1.0	84	1.0	3018945	130		1.0	3018945
Ion Balance (% Difference)	%	0.560	N/A	2.91	N/A	3018946	1.07		N/A	3018946
Langelier Index (@ 20C)	N/A	-0.425		-0.239		3018951	0.116			3018951
Langelier Index (@ 4C)	N/A	-0.674		-0.488		3018952	-0.133			3018952
Nitrate (N)	mg/L	ND	0.050	0.10	0.050	3018948	0.11		0.050	3018948
Saturation pH (@ 20C)	N/A	8.37		8.12		3018951	7.79			3018951
Saturation pH (@ 4C)	N/A	8.61		8.37		3018952	8.04			3018952
Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	47	5.0	66	5.0	3020716	100		25	3022499
Dissolved Chloride (Cl)	mg/L	140	5.0	60	1.0	3020718	160		5.0	3020718
Colour	TCU	8.1	5.0	19	5.0	3020721	ND		5.0	3020721
Nitrate + Nitrite	mg/L	ND	0.050	0.10	0.050	3020723	0.11		0.050	3020723
Nitrite (N)	mg/L	ND	0.010	ND	0.010	3020724	ND		0.010	3020724
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	ND	0.050	3020421	ND		0.050	3020421
Total Organic Carbon (C)	mg/L	2.6	0.50	4.8	0.50	3022277	1.8	1.7	0.50	3022277
Orthophosphate (P)	mg/L	ND	0.010	ND	0.010	3020722	ND		0.010	3020722
pH	pH	7.94	N/A	7.88	N/A	3020420	7.91		N/A	3020420
Reactive Silica (SiO2)	mg/L	4.0	0.50	4.5	0.50	3020720	2.3		0.50	3020720
Total Suspended Solids	mg/L	ND	10	1.0	1.0	3020413	5.4		1.0	3020413
Dissolved Sulphate (SO4)	mg/L	27	2.0	25	2.0	3020719	6.7		2.0	3020719
Turbidity	NTU	0.34	0.10	0.98	0.10	3020407	ND		0.10	3020407
Conductivity	uS/cm	580	1.0	350	1.0	3020422	690		1.0	3020422

 ND = Not detected
 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2G8884
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 Dillon Consulting Limited
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RESULTS OF ANALYSES OF WATER

Maxxam ID		PK1795		PK1796			PK1797		
Sampling Date		2012/10/25		2012/10/26			2012/10/25		
COC Number		B 127511		B 127511			B 127511		
	Units	RED 2013_5A	QC Batch	RED 2013_6	RDL	QC Batch	RED 2013_6A	RDL	QC Batch

Calculated Parameters									
Anion Sum	me/L	1.30	3018947	2.24	N/A	3018947	1.16	N/A	3018947
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	39	3018944	45	1.0	3018944	14	1.0	3018944
Calculated TDS	mg/L	75.0	3018953	130	1.0	3018953	73.0	1.0	3018953
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	3018944	ND	1.0	3018944	ND	1.0	3018944
Cation Sum	me/L	1.33	3018947	2.24	N/A	3018947	1.30	N/A	3018947
Hardness (CaCO3)	mg/L	35	3018945	48	1.0	3018945	27	1.0	3018945
Ion Balance (% Difference)	%	1.14	3018946	0.00	N/A	3018946	5.69	N/A	3018946
Langelier Index (@ 20C)	N/A	-0.978	3018951	-0.753		3018951	-2.48		3018951
Langelier Index (@ 4C)	N/A	-1.23	3018952	-1.00		3018952	-2.73		3018952
Nitrate (N)	mg/L	ND	3018948	0.14	0.050	3018948	ND	0.050	3018948
Saturation pH (@ 20C)	N/A	8.68	3018951	8.61		3018951	9.31		3018951
Saturation pH (@ 4C)	N/A	8.93	3018952	8.86		3018952	9.56		3018952
Inorganics									
Total Alkalinity (Total as CaCO3)	mg/L	39	3020716	45	5.0	3020716	14	5.0	3020716
Dissolved Chloride (Cl)	mg/L	16	3020718	33	1.0	3020718	31	1.0	3020718
Colour	TCU	16	3020721	26	5.0	3020721	190	25	3020721
Nitrate + Nitrite	mg/L	ND	3020723	0.14	0.050	3020723	ND	0.050	3020723
Nitrite (N)	mg/L	ND	3020724	ND	0.010	3020724	ND	0.010	3020724
Nitrogen (Ammonia Nitrogen)	mg/L	ND	3020421	ND	0.050	3020421	ND	0.050	3020421
Total Organic Carbon (C)	mg/L	4.7	3022277	3.3	0.50	3022277	20	1.0	3022277
Orthophosphate (P)	mg/L	ND	3020722	ND	0.010	3020722	ND	0.010	3020722
pH	pH	7.70	3020420	7.86	N/A	3020420	6.83	N/A	3020420
Reactive Silica (SiO2)	mg/L	5.1	3020720	3.9	0.50	3020720	5.5	0.50	3020720
Total Suspended Solids	mg/L	ND	3020413	ND	1.0	3020621	2.4	2.0	3020413
Dissolved Sulphate (SO4)	mg/L	3.0	3020719	20	2.0	3020719	ND	2.0	3020719
Turbidity	NTU	0.37	3020407	1.5	0.10	3020407	0.78	0.10	3020407
Conductivity	uS/cm	130	3020422	220	1.0	3020422	130	1.0	3020422

ND = Not detected
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 QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF WATER

Maxxam ID		PK1798			PK1799	PK1799		
Sampling Date		2012/10/26			2012/10/26	2012/10/26		
COC Number		B 127511			B 127511	B 127511		
	Units	RED 2013_8	RDL	QC Batch	RED 2013_8A	RED 2013_8A Lab-Dup	RDL	QC Batch

Calculated Parameters								
Anion Sum	me/L	3.14	N/A	3018947	0.320		N/A	3019189
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	91	1.0	3018944	7.2		1.0	3019185
Calculated TDS	mg/L	173	1.0	3018953	26.0		1.0	3019193
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	3018944	ND		1.0	3019185
Cation Sum	me/L	3.17	N/A	3018947	0.490		N/A	3019189
Hardness (CaCO3)	mg/L	97	1.0	3018945	11		1.0	3019187
Ion Balance (% Difference)	%	0.480	N/A	3018946	21.0		N/A	3019188
Langelier Index (@ 20C)	N/A	-0.0180		3018951	-3.66			3019191
Langelier Index (@ 4C)	N/A	-0.268		3018952	-3.91			3019192
Nitrate (N)	mg/L	ND	0.050	3018948	ND		0.050	3019190
Saturation pH (@ 20C)	N/A	7.92		3018951	9.99			3019191
Saturation pH (@ 4C)	N/A	8.17		3018952	10.2			3019192
Inorganics								
Total Alkalinity (Total as CaCO3)	mg/L	91	5.0	3020716	7.2		5.0	3020716
Dissolved Chloride (Cl)	mg/L	42	1.0	3020718	6.2		1.0	3020718
Colour	TCU	100	25	3020721	190		25	3020721
Nitrate + Nitrite	mg/L	ND	0.050	3020723	ND		0.050	3020723
Nitrite (N)	mg/L	ND	0.010	3020724	ND		0.010	3020724
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	3020421	ND		0.050	3020421
Total Organic Carbon (C)	mg/L	12	0.50	3022277	22		1.0	3022277
Orthophosphate (P)	mg/L	ND	0.010	3020722	0.011		0.010	3020722
pH	pH	7.90	N/A	3020420	6.33		N/A	3020420
Reactive Silica (SiO2)	mg/L	3.8	0.50	3020720	3.8		0.50	3020720
Total Suspended Solids	mg/L	3.3	2.0	3020621	5.0	ND	5.0	3020621
Dissolved Sulphate (SO4)	mg/L	5.7	2.0	3020719	ND		2.0	3020719
Turbidity	NTU	5.4	0.10	3020407	2.3		0.10	3020407
Conductivity	uS/cm	300	1.0	3020422	41		1.0	3020422

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RESULTS OF ANALYSES OF WATER

Maxxam ID		PK1800		PK1801		PK1806	PK1806		
Sampling Date		2012/10/24		2012/10/24		2012/10/24	2012/10/24		
COC Number		B 127511		B 127511		B 127513	B 127513		
	Units	RED 2013_9	RDL	RED 2013_9A	RDL	RED 2014_1	RED 2014_1 Lab-Dup	RDL	QC Batch

Calculated Parameters									
Anion Sum	me/L	2.46	N/A	33.9	N/A	0.970		N/A	3019189
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	54	1.0	900	1.0	18		1.0	3019185
Calculated TDS	mg/L	142	1.0	1990	1.0	62.0		1.0	3019193
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	140	1.0	ND		1.0	3019185
Cation Sum	me/L	2.46	N/A	32.3	N/A	1.12		N/A	3019189
Hardness (CaCO3)	mg/L	63	1.0	140	1.0	24		1.0	3019187
Ion Balance (% Difference)	%	0.00	N/A	2.54	N/A	7.18		N/A	3019188
Langelier Index (@ 20C)	N/A	-0.632		2.08		-1.85			3019191
Langelier Index (@ 4C)	N/A	-0.882		1.84		-2.10			3019192
Nitrate (N)	mg/L	0.21	0.050	ND	0.050	ND		0.050	3019190
Saturation pH (@ 20C)	N/A	8.34		7.13		9.21			3019191
Saturation pH (@ 4C)	N/A	8.59		7.37		9.46			3019192
Inorganics									
Total Alkalinity (Total as CaCO3)	mg/L	54	5.0	1000	75	18		5.0	3020716
Dissolved Chloride (Cl)	mg/L	39	1.0	91	1.0	21		1.0	3020718
Colour	TCU	78	25	780	150	190		25	3020721
Nitrate + Nitrite	mg/L	0.21	0.050	ND	0.050	ND		0.050	3020723
Nitrite (N)	mg/L	ND	0.010	ND	0.010	ND		0.010	3020724
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	ND	0.050	ND	ND	0.050	3020421
Total Organic Carbon (C)	mg/L	9.6	0.50	53 (1)	5.0	16		0.50	3022277
Orthophosphate (P)	mg/L	ND	0.010	0.73	0.010	0.012		0.010	3020722
pH	pH	7.71	N/A	9.21	N/A	7.36		N/A	3020420
Reactive Silica (SiO2)	mg/L	4.9	0.50	15	0.50	5.5		0.50	3020720
Total Suspended Solids	mg/L	7.6	2.0	9.2	2.0	ND		1.0	3020405
Dissolved Sulphate (SO4)	mg/L	13	2.0	500	50	ND		2.0	3020719
Turbidity	NTU	14	0.10	15	0.10	0.70		0.10	3020407
Conductivity	uS/cm	240	1.0	2800	1.0	110		1.0	3020422

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 QC Batch = Quality Control Batch
 (1) Reporting limit was increased due to turbidity.

Maxxam Job #: B2G8884
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 Dillon Consulting Limited
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 Site Location: PICTOU COUNTY PIPELINE

RESULTS OF ANALYSES OF WATER

Maxxam ID		PK1807			PK1808		
Sampling Date		2012/10/26			2012/10/26		
COC Number		B 127513			B 127513		
	Units	RED 2014_2	RDL	QC Batch	RED 2014_2A	RDL	QC Batch

Calculated Parameters							
Anion Sum	me/L	0.420	N/A	3019189	0.570	N/A	3019189
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	13	1.0	3019185	16	1.0	3019185
Calculated TDS	mg/L	27.0	1.0	3019193	35.0	1.0	3019193
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	3019185	ND	1.0	3019185
Cation Sum	me/L	0.500	N/A	3019189	0.600	N/A	3019189
Hardness (CaCO3)	mg/L	14	1.0	3019187	18	1.0	3019187
Ion Balance (% Difference)	%	8.70	N/A	3019188	2.56	N/A	3019188
Langelier Index (@ 20C)	N/A	-2.47		3019191	-2.08		3019191
Langelier Index (@ 4C)	N/A	-2.73		3019192	-2.33		3019192
Nitrate (N)	mg/L	ND	0.050	3019190	ND	0.050	3019190
Saturation pH (@ 20C)	N/A	9.58		3019191	9.36		3019191
Saturation pH (@ 4C)	N/A	9.84		3019192	9.61		3019192
Inorganics							
Total Alkalinity (Total as CaCO3)	mg/L	13	5.0	3020716	16	5.0	3020716
Dissolved Chloride (Cl)	mg/L	5.3	1.0	3020718	6.3	1.0	3020718
Colour	TCU	31	5.0	3020721	21	5.0	3020721
Nitrate + Nitrite	mg/L	ND	0.050	3020723	ND	0.050	3020723
Nitrite (N)	mg/L	ND	0.010	3020724	ND	0.010	3020724
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	3020421	ND	0.050	3020421
Total Organic Carbon (C)	mg/L	7.9	0.50	3022277	4.9	0.50	3022277
Orthophosphate (P)	mg/L	ND	0.010	3020722	ND	0.010	3020722
pH	pH	7.11	N/A	3020420	7.28	N/A	3020423
Reactive Silica (SiO2)	mg/L	2.7	0.50	3020720	3.5	0.50	3020720
Total Suspended Solids	mg/L	11	5.0	3020621	4.0	2.0	3020621
Dissolved Sulphate (SO4)	mg/L	ND	2.0	3020719	2.9	2.0	3020719
Turbidity	NTU	4.5	0.10	3020407	4.7	0.10	3020407
Conductivity	uS/cm	48	1.0	3020422	59	1.0	3020424

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 Dillon Consulting Limited
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 Site Location: PICTOU COUNTY PIPELINE

RESULTS OF ANALYSES OF WATER

Maxxam ID		PK1809			PK1810		
Sampling Date		2012/10/24			2012/10/26		
COC Number		B 127513			B 127513		
	Units	MAGENTA 2013 1	RDL	QC Batch	MAGENTA 2013 3	RDL	QC Batch

Calculated Parameters							
Anion Sum	me/L	1.15	N/A	3019189	3.10	N/A	3019189
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	18	1.0	3019185	64	1.0	3019185
Calculated TDS	mg/L	72.0	1.0	3019193	178	1.0	3019193
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	3019185	ND	1.0	3019185
Cation Sum	me/L	1.30	N/A	3019189	3.07	N/A	3019189
Hardness (CaCO3)	mg/L	24	1.0	3019187	77	1.0	3019187
Ion Balance (% Difference)	%	6.12	N/A	3019188	0.490	N/A	3019188
Langelier Index (@ 20C)	N/A	-2.05		3019191	-0.294		3019191
Langelier Index (@ 4C)	N/A	-2.30		3019192	-0.545		3019192
Nitrate (N)	mg/L	ND	0.050	3019190	0.36	0.050	3019190
Saturation pH (@ 20C)	N/A	9.21		3019191	8.19		3019191
Saturation pH (@ 4C)	N/A	9.46		3019192	8.45		3019192
Inorganics							
Total Alkalinity (Total as CaCO3)	mg/L	18	5.0	3020716	64	5.0	3020716
Dissolved Chloride (Cl)	mg/L	28	1.0	3020718	53	1.0	3020718
Colour	TCU	220	25	3020721	86	25	3020721
Nitrate + Nitrite	mg/L	ND	0.050	3020723	0.36	0.050	3020723
Nitrite (N)	mg/L	ND	0.010	3020724	ND	0.010	3020724
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	3020421	ND	0.050	3020421
Total Organic Carbon (C)	mg/L	17	0.50	3022280	11	0.50	3022280
Orthophosphate (P)	mg/L	ND	0.010	3020722	ND	0.010	3020722
pH	pH	7.16	N/A	3020423	7.90	N/A	3020423
Reactive Silica (SiO2)	mg/L	5.4	0.50	3020720	4.8	0.50	3020720
Total Suspended Solids	mg/L	31	2.0	3020405	1.6	1.0	3020621
Dissolved Sulphate (SO4)	mg/L	ND	2.0	3020719	14	2.0	3020719
Turbidity	NTU	1.0	0.10	3020407	1.6	0.10	3020407
Conductivity	uS/cm	130	1.0	3020424	310	1.0	3020424

ND = Not detected
 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2G8884
 Report Date: 2012/11/06

 Dillon Consulting Limited
 Client Project #: 12-6744-1000
 Site Location: PICTOU COUNTY PIPELINE

RESULTS OF ANALYSES OF WATER

Maxxam ID		PK1811	PK1812		
Sampling Date		2012/10/26	2012/10/26		
COC Number		B 127513	B 127513		
	Units	MAGENTA 2013 4	MAGENTA 2013 5	RDL	QC Batch

Calculated Parameters					
Anion Sum	me/L	3.25	2.55	N/A	3019189
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	91	51	1.0	3019185
Calculated TDS	mg/L	177	145	1.0	3019193
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	ND	1.0	3019185
Cation Sum	me/L	3.19	2.48	N/A	3019189
Hardness (CaCO ₃)	mg/L	100	61	1.0	3019187
Ion Balance (% Difference)	%	0.930	1.39	N/A	3019188
Langelier Index (@ 20C)	N/A	-0.00900	-0.546		3019191
Langelier Index (@ 4C)	N/A	-0.259	-0.797		3019192
Nitrate (N)	mg/L	ND	0.21	0.050	3019190
Saturation pH (@ 20C)	N/A	7.91	8.39		3019191
Saturation pH (@ 4C)	N/A	8.16	8.64		3019192
Inorganics					
Total Alkalinity (Total as CaCO ₃)	mg/L	92	51	5.0	3020716
Dissolved Chloride (Cl)	mg/L	46	45	1.0	3020718
Colour	TCU	98	110	25	3020721
Nitrate + Nitrite	mg/L	ND	0.21	0.050	3020723
Nitrite (N)	mg/L	ND	ND	0.010	3020724
Nitrogen (Ammonia Nitrogen)	mg/L	ND	ND	0.050	3020429
Total Organic Carbon (C)	mg/L	12	12	0.50	3022280
Orthophosphate (P)	mg/L	ND	ND	0.010	3020722
pH	pH	7.90	7.84	N/A	3020423
Reactive Silica (SiO ₂)	mg/L	4.0	4.5	0.50	3020720
Total Suspended Solids	mg/L	4.0	1.0	1.0	3021971
Dissolved Sulphate (SO ₄)	mg/L	5.8	11	2.0	3020719
Turbidity	NTU	4.6	1.8	0.10	3020407
Conductivity	uS/cm	320	260	1.0	3020424

ND = Not detected
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 QC Batch = Quality Control Batch

Maxxam Job #: B2G8884
 Report Date: 2012/11/06

 Dillon Consulting Limited
 Client Project #: 12-6744-1000
 Site Location: PICTOU COUNTY PIPELINE

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		PK1792	PK1792	PK1793		PK1794		PK1795		
Sampling Date		2012/10/25	2012/10/25	2012/10/25		2012/10/25		2012/10/25		
COC Number		B 127511	B 127511	B 127511		B 127511		B 127511		
	Units	RED 2013_1	RED 2013_1 Lab-Dup	RED 2013_3	QC Batch	RED 2013_5	QC Batch	RED 2013_5A	RDL	QC Batch

Metals										
Total Aluminum (Al)	ug/L	17.5	18.0	30.1	3020451	12.1	3020444	34.1	5.0	3020451
Total Antimony (Sb)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	1.0	3020451
Total Arsenic (As)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	1.0	3020451
Total Barium (Ba)	ug/L	32.2	31.9	63.4	3020451	220	3020444	67.4	1.0	3020451
Total Beryllium (Be)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	1.0	3020451
Total Bismuth (Bi)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	2.0	3020451
Total Boron (B)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	50	3020451
Total Cadmium (Cd)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	0.017	3020451
Total Calcium (Ca)	ug/L	24800	24400	28100	3020451	43500	3020444	11500	100	3020451
Total Chromium (Cr)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	1.0	3020451
Total Cobalt (Co)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	0.40	3020451
Total Copper (Cu)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	2.0	3020451
Total Iron (Fe)	ug/L	ND	ND	229	3020451	ND	3020444	ND	50	3020451
Total Lead (Pb)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	0.50	3020451
Total Magnesium (Mg)	ug/L	5150	5050	3370	3020451	3980	3020444	1550	100	3020451
Total Manganese (Mn)	ug/L	ND	ND	310	3020451	27.8	3020444	14.0	2.0	3020451
Total Molybdenum (Mo)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	2.0	3020451
Total Nickel (Ni)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	2.0	3020451
Total Phosphorus (P)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	100	3020451
Total Potassium (K)	ug/L	1420	1390	1080	3020451	694	3020444	734	100	3020451
Total Selenium (Se)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	1.0	3020451
Total Silver (Ag)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	0.10	3020451
Total Sodium (Na)	ug/L	83900	82100	37400	3020451	90900	3020444	14100	100	3020451
Total Strontium (Sr)	ug/L	157	154	91.8	3020451	59.8	3020444	52.6	2.0	3020451
Total Thallium (Tl)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	0.10	3020451
Total Tin (Sn)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	2.0	3020451
Total Titanium (Ti)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	2.0	3020451
Total Uranium (U)	ug/L	ND	ND	0.11	3020451	0.11	3020444	ND	0.10	3020451
Total Vanadium (V)	ug/L	ND	ND	ND	3020451	ND	3020444	ND	2.0	3020451
Total Zinc (Zn)	ug/L	ND	ND	ND	3020451	6.2	3020444	6.7	5.0	3020451

 ND = Not detected
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 QC Batch = Quality Control Batch

Maxxam Job #: B2G8884
 Report Date: 2012/11/06

 Dillon Consulting Limited
 Client Project #: 12-6744-1000
 Site Location: PICTOU COUNTY PIPELINE

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		PK1796		PK1797		PK1798	PK1799		
Sampling Date		2012/10/26		2012/10/25		2012/10/26	2012/10/26		
COC Number		B 127511		B 127511		B 127511	B 127511		
	Units	RED 2013_6	QC Batch	RED 2013_6A	QC Batch	RED 2013_8	RED 2013_8A	RDL	QC Batch

Metals									
Total Aluminum (Al)	ug/L	131	3020451	351	3020444	237	511	5.0	3020451
Total Antimony (Sb)	ug/L	ND	3020451	ND	3020444	ND	ND	1.0	3020451
Total Arsenic (As)	ug/L	ND	3020451	ND	3020444	ND	1.4	1.0	3020451
Total Barium (Ba)	ug/L	44.9	3020451	94.6	3020444	149	19.6	1.0	3020451
Total Beryllium (Be)	ug/L	ND	3020451	ND	3020444	ND	ND	1.0	3020451
Total Bismuth (Bi)	ug/L	ND	3020451	ND	3020444	ND	ND	2.0	3020451
Total Boron (B)	ug/L	ND	3020451	ND	3020444	ND	ND	50	3020451
Total Cadmium (Cd)	ug/L	ND	3020451	0.027	3020444	ND	0.044	0.017	3020451
Total Calcium (Ca)	ug/L	12400	3020451	7460	3020444	31700	2750	100	3020451
Total Chromium (Cr)	ug/L	ND	3020451	ND	3020444	ND	ND	1.0	3020451
Total Cobalt (Co)	ug/L	ND	3020451	0.41	3020444	0.57	2.86	0.40	3020451
Total Copper (Cu)	ug/L	ND	3020451	ND	3020444	ND	ND	2.0	3020451
Total Iron (Fe)	ug/L	269	3020451	970	3020444	2430	2400	50	3020451
Total Lead (Pb)	ug/L	ND	3020451	ND	3020444	ND	0.65	0.50	3020451
Total Magnesium (Mg)	ug/L	4160	3020451	1930	3020444	4380	921	100	3020451
Total Manganese (Mn)	ug/L	40.0	3020451	134	3020444	1040	983	2.0	3020451
Total Molybdenum (Mo)	ug/L	ND	3020451	ND	3020444	ND	ND	2.0	3020451
Total Nickel (Ni)	ug/L	ND	3020451	ND	3020444	2.7	4.1	2.0	3020451
Total Phosphorus (P)	ug/L	ND	3020451	ND	3020444	ND	ND	100	3020451
Total Potassium (K)	ug/L	902	3020451	620	3020444	1750	1130	100	3020451
Total Selenium (Se)	ug/L	ND	3020451	ND	3020444	ND	ND	1.0	3020451
Total Silver (Ag)	ug/L	ND	3020451	ND	3020444	ND	ND	0.10	3020451
Total Sodium (Na)	ug/L	28600	3020451	16500	3020444	25300	3610	100	3020451
Total Strontium (Sr)	ug/L	68.0	3020451	45.7	3020444	143	15.2	2.0	3020451
Total Thallium (Tl)	ug/L	ND	3020451	ND	3020444	ND	ND	0.10	3020451
Total Tin (Sn)	ug/L	ND	3020451	ND	3020444	ND	ND	2.0	3020451
Total Titanium (Ti)	ug/L	ND	3020451	3.8	3020444	3.7	5.9	2.0	3020451
Total Uranium (U)	ug/L	0.13	3020451	ND	3020444	2.62	ND	0.10	3020451
Total Vanadium (V)	ug/L	ND	3020451	ND	3020444	2.5	4.1	2.0	3020451
Total Zinc (Zn)	ug/L	6.5	3020451	11.7	3020444	14.2	17.7	5.0	3020451

 ND = Not detected
 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2G8884
 Report Date: 2012/11/06

 Dillon Consulting Limited
 Client Project #: 12-6744-1000
 Site Location: PICTOU COUNTY PIPLINE

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		PK1800	PK1801	PK1806		PK1807	PK1808		
Sampling Date		2012/10/24	2012/10/24	2012/10/24		2012/10/26	2012/10/26		
COC Number		B 127511	B 127511	B 127513		B 127513	B 127513		
	Units	RED 2013_9	RED 2013_9A	RED 2014_1	QC Batch	RED 2014_2	RED 2014_2A	RDL	QC Batch

Metals									
Total Aluminum (Al)	ug/L	362	1190	209	3020451	453	207	5.0	3020444
Total Antimony (Sb)	ug/L	ND	2.5	ND	3020451	ND	ND	1.0	3020444
Total Arsenic (As)	ug/L	ND	25.1	ND	3020451	ND	ND	1.0	3020444
Total Barium (Ba)	ug/L	104	179	93.8	3020451	40.5	73.3	1.0	3020444
Total Beryllium (Be)	ug/L	ND	ND	ND	3020451	ND	ND	1.0	3020444
Total Bismuth (Bi)	ug/L	ND	ND	ND	3020451	ND	ND	2.0	3020444
Total Boron (B)	ug/L	62	165	ND	3020451	ND	ND	50	3020444
Total Cadmium (Cd)	ug/L	0.021	0.140	0.029	3020451	0.018	0.028	0.017	3020444
Total Calcium (Ca)	ug/L	19600	36600	6940	3020451	3760	5300	100	3020444
Total Chromium (Cr)	ug/L	ND	5.7	ND	3020451	1.7	ND	1.0	3020444
Total Cobalt (Co)	ug/L	0.50	3.96	ND	3020451	ND	ND	0.40	3020444
Total Copper (Cu)	ug/L	ND	6.2	ND	3020451	ND	ND	2.0	3020444
Total Iron (Fe)	ug/L	949	1430	492	3020451	383	189	50	3020444
Total Lead (Pb)	ug/L	0.71	2.39	ND	3020451	ND	ND	0.50	3020444
Total Magnesium (Mg)	ug/L	3320	11100	1540	3020451	1170	1230	100	3020444
Total Manganese (Mn)	ug/L	283	932	14.3	3020451	133	57.9	2.0	3020444
Total Molybdenum (Mo)	ug/L	3.0	31.5	ND	3020451	ND	ND	2.0	3020444
Total Nickel (Ni)	ug/L	ND	43.0	ND	3020451	ND	ND	2.0	3020444
Total Phosphorus (P)	ug/L	ND	980	ND	3020451	ND	ND	100	3020444
Total Potassium (K)	ug/L	3460	50700	781	3020451	1100	710	100	3020444
Total Selenium (Se)	ug/L	ND	1.3	ND	3020451	ND	ND	1.0	3020444
Total Silver (Ag)	ug/L	ND	ND	ND	3020451	ND	ND	0.10	3020444
Total Sodium (Na)	ug/L	25000	647000	14000	3020451	4100	4820	100	3020444
Total Strontium (Sr)	ug/L	88.4	122	48.3	3020451	14.8	23.8	2.0	3020444
Total Thallium (Tl)	ug/L	ND	ND	ND	3020451	ND	ND	0.10	3020444
Total Tin (Sn)	ug/L	ND	ND	ND	3020451	ND	ND	2.0	3020444
Total Titanium (Ti)	ug/L	6.1	57.8	3.4	3020451	7.9	3.8	2.0	3020444
Total Uranium (U)	ug/L	ND	2.60	ND	3020451	ND	ND	0.10	3020444
Total Vanadium (V)	ug/L	ND	78.2	ND	3020451	ND	ND	2.0	3020444
Total Zinc (Zn)	ug/L	9.3	33.0	7.4	3020451	7.9	7.4	5.0	3020444

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Maxxam Job #: B2G8884
 Report Date: 2012/11/06

 Dillon Consulting Limited
 Client Project #: 12-6744-1000
 Site Location: PICTOU COUNTY PIPELINE

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		PK1809	PK1810	PK1811	PK1812		
Sampling Date		2012/10/24	2012/10/26	2012/10/26	2012/10/26		
COC Number		B 127513	B 127513	B 127513	B 127513		
	Units	MAGENTA 2013_1	MAGENTA 2013_3	MAGENTA 2013_4	MAGENTA 2013_5	RDL	QC Batch
Metals							
Total Aluminum (Al)	ug/L	286	68.7	189	93.2	5.0	3020451
Total Antimony (Sb)	ug/L	ND	ND	ND	ND	1.0	3020451
Total Arsenic (As)	ug/L	ND	ND	ND	ND	1.0	3020451
Total Barium (Ba)	ug/L	102	113	163	87.2	1.0	3020451
Total Beryllium (Be)	ug/L	ND	ND	ND	ND	1.0	3020451
Total Bismuth (Bi)	ug/L	ND	ND	ND	ND	2.0	3020451
Total Boron (B)	ug/L	ND	72	ND	53	50	3020451
Total Cadmium (Cd)	ug/L	0.040	0.019	ND	0.018	0.017	3020451
Total Calcium (Ca)	ug/L	7250	23900	32200	18600	100	3020451
Total Chromium (Cr)	ug/L	ND	ND	ND	ND	1.0	3020451
Total Cobalt (Co)	ug/L	ND	ND	0.92	ND	0.40	3020451
Total Copper (Cu)	ug/L	ND	ND	ND	ND	2.0	3020451
Total Iron (Fe)	ug/L	744	364	2170	429	50	3020451
Total Lead (Pb)	ug/L	ND	ND	ND	ND	0.50	3020451
Total Magnesium (Mg)	ug/L	1470	4220	4770	3450	100	3020451
Total Manganese (Mn)	ug/L	113	54.9	1030	16.6	2.0	3020451
Total Molybdenum (Mo)	ug/L	ND	ND	ND	ND	2.0	3020451
Total Nickel (Ni)	ug/L	ND	ND	2.8	ND	2.0	3020451
Total Phosphorus (P)	ug/L	ND	ND	ND	ND	100	3020451
Total Potassium (K)	ug/L	955	4370	1720	3420	100	3020451
Total Selenium (Se)	ug/L	ND	ND	ND	ND	1.0	3020451
Total Silver (Ag)	ug/L	ND	ND	ND	ND	0.10	3020451
Total Sodium (Na)	ug/L	17600	32400	24500	26800	100	3020451
Total Strontium (Sr)	ug/L	51.7	115	156	89.5	2.0	3020451
Total Thallium (Tl)	ug/L	ND	ND	ND	ND	0.10	3020451
Total Tin (Sn)	ug/L	ND	ND	ND	ND	2.0	3020451
Total Titanium (Ti)	ug/L	3.7	ND	3.3	3.0	2.0	3020451
Total Uranium (U)	ug/L	ND	ND	2.06	ND	0.10	3020451
Total Vanadium (V)	ug/L	ND	ND	ND	ND	2.0	3020451
Total Zinc (Zn)	ug/L	10.5	6.0	16.2	6.7	5.0	3020451
ND = Not detected RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B2G8884
Report Date: 2012/11/06

Dillon Consulting Limited
Client Project #: 12-6744-1000
Site Location: PICTOU COUNTY PIPLINE

Package 1	11.3°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample PK1792-01: Total Suspended Solids analysis repeated due to manufacturer defect of filters. Repeat analysis performed on sample past recommended hold time. Minimal impact on sample data quality. Detection limit raised due to limited sample volume available for re-analysis.

Sample PK1797-01: RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample PK1799-01: RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Total Suspended Solids analysis repeated due to manufacturer defect of filters. Repeat analysis performed on sample past recommended hold time. Minimal impact on sample data quality.

Sample PK1806-01: RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample PK1807-01: RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Total Suspended Solids analysis repeated due to manufacturer defect of filters. Repeat analysis performed on sample past recommended hold time. Minimal impact on sample data quality.

Sample PK1809-01: RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Results relate only to the items tested.

Dillon Consulting Limited
 Attention: Scott McMillan
 Client Project #: 12-6744-1000
 P.O. #:
 Site Location: PICTOU COUNTY PIPLINE

Quality Assurance Report

Maxxam Job Number: DB2G8884

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3020405 AWM	QC Standard	Total Suspended Solids	2012/11/01		104	%	80 - 120
	Method Blank	Total Suspended Solids	2012/11/01	ND, RDL=1.0		mg/L	
	RPD	Total Suspended Solids	2012/11/01	0		%	25
3020407 SCR	QC Standard	Turbidity	2012/10/31		101	%	80 - 120
	RPD	Turbidity	2012/10/31	NC		%	25
3020413 AWM	QC Standard	Total Suspended Solids	2012/11/01		101	%	80 - 120
	Method Blank	Total Suspended Solids	2012/11/01	ND, RDL=1.0		mg/L	
	RPD	Total Suspended Solids	2012/11/01	NC		%	25
3020420 SCR	QC Standard	pH	2012/10/31		100	%	80 - 120
	RPD	pH	2012/10/31	0.3		%	25
3020421 ARS	Matrix Spike						
	[PK1806-02]	Nitrogen (Ammonia Nitrogen)	2012/10/31		88	%	80 - 120
	QC Standard	Nitrogen (Ammonia Nitrogen)	2012/10/31		97	%	80 - 120
	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2012/10/31		94	%	80 - 120
	Method Blank	Nitrogen (Ammonia Nitrogen)	2012/10/31	ND, RDL=0.050		mg/L	
	RPD [PK1806-02]	Nitrogen (Ammonia Nitrogen)	2012/10/31	NC		%	25
3020422 SCR	Spiked Blank	Conductivity	2012/10/31		98	%	80 - 120
	Method Blank	Conductivity	2012/10/31	ND, RDL=1.0		uS/cm	
	RPD	Conductivity	2012/10/31	0		%	25
3020423 SCR	QC Standard	pH	2012/10/31		100	%	80 - 120
	RPD	pH	2012/10/31	0.9		%	25
3020424 SCR	Spiked Blank	Conductivity	2012/10/31		98	%	80 - 120
	Method Blank	Conductivity	2012/10/31	ND, RDL=1.0		uS/cm	
	RPD	Conductivity	2012/10/31	0.6		%	25
3020429 ARS	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2012/11/01		92	%	80 - 120
	QC Standard	Nitrogen (Ammonia Nitrogen)	2012/10/31		99	%	80 - 120
	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2012/10/31		93	%	80 - 120
	Method Blank	Nitrogen (Ammonia Nitrogen)	2012/10/31	ND, RDL=0.050		mg/L	
	RPD	Nitrogen (Ammonia Nitrogen)	2012/11/01	NC		%	25
3020444 DLB	Matrix Spike	Total Aluminum (Al)	2012/11/01		107	%	80 - 120
		Total Antimony (Sb)	2012/11/01		111	%	80 - 120
		Total Arsenic (As)	2012/11/01		109	%	80 - 120
		Total Barium (Ba)	2012/11/01		105	%	80 - 120
		Total Beryllium (Be)	2012/11/01		108	%	80 - 120
		Total Bismuth (Bi)	2012/11/01		110	%	80 - 120
		Total Boron (B)	2012/11/01		104	%	80 - 120
		Total Cadmium (Cd)	2012/11/01		107	%	80 - 120
		Total Calcium (Ca)	2012/11/01		NC	%	80 - 120
		Total Chromium (Cr)	2012/11/01		108	%	80 - 120
		Total Cobalt (Co)	2012/11/01		108	%	80 - 120
		Total Copper (Cu)	2012/11/01		NC	%	80 - 120
		Total Iron (Fe)	2012/11/01		NC	%	80 - 120
		Total Lead (Pb)	2012/11/01		109	%	80 - 120
		Total Magnesium (Mg)	2012/11/01		113	%	80 - 120
		Total Manganese (Mn)	2012/11/01		104	%	80 - 120
		Total Molybdenum (Mo)	2012/11/01		114	%	80 - 120
		Total Nickel (Ni)	2012/11/01		108	%	80 - 120
		Total Phosphorus (P)	2012/11/01		113	%	80 - 120
		Total Potassium (K)	2012/11/01		104	%	80 - 120
		Total Selenium (Se)	2012/11/01		109	%	80 - 120
		Total Silver (Ag)	2012/11/01		113	%	80 - 120
		Total Sodium (Na)	2012/11/01		NC	%	80 - 120
		Total Strontium (Sr)	2012/11/01		NC	%	80 - 120
		Total Thallium (Tl)	2012/11/01		110	%	80 - 120
		Total Tin (Sn)	2012/11/01		111	%	80 - 120

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3020444 DLB	Matrix Spike	Total Titanium (Ti)	2012/11/01		111	%	80 - 120
		Total Uranium (U)	2012/11/01		118	%	80 - 120
		Total Vanadium (V)	2012/11/01		108	%	80 - 120
		Total Zinc (Zn)	2012/11/01		108	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2012/11/01		107	%	80 - 120
		Total Antimony (Sb)	2012/11/01		106	%	80 - 120
		Total Arsenic (As)	2012/11/01		103	%	80 - 120
		Total Barium (Ba)	2012/11/01		102	%	80 - 120
		Total Beryllium (Be)	2012/11/01		102	%	80 - 120
		Total Bismuth (Bi)	2012/11/01		108	%	80 - 120
		Total Boron (B)	2012/11/01		99	%	80 - 120
		Total Cadmium (Cd)	2012/11/01		103	%	80 - 120
		Total Calcium (Ca)	2012/11/01		100	%	80 - 120
		Total Chromium (Cr)	2012/11/01		102	%	80 - 120
		Total Cobalt (Co)	2012/11/01		103	%	80 - 120
		Total Copper (Cu)	2012/11/01		103	%	80 - 120
		Total Iron (Fe)	2012/11/01		110	%	80 - 120
		Total Lead (Pb)	2012/11/01		104	%	80 - 120
		Total Magnesium (Mg)	2012/11/01		111	%	80 - 120
		Total Manganese (Mn)	2012/11/01		101	%	80 - 120
		Total Molybdenum (Mo)	2012/11/01		105	%	80 - 120
		Total Nickel (Ni)	2012/11/01		104	%	80 - 120
		Total Phosphorus (P)	2012/11/01		112	%	80 - 120
		Total Potassium (K)	2012/11/01		107	%	80 - 120
		Total Selenium (Se)	2012/11/01		102	%	80 - 120
		Total Silver (Ag)	2012/11/01		107	%	80 - 120
		Total Sodium (Na)	2012/11/01		110	%	80 - 120
		Total Strontium (Sr)	2012/11/01		100	%	80 - 120
		Total Thallium (Tl)	2012/11/01		106	%	80 - 120
		Total Tin (Sn)	2012/11/01		104	%	80 - 120
		Total Titanium (Ti)	2012/11/01		108	%	80 - 120
		Total Uranium (U)	2012/11/01		114	%	80 - 120
		Total Vanadium (V)	2012/11/01		103	%	80 - 120
		Total Zinc (Zn)	2012/11/01		105	%	80 - 120
	Method Blank	Total Aluminum (Al)	2012/11/01	ND, RDL=5.0		ug/L	
		Total Antimony (Sb)	2012/11/01	ND, RDL=1.0		ug/L	
		Total Arsenic (As)	2012/11/01	ND, RDL=1.0		ug/L	
		Total Barium (Ba)	2012/11/01	ND, RDL=1.0		ug/L	
		Total Beryllium (Be)	2012/11/01	ND, RDL=1.0		ug/L	
		Total Bismuth (Bi)	2012/11/01	ND, RDL=2.0		ug/L	
		Total Boron (B)	2012/11/01	ND, RDL=50		ug/L	
		Total Cadmium (Cd)	2012/11/01	ND, RDL=0.017		ug/L	
		Total Calcium (Ca)	2012/11/01	ND, RDL=100		ug/L	
		Total Chromium (Cr)	2012/11/01	ND, RDL=1.0		ug/L	
		Total Cobalt (Co)	2012/11/01	ND, RDL=0.40		ug/L	
		Total Copper (Cu)	2012/11/01	ND, RDL=2.0		ug/L	
		Total Iron (Fe)	2012/11/01	ND, RDL=50		ug/L	
		Total Lead (Pb)	2012/11/01	ND, RDL=0.50		ug/L	
		Total Magnesium (Mg)	2012/11/01	ND, RDL=100		ug/L	
		Total Manganese (Mn)	2012/11/01	ND, RDL=2.0		ug/L	
		Total Molybdenum (Mo)	2012/11/01	ND, RDL=2.0		ug/L	
		Total Nickel (Ni)	2012/11/01	ND, RDL=2.0		ug/L	
		Total Phosphorus (P)	2012/11/01	ND, RDL=100		ug/L	
		Total Potassium (K)	2012/11/01	ND, RDL=100		ug/L	
		Total Selenium (Se)	2012/11/01	ND, RDL=1.0		ug/L	

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3020444 DLB	Method Blank	Total Silver (Ag)	2012/11/01	ND, RDL=0.10		ug/L	
		Total Sodium (Na)	2012/11/01	ND, RDL=100		ug/L	
		Total Strontium (Sr)	2012/11/01	ND, RDL=2.0		ug/L	
		Total Thallium (Tl)	2012/11/01	ND, RDL=0.10		ug/L	
		Total Tin (Sn)	2012/11/01	ND, RDL=2.0		ug/L	
		Total Titanium (Ti)	2012/11/01	ND, RDL=2.0		ug/L	
		Total Uranium (U)	2012/11/01	ND, RDL=0.10		ug/L	
		Total Vanadium (V)	2012/11/01	ND, RDL=2.0		ug/L	
		Total Zinc (Zn)	2012/11/01	ND, RDL=5.0		ug/L	
	RPD	Total Aluminum (Al)	2012/10/30	3.7		%	25
		Total Antimony (Sb)	2012/10/30	NC		%	25
		Total Arsenic (As)	2012/10/30	NC		%	25
		Total Barium (Ba)	2012/10/30	NC		%	25
		Total Beryllium (Be)	2012/10/30	NC		%	25
		Total Bismuth (Bi)	2012/10/30	NC		%	25
		Total Boron (B)	2012/10/30	NC		%	25
		Total Cadmium (Cd)	2012/10/30	NC		%	25
		Total Calcium (Ca)	2012/10/30	3.5		%	25
		Total Chromium (Cr)	2012/10/30	NC		%	25
		Total Cobalt (Co)	2012/10/30	NC		%	25
		Total Copper (Cu)	2012/10/30	2.2		%	25
		Total Iron (Fe)	2012/10/30	0.4		%	25
		Total Lead (Pb)	2012/10/30	NC		%	25
		Total Magnesium (Mg)	2012/10/30	NC		%	25
		Total Manganese (Mn)	2012/10/30	2.3		%	25
		Total Molybdenum (Mo)	2012/10/30	NC		%	25
		Total Nickel (Ni)	2012/10/30	NC		%	25
		Total Phosphorus (P)	2012/10/30	NC		%	25
		Total Potassium (K)	2012/10/30	NC		%	25
		Total Selenium (Se)	2012/10/30	NC		%	25
		Total Silver (Ag)	2012/10/30	NC		%	25
		Total Sodium (Na)	2012/10/30	1.5		%	25
		Total Strontium (Sr)	2012/10/30	NC		%	25
		Total Thallium (Tl)	2012/10/30	NC		%	25
		Total Tin (Sn)	2012/10/30	NC		%	25
		Total Titanium (Ti)	2012/10/30	NC		%	25
		Total Uranium (U)	2012/10/30	NC		%	25
		Total Vanadium (V)	2012/10/30	NC		%	25
		Total Zinc (Zn)	2012/10/30	NC		%	25
3020451 DLB	Matrix Spike [PK1793-03]	Total Aluminum (Al)	2012/11/02		104	%	80 - 120
		Total Antimony (Sb)	2012/11/02		102	%	80 - 120
		Total Arsenic (As)	2012/11/02		99	%	80 - 120
		Total Barium (Ba)	2012/11/02		NC	%	80 - 120
		Total Beryllium (Be)	2012/11/02		104	%	80 - 120
		Total Bismuth (Bi)	2012/11/02		99	%	80 - 120
		Total Boron (B)	2012/11/02		100	%	80 - 120
		Total Cadmium (Cd)	2012/11/02		99	%	80 - 120
		Total Calcium (Ca)	2012/11/02		NC	%	80 - 120
		Total Chromium (Cr)	2012/11/02		99	%	80 - 120
		Total Cobalt (Co)	2012/11/02		103	%	80 - 120
		Total Copper (Cu)	2012/11/02		97	%	80 - 120
		Total Iron (Fe)	2012/11/02		102	%	80 - 120
		Total Lead (Pb)	2012/11/02		101	%	80 - 120
		Total Magnesium (Mg)	2012/11/02		102	%	80 - 120

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3020451 DLB	Matrix Spike [PK1793-03]	Total Manganese (Mn)	2012/11/02		NC	%	80 - 120
		Total Molybdenum (Mo)	2012/11/02		102	%	80 - 120
		Total Nickel (Ni)	2012/11/02		96	%	80 - 120
		Total Phosphorus (P)	2012/11/02		102	%	80 - 120
		Total Potassium (K)	2012/11/02		100	%	80 - 120
		Total Selenium (Se)	2012/11/02		100	%	80 - 120
		Total Silver (Ag)	2012/11/02		99	%	80 - 120
		Total Sodium (Na)	2012/11/02		NC	%	80 - 120
		Total Strontium (Sr)	2012/11/02		NC	%	80 - 120
		Total Thallium (Tl)	2012/11/02		100	%	80 - 120
		Total Tin (Sn)	2012/11/02		99	%	80 - 120
		Total Titanium (Ti)	2012/11/02		102	%	80 - 120
		Total Uranium (U)	2012/11/02		105	%	80 - 120
	Spiked Blank	Total Vanadium (V)	2012/11/02		101	%	80 - 120
		Total Zinc (Zn)	2012/11/02		97	%	80 - 120
		Total Aluminum (Al)	2012/11/02		105	%	80 - 120
		Total Antimony (Sb)	2012/11/02		103	%	80 - 120
		Total Arsenic (As)	2012/11/02		101	%	80 - 120
		Total Barium (Ba)	2012/11/02		102	%	80 - 120
		Total Beryllium (Be)	2012/11/02		104	%	80 - 120
		Total Bismuth (Bi)	2012/11/02		105	%	80 - 120
		Total Boron (B)	2012/11/02		100	%	80 - 120
		Total Cadmium (Cd)	2012/11/02		101	%	80 - 120
		Total Calcium (Ca)	2012/11/02		102	%	80 - 120
		Total Chromium (Cr)	2012/11/02		102	%	80 - 120
		Total Cobalt (Co)	2012/11/02		107	%	80 - 120
		Total Copper (Cu)	2012/11/02		101	%	80 - 120
		Total Iron (Fe)	2012/11/02		103	%	80 - 120
		Total Lead (Pb)	2012/11/02		106	%	80 - 120
		Total Magnesium (Mg)	2012/11/02		103	%	80 - 120
		Total Manganese (Mn)	2012/11/02		101	%	80 - 120
		Total Molybdenum (Mo)	2012/11/02		104	%	80 - 120
		Total Nickel (Ni)	2012/11/02		100	%	80 - 120
		Total Phosphorus (P)	2012/11/02		103	%	80 - 120
		Total Potassium (K)	2012/11/02		102	%	80 - 120
		Total Selenium (Se)	2012/11/02		100	%	80 - 120
		Total Silver (Ag)	2012/11/02		105	%	80 - 120
		Total Sodium (Na)	2012/11/02		103	%	80 - 120
		Total Strontium (Sr)	2012/11/02		100	%	80 - 120
		Total Thallium (Tl)	2012/11/02		103	%	80 - 120
Total Tin (Sn)	2012/11/02		103	%	80 - 120		
Total Titanium (Ti)	2012/11/02		104	%	80 - 120		
Total Uranium (U)	2012/11/02		107	%	80 - 120		
Total Vanadium (V)	2012/11/02		104	%	80 - 120		
Method Blank	Total Zinc (Zn)	2012/11/02		101	%	80 - 120	
	Total Aluminum (Al)	2012/11/02		5.5, RDL=5.0		ug/L	
	Total Antimony (Sb)	2012/11/02		ND, RDL=1.0		ug/L	
	Total Arsenic (As)	2012/11/02		ND, RDL=1.0		ug/L	
	Total Barium (Ba)	2012/11/02		ND, RDL=1.0		ug/L	
	Total Beryllium (Be)	2012/11/02		ND, RDL=1.0		ug/L	
	Total Bismuth (Bi)	2012/11/02		ND, RDL=2.0		ug/L	
	Total Boron (B)	2012/11/02		ND, RDL=50		ug/L	
	Total Cadmium (Cd)	2012/11/02		ND, RDL=0.017		ug/L	
	Total Calcium (Ca)	2012/11/02		ND, RDL=100		ug/L	

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3020451	DLB Method Blank	Total Chromium (Cr)	2012/11/02	ND, RDL=1.0		ug/L	
		Total Cobalt (Co)	2012/11/02	ND, RDL=0.40		ug/L	
		Total Copper (Cu)	2012/11/02	ND, RDL=2.0		ug/L	
		Total Iron (Fe)	2012/11/02	ND, RDL=50		ug/L	
		Total Lead (Pb)	2012/11/02	ND, RDL=0.50		ug/L	
		Total Magnesium (Mg)	2012/11/02	ND, RDL=100		ug/L	
		Total Manganese (Mn)	2012/11/02	ND, RDL=2.0		ug/L	
		Total Molybdenum (Mo)	2012/11/02	ND, RDL=2.0		ug/L	
		Total Nickel (Ni)	2012/11/02	ND, RDL=2.0		ug/L	
		Total Phosphorus (P)	2012/11/02	ND, RDL=100		ug/L	
		Total Potassium (K)	2012/11/02	ND, RDL=100		ug/L	
		Total Selenium (Se)	2012/11/02	ND, RDL=1.0		ug/L	
		Total Silver (Ag)	2012/11/02	ND, RDL=0.10		ug/L	
		Total Sodium (Na)	2012/11/02	ND, RDL=100		ug/L	
		Total Strontium (Sr)	2012/11/02	ND, RDL=2.0		ug/L	
		Total Thallium (Tl)	2012/11/02	ND, RDL=0.10		ug/L	
		Total Tin (Sn)	2012/11/02	ND, RDL=2.0		ug/L	
		Total Titanium (Ti)	2012/11/02	ND, RDL=2.0		ug/L	
		Total Uranium (U)	2012/11/02	ND, RDL=0.10		ug/L	
		Total Vanadium (V)	2012/11/02	ND, RDL=2.0		ug/L	
		Total Zinc (Zn)	2012/11/02	ND, RDL=5.0		ug/L	
	RPD [PK1792-03]	Total Aluminum (Al)	2012/11/02	NC		%	25
		Total Antimony (Sb)	2012/11/02	NC		%	25
		Total Arsenic (As)	2012/11/02	NC		%	25
		Total Barium (Ba)	2012/11/02	0.8		%	25
		Total Beryllium (Be)	2012/11/02	NC		%	25
		Total Bismuth (Bi)	2012/11/02	NC		%	25
		Total Boron (B)	2012/11/02	NC		%	25
		Total Cadmium (Cd)	2012/11/02	NC		%	25
		Total Calcium (Ca)	2012/11/02	1.6		%	25
		Total Chromium (Cr)	2012/11/02	NC		%	25
		Total Cobalt (Co)	2012/11/02	NC		%	25
		Total Copper (Cu)	2012/11/02	NC		%	25
		Total Iron (Fe)	2012/11/02	NC		%	25
		Total Lead (Pb)	2012/11/02	NC		%	25
		Total Magnesium (Mg)	2012/11/02	1.9		%	25
		Total Manganese (Mn)	2012/11/02	NC		%	25
		Total Molybdenum (Mo)	2012/11/02	NC		%	25
		Total Nickel (Ni)	2012/11/02	NC		%	25
		Total Phosphorus (P)	2012/11/02	NC		%	25
		Total Potassium (K)	2012/11/02	2.2		%	25
		Total Selenium (Se)	2012/11/02	NC		%	25
		Total Silver (Ag)	2012/11/02	NC		%	25
		Total Sodium (Na)	2012/11/02	2.2		%	25
		Total Strontium (Sr)	2012/11/02	2.0		%	25
		Total Thallium (Tl)	2012/11/02	NC		%	25
		Total Tin (Sn)	2012/11/02	NC		%	25
		Total Titanium (Ti)	2012/11/02	NC		%	25
		Total Uranium (U)	2012/11/02	NC		%	25
		Total Vanadium (V)	2012/11/02	NC		%	25
		Total Zinc (Zn)	2012/11/02	NC		%	25
3020621	AWM QC Standard	Total Suspended Solids	2012/11/05		99	%	80 - 120
	Method Blank	Total Suspended Solids	2012/11/01	ND, RDL=1.0		mg/L	
	RPD [PK1799-01]	Total Suspended Solids	2012/11/01	NC		%	25
3020716	ALG Matrix Spike	Total Alkalinity (Total as CaCO3)	2012/11/02		NC	%	80 - 120

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3020716 ALG	QC Standard	Total Alkalinity (Total as CaCO3)	2012/11/01		103	%	80 - 120
	Spiked Blank	Total Alkalinity (Total as CaCO3)	2012/11/01		100	%	80 - 120
	Method Blank	Total Alkalinity (Total as CaCO3)	2012/11/01	ND, RDL=5.0		mg/L	
	RPD	Total Alkalinity (Total as CaCO3)	2012/11/02	1.7		%	25
3020718 ALG	Matrix Spike	Dissolved Chloride (Cl)	2012/11/01		NC	%	80 - 120
	QC Standard	Dissolved Chloride (Cl)	2012/11/01		103	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2012/11/01		99	%	80 - 120
	Method Blank	Dissolved Chloride (Cl)	2012/11/01	ND, RDL=1.0		mg/L	
	RPD	Dissolved Chloride (Cl)	2012/11/01	1.8		%	25
3020719 ALG	Matrix Spike	Dissolved Sulphate (SO4)	2012/11/02		NC	%	80 - 120
	QC Standard	Dissolved Sulphate (SO4)	2012/11/02		104	%	80 - 120
	Spiked Blank	Dissolved Sulphate (SO4)	2012/11/02		102	%	80 - 120
	Method Blank	Dissolved Sulphate (SO4)	2012/11/02	ND, RDL=2.0		mg/L	
	RPD	Dissolved Sulphate (SO4)	2012/11/02	1.3		%	25
3020720 ARS	Matrix Spike	Reactive Silica (SiO2)	2012/11/01		NC	%	80 - 120
	Spiked Blank	Reactive Silica (SiO2)	2012/11/01		99	%	80 - 120
	Method Blank	Reactive Silica (SiO2)	2012/11/01	ND, RDL=0.50		mg/L	
	RPD	Reactive Silica (SiO2)	2012/11/01	0.8		%	25
3020721 ALG	QC Standard	Colour	2012/11/01		104	%	80 - 120
	Method Blank	Colour	2012/11/01	ND, RDL=5.0		TCU	
	RPD	Colour	2012/11/01	NC		%	25
3020722 JOA	Matrix Spike	Orthophosphate (P)	2012/11/02		86	%	80 - 120
	QC Standard	Orthophosphate (P)	2012/11/02		100	%	80 - 120
	Spiked Blank	Orthophosphate (P)	2012/11/02		98	%	80 - 120
	Method Blank	Orthophosphate (P)	2012/11/02	ND, RDL=0.010		mg/L	
	RPD	Orthophosphate (P)	2012/11/02	NC		%	25
3020723 JOA	Matrix Spike	Nitrate + Nitrite	2012/11/02		101	%	80 - 120
	QC Standard	Nitrate + Nitrite	2012/11/02		102	%	80 - 120
	Spiked Blank	Nitrate + Nitrite	2012/11/02		100	%	80 - 120
	Method Blank	Nitrate + Nitrite	2012/11/02	ND, RDL=0.050		mg/L	
	RPD	Nitrate + Nitrite	2012/11/02	1.7		%	25
3020724 ALG	Matrix Spike	Nitrite (N)	2012/11/01		95	%	80 - 120
	QC Standard	Nitrite (N)	2012/11/01		96	%	80 - 120
	Spiked Blank	Nitrite (N)	2012/11/01		92	%	80 - 120
	Method Blank	Nitrite (N)	2012/11/01	ND, RDL=0.010		mg/L	
	RPD	Nitrite (N)	2012/11/01	NC		%	25
3021971 AWM	QC Standard	Total Suspended Solids	2012/11/02		102	%	80 - 120
	Method Blank	Total Suspended Solids	2012/11/02	ND, RDL=1.0		mg/L	
	RPD	Total Suspended Solids	2012/11/02	6.9		%	25
3022277 KFO	Matrix Spike	Total Organic Carbon (C)	2012/11/01		92	%	80 - 120
	[PK1794-02]	Total Organic Carbon (C)	2012/11/01		98	%	80 - 120
	Spiked Blank	Total Organic Carbon (C)	2012/11/01		98	%	80 - 120
	Method Blank	Total Organic Carbon (C)	2012/11/01	ND, RDL=0.50		mg/L	
	RPD [PK1794-02]	Total Organic Carbon (C)	2012/11/01	NC		%	25
3022280 KFO	Matrix Spike	Total Organic Carbon (C)	2012/11/01		96	%	80 - 120
	Spiked Blank	Total Organic Carbon (C)	2012/11/01		98	%	80 - 120
	Method Blank	Total Organic Carbon (C)	2012/11/01	ND, RDL=0.50		mg/L	
	RPD	Total Organic Carbon (C)	2012/11/01	3.2		%	25
3022499 ARS	Matrix Spike	Total Alkalinity (Total as CaCO3)	2012/11/05		99	%	80 - 120
	QC Standard	Total Alkalinity (Total as CaCO3)	2012/11/05		110	%	80 - 120
	Spiked Blank	Total Alkalinity (Total as CaCO3)	2012/11/05		108	%	80 - 120
	Method Blank	Total Alkalinity (Total as CaCO3)	2012/11/05	ND, RDL=5.0		mg/L	
	RPD	Total Alkalinity (Total as CaCO3)	2012/11/05	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Dillon Consulting Limited
Attention: Scott McMillan
Client Project #: 12-6744-1000
P.O. #:
Site Location: PICTOU COUNTY PIPELINE

Quality Assurance Report (Continued)

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QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

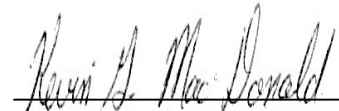
Validation Signature Page

Maxxam Job #: B2G8884

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Colleen Acker



Kevin Macdonald, Inorganics Supervisor

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.