SENES Consultants Limited

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MEMORANDUM

TO: Matthew McElwaine - PWGSC 340873-000

FROM: Charles Gravelle 25 May 2010

SUBJ: **Roberts Bay and Ida bay Mine Site Remediation Project**
Response to Nunavut Water Board Comments to 2009 Annual Report

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Further to our discussion of 21 May 2010 please find enclosed herein our response to the issues raised by the Nunavut Water board (NWB) in their review letter dated 16 March 2010. For ease of review we have number our responses using the same nomenclature as NWB in their letter.

Item 1. The 2009 Annual Report did not contain the results from sampling the Tailings Pond Effluent at Monitoring Program Station ROB-5 during discharge as required by Part D, Items 4 and 5. Also, no other sampling information was provided that was required under the Monitoring Program.

Response 1: The Annual Report did not provide any sampling results for Station ROB-5 because no effluent was discharged from the tailings pond and no run off was noted during the site remediation program. The construction of the landfill was completed without the requirement to dewater and discharge the water located in the tailings pond.

The status of the Monitoring Program as of the completion of the 2009 field season is presented in Table 1.

Table 1: Summary of Monitoring Program

Monitoring	Station Description	Parameter	Frequency	Comment
ROB-1	Water Supply intake at unnamed Lake adjacent Camp	Volume	Daily	Information is appended in Appendix A
ROB-2	Water Supply intake at Roberts Lake	Volume	Daily	No water taken from this lake.
ROB-3	Sewage pumped to the Sewage Disposal Facility	Volume	Monthly and Annually	July – 34 m^3 August – 117 m^3 Annual – 150 m^3
ROB-4	Final Point Discharge from the Sewage Lagoon	Volume & Water Quality	Once upon commencement of discharge and at completion of remediation	150 m^3discharged. Chemistry is appended in Appendix A
ROB-5	Discharge from Tailings Pond	Volume & Water Quality	During periods of flow	No water discharged from Tailings Pond and no run off noted during remediation program
ROB-6	The stream flowing south to Roberts Lake	Water Quality	Annually after spring melt	Scheduled for 2010, it shall be noted that there was no stream noted flowing south to Roberts Lake from the site and it is suspected that this is a seasonal freshet (sampling to occur during spring melt)
ROB-7	The stream(s) flowing north and west around the bedrock ridge.	Water Quality	Annually after spring melt	Scheduled for 2010, it shall be noted that there was no stream noted flowing south to Roberts Lake from the site and it is suspected that this is a seasonal freshet (sampling to occur during spring melt)

ROB-8	Streams flowing W from former tailings pond area	Water Quality	Annually after spring melt	Scheduled for 2010, it shall be noted that there was no stream noted flowing south to Roberts Lake from the site and it is suspected that this is a seasonal freshet (sampling to occur during spring melt)
ROB-9	Roberts Lake (background)	Water Quality	Annually after spring melt	Scheduled for 2010
ROB-10	Runoff leachate from SWMF	Water Quality	Annually after spring melt	Scheduled for 2010 (It shall be noted that the design of the SWMF precludes leachate generation, any runoff noted during monitoring activities shall be sampled accordingly)
ROB-11	Runoff and leachate from the Landfill	Water Quality	Annually after spring melt	Scheduled for 2010 (It shall be noted that the previously referenced "Landfill" was a scattered surficial debris area. The debris has been collected and placed in the SWMF. The area has been covered and regarded. Any noted runoff during monitoring activities shall be sampled accordingly)
ROB-12	Tailings	Temperature	As determined	Scheduled for 2010

The analytical results for the ROB-1 and ROB-4 locations are appended herein (Appendix A).

Item 2:The Annual report did not contain information describing consultation with local organizations and the residents of the nearby communities.

Response 2: The community consultation process for this program is described under the following headings.

Approach to Consultation

The nearest community to the Roberts Bay and Ida Bay Silver Mine site is Cambridge Bay, Nunavut. The site is located approximately 115 kilometres southwest of Cambridge Bay. Consequently, since the start of the project there has been strong and growing relationship between the INAC/PWGSC officials and the various groups in Cambridge Bay Hamlet.

So far, on the project, active consultations have been made by PWGSC/INAC with the regional Inuit Association (Kitikmeot Inuit Association (KIA)), the Ekaluktutiak Hunters and Trappers Organization (HTO), the Cambridge Bay Mayor and the Hamlet Council, and the Cambridge Bay Community Members. These consultations take various forms such as letters/e-mail communications, telephone conversations, site visits with community members, and public meetings in the Hamlet of Cambridge Bay.

At the inception of the project in 2005/2006, visits were made to the site by representatives of KIA, HTO, Cambridge Bay Hamlet members and INAC/PWGSC. Through these visits and other meetings, INAC/PWGSC representatives obtained local perspectives on the mine site's previous use and site restoration priorities. Similar meetings and consultations (details below) have continued to this stage of the project and are planned to continue to the end of the project.

It was the goal of this project to maximize Inuit businesses; and the employment and training of Inuit people of the neighboring community (Cambridge Bay) during the course of executing this project. Contract tenders included requirements for maximizing community involvement and supporting Inuit employment and business development. The successful contractor, Quantum Murray LP is being assessed based on the Inuit Employment and Business commitment he made during the tendering process and may be eligible for some incentive if he meets and exceeds the commitments or otherwise will be penalized. The contractor has achieved good Inuit involvement targets to date.

As part of the Roberts and Ida Bay remediation project, the contractor developed and delivered an Inuit Capacity Development Training program for local Inuit workers during the FY 2009-10. The aim of the training program is to enhance the skills of the workers for the execution of the current project and maximize the workers' employment opportunities in similar future projects. Funding for the training was provided by INAC.

Community Meetings

Prior to the issuance of the NWB Licence # **1BR-ROB0813**, a community meeting for the finalization of the Remedial Action Plan (RAP) for Roberts Bay was held at Cambridge Bay on November 30, 2006. The meeting was well attended by community members and representatives of

the HTO, Hamlet council, KIA.

Under the current Licence (# **1BR-ROB0813**), two(2) community meetings have been held in Cambridge Bay, one pre-construction meeting and the second a project progress/ end of 2009 season's meeting. The pre-construction meeting was held on July 16, 2008 and was attended by Dele Morakinyo (Indian and Northern Affairs), Matthew McElwaine (Public Works & Government Services Canada), Vijay Lanji, Ron Bosel, John Weigel and Peter Yip (Quantum Murray LP), representatives of local groups in Cambridge Bay, and community members . Community members were provided an overview of the project, including background and scope of work. They were also advised on date/schedule of the project and the jobs/businesses available on the project. The community members had the opportunity to ask questions or express any concerns they may have had. No issues were raised.

The progress/end of the 2009 season meeting was held on September 22, 2009 and was attended by Dele Morakinyo (Indian and Northern Affairs), Matthew McElwaine (Public Works & Government Services Canada), Vijay Lanji and Gavin Domitter (Quantum Murray LP), representatives of local groups in Cambridge Bay, and community members. Community members were provided an overview of the work completed in the summer of 2009 and the remaining works (including demobilization) scheduled for 2010. An overview of the INAC Capacity Building Training Program delivered by Quantum Murray LP in April 2009 was given, and illustrated the link between the training and the work completed onsite. This meeting recorded a much higher attendance than the previous 2, mostly because the community was fully engaged through the training program and the summer work in the 2009 season. No issues were raised.

A third community meeting is planned for the end of 2010 once all equipment has been demobilized from the site and the project is complete.

Community Coordinator

QMLP have retained the services of local Inuit to aid them with the hiring of staff, from Cambridge Bay, for the remedial works program at Roberts Bay and Ida Bay. Ikey Evalik has been the Inuit Community Coordinator from May 11, 2009 to the present while a second Community Coordinator, Joe Otokiak, was hired on November 11, 2009, and he will assist Ikey Evalik with off season activities including winter security patrols. Both Community Coordinators are scheduled to remain on the project until late 2010.

A final community meeting is scheduled to take place in Cambridge Bay at the conclusion of this project.

Item 3:The Annual Report did not include an executive summary in English, Inuktitut and Inuinnaqtun of all Plans, reports or Studies conducted under this Licence.

Response 3: PWGSC/INAC will provide the executive summary in English, Inuktitut and Inuinnaqtun.

Item 4:The Annual report did not include a summary of all wastes backhauled for disposal.

Response 4: No wastes were backhauled during the 2009 field program. As part of the 2009 program a total of 186 Seacans and seven Super Sacks were prepared for backhaulage from the Roberts Bay mine site to the temporary laydown area at the Ida Bay mine site from which the materials will be transferred off-site for disposal in 2010. The total of 11 Seacans were used to package 24 containers hazardous materials, 175 Seacans and seven Super Sacks of primarily petroleum hydrocarbon impacted soils which a portion co-contaminated with elevated metal parameter concentrations and two flatbed floats of mine related equipment painted with lead amended paints (estimated mass 11,000 kg) are to be initially transferred from Roberts Bay to Ida Bay in Spring 2010 and subsequently shipped off site after the barge demobilization in the Summer of 2010. A summary table of the hazardous materials encountered on site and their location by container number is provided in Table 2.

Closure

We trust the information presented herein meets your current needs. Should you require additional information please do not hesitate to contact the writer.

Charles Gravelle M.Sc.E., P.Eng.
Senior Project Manager (Resident Engineer on Roberts Bay Project)

Table 2: Summary of Containerized Hazardous Materials

Crate ID	Container ID	Material	Quantity
1	n/a	Asbestos Bags	3 bags
1	n/a	Empty cylinders	12
2	12	Xanthantes	1
2	8	Glycol	1
2	n/a	Waste Oil Filters	15 filters
3	1	Corrosive Liquids	1
3	2	Corrosive Liquids	1
3	6	PCB containing materials	1
3	17	PCB containing materials	1
4	5	Batteries (acid filled)	1
4	14	Batteries (acid filled)	1
4	15	Batteries (acid filled)	1
4	16	Batteries (acid filled)	1
5	3	Corrosive Liquids	1
5	10	Xanthantes	1
5	13	Toxic Solids	1
5	19	Xanthnate Solution	1
6	4	Batteries (acid filled)	1
6	11	Xanthantes	1
6	18	Calcium Carbonate	1
7	7	Pine Oil	1
7	9	Waste Dowthern 1012	1
7	9 of 11	Flammable Petroleum-based Liquids	1
8	5,6,7 and 8 of 11	Flammable Petroleum-based Liquids	4
9	1,2,3 and 4 of 11	Flammable Petroleum-based Liquids	4
10	22	Batteries (acid filled)	1
10	23P	Batteries (acid filled)	1
10	24P	Batteries (acid filled)	1
11	10 of 11	Flammable Petroleum-based Liquids	1
11	11 of 11	Flammable Petroleum-based Liquids	1
11	20	Used Oil	1
11	21	Used Oil	1

APPENDIX A

Analytical Results

Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.: 290513

- FINAL REPORT -

Prepared For: Quantum Murray LP

Address: 100-3600 Viking Way
Richmond, BC
V6V 1N6

Attn: Gavin Domitter **Facsimile:** (604) 270-7389

Final report has been reviewed and approved by:

Angelique Ruzindana
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association of Environmental Analytical Laboratories (CAEAL) as a testing laboratory for specific tests registered with CAEAL.
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  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
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- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Wednesday, August 12, 2009
Print Date: Wednesday, August 12, 2009

Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.: 290513

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Camp Tap **Taiga Sample ID:** 001

Client Project:
Sample Type: Potable
Received Date: 03-Aug-09
Sampling Date: 02-Aug-09
Sampling Time: 19:30
Location: Roberts Bay
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Physicals						
Alkalinity, Total (as CaCO3)	34.0	0.4	mg/L	04-Aug-09	SM2320:B	
Conductivity, Specific (@ 25°C)	131	0.4	µS/cm	04-Aug-09	SM2510:B	
pH	7.70		pH units	04-Aug-09	SM4500-H:B	
Major Ions						
Chloride	25.6	0.7	mg/L	07-Aug-09	SM4110:B	
Hardness	16.6	0.7	mg/L	07-Aug-09	SM2340:B	
Magnesium	1.1	0.1	mg/L	07-Aug-09	SM4110:B	
Nitrate	0.04	0.01	mg/L	07-Aug-09	SM4110:B	
Nitrite	< 0.01	0.01	mg/L	07-Aug-09	SM4110:B	
Sodium	8.5	0.1	mg/L	07-Aug-09	SM4110:B	
Sulphate	< 1	1	mg/L	07-Aug-09	SM4110:B	
Microbiology						
Coliforms, Fecal	< 1	1	CFU/100mL	03-Aug-09	SM9222:D	
Coliforms, Total	1.0	1.0	MPN/100mL	03-Aug-09	SM9223:B	

ReportDate: Wednesday, August 12, 2009
Print Date: Wednesday, August 12, 2009

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Taiga Batch No.: 290513

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Camp Tap **Taiga Sample ID: 001**

Escherichia coli	< 1.0	1.0	MPN/100mL	03-Aug-09	SM9223:B
Trace Metals, Dissolved					
Cadmium	< 0.05	0.05	µg/L	06-Aug-09	EPA200.8
Cobalt	< 0.1	0.1	µg/L	06-Aug-09	EPA200.8
Copper	5.2	0.2	µg/L	06-Aug-09	EPA200.8
Lead	0.5	0.1	µg/L	06-Aug-09	EPA200.8
Nickel	0.7	0.1	µg/L	06-Aug-09	EPA200.8
Trace Metals, Total					
Arsenic	2.0	0.2	µg/L	06-Aug-09	EPA200.8
Chromium	0.3	0.1	µg/L	06-Aug-09	EPA200.8
Iron	187	5	µg/L	06-Aug-09	EPA200.8
Manganese	2.0	0.1	µg/L	06-Aug-09	EPA200.8
Mercury	< 0.01	0.01	µg/L	06-Aug-09	EPA200.8
Zinc	6.6	0.4	µg/L	06-Aug-09	EPA200.8
Subcontracted Organics					
Benzene	< 0.001	0.001	mg/L	07-Aug-09	EPA8021B
Ethylbenzene	< 0.001	0.001	mg/L	07-Aug-09	EPA8021B
Hydrocarbons, Total Extractable	< 0.1	0.1	mg/L	07-Aug-09	Alta.Env.Met
Hydrocarbons, Total Purgeable	< 0.01	0.01	mg/L	07-Aug-09	EPA8021B
Polychlorinated Biphenyls	< 0.1	0.1	ug/L	10-Aug-09	EPA8082
Toluene	< 0.001	0.001	mg/L	07-Aug-09	EPA8021B
Xylenes	< 0.001	0.001	mg/L	07-Aug-09	EPA8021B

ReportDate: Wednesday, August 12, 2009
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Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.: 290513

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Wastewater System **Taiga Sample ID:** 002

Client Project:
Sample Type: Wastewater
Received Date: 03-Aug-09
Sampling Date: 02-Aug-09
Sampling Time: 19:30
Location: Roberts Bay
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Physicals						
pH	7.98		pH units	04-Aug-09	SM4500-H:B	
Solids, Total Suspended	28	3	mg/L	06-Aug-09	SM2540:D	
Inorganics - Nutrients						
Biochemical Oxygen Demand	80	2	mg/L	04-Aug-09	SM5210:B	
Microbiology						
Coliforms, Fecal	130000	10000	CFU/100mL	03-Aug-09	SM9222:D	
Organics						
Oil and Grease, visible	NonVisual			06-Aug-09	Visual Exam	

ReportDate: Wednesday, August 12, 2009
Print Date: Wednesday, August 12, 2009

Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
290513

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Wastewater System **Taiga Sample ID: 002**

*** Taiga analytical methods are based on the following standard analytical methods**
SM - Standard Methods for the Examination of Water and Wastewater
EPA - United States Environmental Protection Agency

ReportDate: Wednesday, August 12, 2009
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Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.: 290542

- FINAL REPORT -

Prepared For: Quantum Murray LP

Address: 100-3600 Viking Way
Richmond, BC
V6V 1N6

Attn: Gavin Domitter **Facsimile:** (604) 270-7389

Final report has been reviewed and approved by:

Angelique Ruzindana
Quality Assurance Officer

NOTES:

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Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.: 290542

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Wastewater **Taiga Sample ID: 001**

Client Project:
Sample Type: Wastewater
Received Date: 07-Aug-09
Sampling Date: 06-Aug-09
Sampling Time: 17:50
Location: Roberts Bay
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Physicals						
pH	7.89		pH units	07-Aug-09	SM4500-H:B	
Solids, Total Suspended	42	3	mg/L	11-Aug-09	SM2540:D	
Inorganics - Nutrients						
Biochemical Oxygen Demand	79	2	mg/L	07-Aug-09	SM5210:B	
Microbiology						
Coliforms, Fecal	1320000	10000	CFU/100mL	07-Aug-09	SM9222:D	
Organics						
Oil and Grease, visible	NonVisual			10-Aug-09	Visual Exam	

ReportDate: Wednesday, August 12, 2009
Print Date: Wednesday, August 12, 2009

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Taiga Batch No.: 290542

- FINAL REPORT -

Prepared For: Quantum Murray LP

Address: 100-3600 Viking Way
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Attn: Gavin Domitter **Facsimile:** (604) 270-7389

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Taiga Batch No.: 290542

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Wastewater **Taiga Sample ID: 001**

Client Project:
Sample Type: Wastewater
Received Date: 07-Aug-09
Sampling Date: 06-Aug-09
Sampling Time: 17:50
Location: Roberts Bay
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Physicals						
pH	7.89		pH units	07-Aug-09	SM4500-H:B	
Solids, Total Suspended	42	3	mg/L	11-Aug-09	SM2540:D	
Inorganics - Nutrients						
Biochemical Oxygen Demand	79	2	mg/L	07-Aug-09	SM5210:B	
Microbiology						
Coliforms, Fecal	1320000	10000	CFU/100mL	07-Aug-09	SM9222:D	
Organics						
Oil and Grease, visible	NonVisual			10-Aug-09	Visual Exam	

ReportDate: Wednesday, August 12, 2009
Print Date: Wednesday, August 12, 2009

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Taiga Batch No.:
290542

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Wastewater **Taiga Sample ID: 001**

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ReportDate: Wednesday, August 12, 2009
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Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.: 290556

- FINAL REPORT -

Prepared For: Quantum Murray LP

Address: 100-3600 Viking Way
Richmond, BC
V6V 1N6

Attn: Gavin Domitter **Facsimile:** (604) 270-7389

Final report has been reviewed and approved by:

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ReportDate: Monday, August 17, 2009
Print Date: Monday, August 17, 2009

Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.: 290556

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Wastewater **Taiga Sample ID: 001**

Client Project:
Sample Type: Wastewater
Received Date: 10-Aug-09
Sampling Date: 09-Aug-09
Sampling Time: 18:45
Location: Roberts Bay
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Physicals						
pH	11.4		pH units	11-Aug-09	SM4500-H:B	
Solids, Total Suspended	152	3	mg/L	14-Aug-09	SM2540:D	
Inorganics - Nutrients						
Biochemical Oxygen Demand	36	2	mg/L	10-Aug-09	SM5210:B	
Microbiology						
Coliforms, Fecal	< 4	4	CFU/100mL	10-Aug-09	SM9222:D	
Organics						
Oil and Grease, visible	NonVisual			11-Aug-09	Visual Exam	

ReportDate: Monday, August 17, 2009
Print Date: Monday, August 17, 2009

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Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
290556

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Wastewater **Taiga Sample ID: 001**

*** Taiga analytical methods are based on the following standard analytical methods**
SM - Standard Methods for the Examination of Water and Wastewater
EPA - United States Environmental Protection Agency

ReportDate: Monday, August 17, 2009
Print Date: Monday, August 17, 2009

Your C.O.C. #: 86424

Attention: GAVIN DOMITTER
QUANTUM ENVIRONMENTAL GROUP
400 - 4400 Dominion Street
Burnaby, AB
CANADA V5G 4G3

Report Date: 2009/08/04
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A938820
Received: 2009/07/27, 13:24

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	1	2009/07/27	2009/07/29	EENVSOP-00005 EENVSOP-00002	EPA 8260C/CCME
CCME Hydrocarbons (F2-F4 in soil)	1	2009/07/27	2009/07/28	EENVSOP-00007 EENVSOP-00006	CWS PHCS Tier 1
CCME Hydrocarbons (F4G in soil)	1	2009/07/29	2009/07/29	EENVSOP-00121	CWS PHCS Tier 1
Moisture	1	N/A	2009/07/28		

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity (pp, total), CO3,HCO3,OH	2	N/A	2009/07/28	EENVSOP-00054	SM 2320-B
Alkalinity (pp, total), CO3,HCO3,OH	1	N/A	2009/07/29	EENVSOP-00054	SM 2320-B
Biochemical Oxygen Demand	1	2009/07/27	2009/08/01	EIND SOP-00010	SM 5210 B
Biochemical Oxygen Demand	3	2009/07/28	2009/08/02	EIND SOP-00010	SM 5210 B
Chloride by Automated Colourimetry	4	N/A	2009/07/29	EENVSOP-00055	EPA 325.2
Chemical Oxygen Demand	1	N/A	2009/07/28	EENVSOP-00064	SM 5220D
Total Coliforms and E.Coli	1	2009/07/27	2009/07/28	EIND SOP-00013	SM 9223 A,B
Total Coliforms and E.Coli	3	2009/07/28	2009/07/29	EIND SOP-00013	SM 9223 A,B
Conductivity	2	N/A	2009/07/28	EENVSOP-00054	SM 2510-B
Conductivity	1	N/A	2009/07/29	EENVSOP-00054	SM 2510-B
Hardness	3	N/A	2009/07/27	CAL WI-00053	AEMM, Method 423
Elements by ICP - Dissolved	3	N/A	2009/07/29	CAL SOP-00192	EPA SW846 6010B
Ion Balance	3	N/A	2009/07/27	CAL WI-00053	SM 1030E
Sum of cations, anions	3	N/A	2009/07/27		
Ammonia-N (Total)	1	N/A	2009/07/29	EENVSOP-00058	EPA 350.1
Nitrate and Nitrite	3	N/A	2009/07/29		
Nitrate + Nitrite-N (calculated)	3	N/A	2009/07/27		
Nitrogen, (Nitrite, Nitrate) by IC	2	N/A	2009/07/28	CAL SOP-00060	SM 4110-B
Nitrogen, (Nitrite, Nitrate) by IC	1	N/A	2009/07/29	CAL SOP-00060	SM 4110-B
Oil & Grease (sheen)	4	2009/07/28	2009/07/28	EENVSOP-00121 V.1	
pH	1	N/A	2009/07/29	EENVSOP-00054	SM 4500-H B
pH (Alkalinity titrator)	2	N/A	2009/07/28	EENVSOP-00054	SM 4500-H+B
pH (Alkalinity titrator)	1	N/A	2009/07/29	EENVSOP-00054	SM 4500-H+B

../2

Your C.O.C. #: 86424

Attention: GAVIN DOMITTER
QUANTUM ENVIRONMENTAL GROUP
400 - 4400 Dominion Street
Burnaby, AB
CANADA V5G 4G3

Report Date: 2009/08/04
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Sulphate by Automated Colourimetry	4	N/A	2009/07/29	EENVSOP-00057	EPA 375.4
Total Dissolved Solids (Calculated)	3	N/A	2009/07/27		SM 1030E
Total Suspended Solids (NFR)	2	2009/07/28	2009/07/28	EENVSOP-00073	SM 2540 D
Total Suspended Solids (NFR)	2	2009/07/29	2009/07/29	EENVSOP-00073	SM 2540 D

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Solvent Scan (liquid waste, volatiles) (2)	1	2009/07/28	2009/07/29	CAL SOP-00104	EPA 8260 C

(1) This test was performed by Maxxam Ontario (From Edmonton)
(2) This test was performed by Maxxam Calgary

Encryption Key

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

BONNIE PULLISHY,
Email: bonnie.pullishy@maxxamanalytics.com
Phone# (780) 577-7100

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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. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page
Total cover pages: 2

RCAP - PARTIAL ROUTINE (WATER)

Maxxam ID		P95343			P95412		
Sampling Date		2009/07/24			2009/07/24		
COC Number		86424			86424		
	Units	**UN-NAMED POND**	**RDL**	**QC Batch**	**ROBERTS LAKE**	**RDL**	**QC Batch**
Calculated Parameters							
Anion Sum	meq/L	1.3	N/A	3305527	2.1	N/A	3305527
Cation Sum	meq/L	1.3	N/A	3305527	2.1	N/A	3305527
Hardness (CaCO3)	mg/L	43	0.5	3305513	36	0.5	3305513
Ion Balance	N/A	0.97	0.01	3305520	0.98	0.01	3305520
Dissolved Nitrate (NO3)	mg/L	0.01	0.01	3305640	<0.01	0.01	3305640
Nitrate plus Nitrite (N)	mg/L	0.003	0.003	3305535	<0.003	0.003	3305535
Dissolved Nitrite (NO2)	mg/L	<0.01	0.01	3305640	<0.01	0.01	3305640
Total Dissolved Solids	mg/L	67	10	3305544	120	10	3305544
Misc. Inorganics							
Conductivity	uS/cm	130	1	3305161	240	1	3305161
pH	N/A	7.89	N/A	3305160	7.44	N/A	3305160
Anions							
Alkalinity (PP as CaCO3)	mg/L	<0.5	0.5	3305152	<0.5	0.5	3305152
Alkalinity (Total as CaCO3)	mg/L	37	0.5	3305152	27	0.5	3305152
Bicarbonate (HCO3)	mg/L	45	0.5	3305152	32	0.5	3305152
Carbonate (CO3)	mg/L	<0.5	0.5	3305152	<0.5	0.5	3305152
Hydroxide (OH)	mg/L	<0.5	0.5	3305152	<0.5	0.5	3305152
Dissolved Sulphate (SO4)	mg/L	<1	1	3309462	5	1	3309462
Dissolved Chloride (Cl)	mg/L	20	1	3309464	52 (1)	2	3309464
Nutrients							
Dissolved Nitrate (N)	mg/L	0.003	0.003	3309578	<0.003	0.003	3307834
Dissolved Nitrite (N)	mg/L	<0.003	0.003	3309578	<0.003	0.003	3307834
Elements							
Dissolved Calcium (Ca)	mg/L	11	0.3	3308711	5.4	0.3	3308711
Dissolved Iron (Fe)	mg/L	0.13	0.06	3308711	<0.06	0.06	3308711
Dissolved Magnesium (Mg)	mg/L	4.0	0.2	3308711	5.6	0.2	3308711
Dissolved Manganese (Mn)	mg/L	<0.004	0.004	3308711	<0.004	0.004	3308711
Dissolved Potassium (K)	mg/L	1.3	0.3	3308711	2.0	0.3	3308711
Dissolved Sodium (Na)	mg/L	8.5	0.5	3308711	30	0.5	3308711

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

RCAP - PARTIAL ROUTINE (WATER)

Maxxam ID		P95445		
Sampling Date		2009/07/24		
COC Number		86424		
	Units	**WTS DISCHARGE**	**RDL**	**QC Batch**
Calculated Parameters				
Anion Sum	meq/L	1.3	N/A	3305527
Cation Sum	meq/L	1.2	N/A	3305527
Hardness (CaCO3)	mg/L	41	0.5	3305513
Ion Balance	N/A	0.96	0.01	3305520
Dissolved Nitrate (NO3)	mg/L	<0.01	0.01	3305641
Nitrate plus Nitrite (N)	mg/L	<0.003	0.003	3305535
Dissolved Nitrite (NO2)	mg/L	<0.01	0.01	3305641
Total Dissolved Solids	mg/L	66	10	3305544
Misc. Inorganics				
Conductivity	uS/cm	130	1	3308330
pH	N/A	7.74	N/A	3308329
Anions				
Alkalinity (PP as CaCO3)	mg/L	<0.5	0.5	3308319
Alkalinity (Total as CaCO3)	mg/L	38	0.5	3308319
Bicarbonate (HCO3)	mg/L	47	0.5	3308319
Carbonate (CO3)	mg/L	<0.5	0.5	3308319
Hydroxide (OH)	mg/L	<0.5	0.5	3308319
Dissolved Sulphate (SO4)	mg/L	<1	1	3309524
Dissolved Chloride (Cl)	mg/L	19	1	3309528
Nutrients				
Dissolved Nitrate (N)	mg/L	<0.003	0.003	3307834
Dissolved Nitrite (N)	mg/L	<0.003	0.003	3307834
Elements				
Dissolved Calcium (Ca)	mg/L	10	0.3	3308711
Dissolved Iron (Fe)	mg/L	0.12	0.06	3308711
Dissolved Magnesium (Mg)	mg/L	3.7	0.2	3308711
Dissolved Manganese (Mn)	mg/L	<0.004	0.004	3308711
Dissolved Potassium (K)	mg/L	1.3	0.3	3308711
Dissolved Sodium (Na)	mg/L	8.7	0.5	3308711

RDL = Reportable Detection Limit

GAS PLANT WASTE WATER ANALYSIS (WATER)

Maxxam ID		P95452		
Sampling Date		2009/07/24		
COC Number		86424		
	Units	**WWTS DISHCHARGE**	**RDL**	**QC Batch**
CONVENTIONALS				
Total Ammonia (N)	mg/L	0.12	0.05	3311547
Demand Parameters				
Total Chemical Oxygen Demand	mg/L	13 (1)	5	3305734
Misc. Inorganics				
pH	N/A	7.73	N/A	3310443
Total Suspended Solids	mg/L	7	1	3305893
Anions				
Dissolved Sulphate (SO4)	mg/L	<1	1	3309462
Dissolved Chloride (Cl)	mg/L	19	1	3309464
Physical Properties				
Visible Sheen	N/A	No	N/A	3306305

RDL = Reportable Detection Limit
(1) Sample was received unpreserved.

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		P95343	P95412		
Sampling Date		2009/07/24	2009/07/24		
COC Number		86424	86424		
	Units	**UN-NAMED POND**	**ROBERTS LAKE**	**RDL**	**QC Batch**
Demand Parameters					
Biochemical Oxygen Demand	mg/L	<3 (1)	<3 (1)	3	3322227
Misc. Inorganics					
Total Suspended Solids	mg/L	2	6	1	3309579
Microbiological Param.					
E.Coli DST	mpn/100mL	4	<1	1	3311552
Total Coliforms DST	mpn/100mL	35 (2)	1 (2)	1	3311552
Physical Properties					
Visible Sheen	N/A	No	No	N/A	3306305

RDL = Reportable Detection Limit
(1) Detection limit raised based on sample volume used for analysis.
(2) Sample was analyzed after holding time expired.

Maxxam ID		P95445			P95452		
Sampling Date		2009/07/24			2009/07/24		
COC Number		86424			86424		
	Units	**WTS DISCHARGE**	**RDL**	**QC Batch**	**WWTS DISHCHARGE**	**RDL**	**QC Batch**
Demand Parameters							
Biochemical Oxygen Demand	mg/L	3	2	3322222	8 (1)	3	3322227
Misc. Inorganics							
Total Suspended Solids	mg/L	<1	1	3305893	N/A	N/A	N/A
Microbiological Param.							
E.Coli DST	mpn/100mL	<1	1	3307106	>2420	1	3311552
Total Coliforms DST	mpn/100mL	<1	1	3307106	>2420 (2)	1	3311552
Physical Properties							
Visible Sheen	N/A	No	N/A	3306305	N/A	N/A	N/A

N/A = Not Applicable
RDL = Reportable Detection Limit
(1) Detection limit raised based on sample volume used for analysis.
(2) Sample was analyzed after holding time expired.

Package 1	5.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

SOLVENT SCAN (WATER) Comments

Sample P95487-01 Solvent Scan (liquid waste, volatiles): Detection limits raised due to dilution to bring analyte within the calibrated range.

Results relate only to the items tested.

QUANTUM ENVIRONMENTAL GROUP
Attention: GAVIN DOMITTER
Client Project #:
P.O. #:
Site Reference:

Quality Assurance Report

Maxxam Job Number: EA938820

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3305152	SB8	Calibration Check	Alkalinity (Total as CaCO3)	2009/07/27		100	%	80 - 120
		BLANK	Alkalinity (PP as CaCO3)	2009/07/28	<0.5		mg/L	
			Alkalinity (Total as CaCO3)	2009/07/28	0.8, RDL=0.5		mg/L	
			Bicarbonate (HCO3)	2009/07/28	0.9, RDL=0.5		mg/L	
			Carbonate (CO3)	2009/07/28	<0.5		mg/L	
			Hydroxide (OH)	2009/07/28	<0.5		mg/L	
		RPD	Alkalinity (PP as CaCO3)	2009/07/28	NC		%	20
			Alkalinity (Total as CaCO3)	2009/07/28	0.8		%	20
			Bicarbonate (HCO3)	2009/07/28	0.8		%	20
			Carbonate (CO3)	2009/07/28	NC		%	20
			Hydroxide (OH)	2009/07/28	NC		%	20
3305160	SB8	Calibration Check	pH	2009/07/27		102	%	97 - 103
		RPD	pH	2009/07/28	0.9		%	5
3305161	SB8	Calibration Check	Conductivity	2009/07/27		100	%	80 - 120
		BLANK	Conductivity	2009/07/27	<1		uS/cm	
		RPD	Conductivity	2009/07/28	0.4		%	20
3305676	DR3	MATRIX SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/07/28		102	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2009/07/28		110	%	30 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/07/28		111	%	60 - 140
			D8-TOLUENE (sur.)	2009/07/28		105	%	60 - 140
			Benzene	2009/07/28		91	%	60 - 140
			Toluene	2009/07/28		92	%	60 - 140
			Ethylbenzene	2009/07/28		98	%	60 - 140
			m & p-Xylene	2009/07/28		104	%	60 - 140
			o-Xylene	2009/07/28		98	%	60 - 140
			(C6-C10)	2009/07/28		110	%	60 - 140
		SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/07/28		107	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2009/07/28		102	%	30 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/07/28		105	%	60 - 140
			D8-TOLUENE (sur.)	2009/07/28		103	%	60 - 140
			Benzene	2009/07/28		91	%	60 - 140
			Toluene	2009/07/28		92	%	60 - 140
			Ethylbenzene	2009/07/28		101	%	60 - 140
			m & p-Xylene	2009/07/28		102	%	60 - 140
			o-Xylene	2009/07/28		95	%	60 - 140
			(C6-C10)	2009/07/28		100	%	80 - 120
		BLANK	4-BROMOFLUOROBENZENE (sur.)	2009/07/28		105	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2009/07/28		105	%	30 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/07/28		111	%	60 - 140
			D8-TOLUENE (sur.)	2009/07/28		101	%	60 - 140
			Benzene	2009/07/28	<0.0050		mg/kg	
			Toluene	2009/07/28	<0.020		mg/kg	
			Ethylbenzene	2009/07/28	<0.010		mg/kg	
			Xylenes (Total)	2009/07/28	<0.040		mg/kg	
			m & p-Xylene	2009/07/28	<0.040		mg/kg	
			o-Xylene	2009/07/28	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2009/07/28	<12		mg/kg	
			(C6-C10)	2009/07/28	<12		mg/kg	
		RPD	Benzene	2009/07/28	NC		%	50
			Toluene	2009/07/28	NC		%	50
			Ethylbenzene	2009/07/28	NC		%	50
			Xylenes (Total)	2009/07/28	NC		%	50
			m & p-Xylene	2009/07/28	NC		%	50
			o-Xylene	2009/07/28	NC		%	50
			F1 (C6-C10) - BTEX	2009/07/28	NC		%	50

QUANTUM ENVIRONMENTAL GROUP
Attention: GAVIN DOMITTER
Client Project #:
P.O. #:
Site Reference:

Quality Assurance Report (Continued)

Maxxam Job Number: EA938820

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3305676	DR3	RPD	(C6-C10)	2009/07/28	NC		%	50
3305697	JT7	MATRIX SPIKE	O-TERPHENYL (sur.)	2009/07/28		81	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2009/07/28		90	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2009/07/28		99	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2009/07/28		107	%	50 - 130
		SPIKE	O-TERPHENYL (sur.)	2009/07/28		89	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2009/07/28		100	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2009/07/28		110	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2009/07/28		117	%	80 - 120
		BLANK	O-TERPHENYL (sur.)	2009/07/28		105	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2009/07/28	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2009/07/28	<10		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2009/07/28	<10		mg/kg	
		RPD	F2 (C10-C16 Hydrocarbons)	2009/07/28	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2009/07/28	7.2		%	50
			F4 (C34-C50 Hydrocarbons)	2009/07/28	2.1		%	50
3305734	LF1	Calibration Check	Total Chemical Oxygen Demand	2009/07/28		102	%	80 - 120
		MATRIX SPIKE	Total Chemical Oxygen Demand	2009/07/28		104	%	80 - 120
		BLANK	Total Chemical Oxygen Demand	2009/07/28	<5		mg/L	
		RPD	Total Chemical Oxygen Demand	2009/07/28	NC		%	20
3305782	JP6	BLANK	Moisture	2009/07/28	<0.3		%	
		RPD	Moisture	2009/07/28	0.9		%	20
3305893	RW3	MATRIX SPIKE	Total Suspended Solids	2009/07/28		100	%	80 - 120
		SPIKE	Total Suspended Solids	2009/07/28		97	%	80 - 120
		BLANK	Total Suspended Solids	2009/07/28	<1		mg/L	
		RPD	Total Suspended Solids	2009/07/28	0 (1)		%	20
3307106	JA6	BLANK	E.Coli DST	2009/07/28	<1		mpn/100mL	
			Total Coliforms DST	2009/07/28	<1		mpn/100mL	
3307834	KM7	Calibration Check	Dissolved Nitrate (N)	2009/07/28		100	%	80 - 120
			Dissolved Nitrite (N)	2009/07/28		97	%	80 - 120
		MATRIX SPIKE	Dissolved Nitrate (N)	2009/07/28		100	%	80 - 120
			Dissolved Nitrite (N)	2009/07/28		97	%	80 - 120
		BLANK	Dissolved Nitrate (N)	2009/07/28	0.003, RDL=0.003		mg/L	
			Dissolved Nitrite (N)	2009/07/28	<0.003		mg/L	
		RPD	Dissolved Nitrate (N)	2009/07/28	0		%	20
			Dissolved Nitrite (N)	2009/07/28	NC		%	20
3308319	MG5	Calibration Check	Alkalinity (Total as CaCO3)	2009/07/29		101	%	80 - 120
		BLANK	Alkalinity (PP as CaCO3)	2009/07/29	<0.5		mg/L	
			Alkalinity (Total as CaCO3)	2009/07/29	<0.5		mg/L	
			Bicarbonate (HCO3)	2009/07/29	<0.5		mg/L	
			Carbonate (CO3)	2009/07/29	<0.5		mg/L	
			Hydroxide (OH)	2009/07/29	<0.5		mg/L	
		RPD	Alkalinity (PP as CaCO3)	2009/07/29	NC		%	20
			Alkalinity (Total as CaCO3)	2009/07/29	0.7		%	20
			Bicarbonate (HCO3)	2009/07/29	0.7		%	20
			Carbonate (CO3)	2009/07/29	NC		%	20
			Hydroxide (OH)	2009/07/29	NC		%	20
3308329	MG5	Calibration Check	pH	2009/07/29		100	%	97 - 103
		RPD	pH	2009/07/29	1.1		%	5
3308330	MG5	Calibration Check	Conductivity	2009/07/29		101	%	80 - 120
		BLANK	Conductivity	2009/07/29	2, RDL=1		uS/cm	
		RPD	Conductivity	2009/07/29	0.6		%	20
3308711	RI3	Calibration Check	Dissolved Calcium (Ca)	2009/07/29		106	%	80 - 120
			Dissolved Iron (Fe)	2009/07/29		94	%	80 - 120
			Dissolved Magnesium (Mg)	2009/07/29		105	%	80 - 120

QUANTUM ENVIRONMENTAL GROUP
Attention: GAVIN DOMITTER
Client Project #:
P.O. #:
Site Reference:

Quality Assurance Report (Continued)

Maxxam Job Number: EA938820

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3308711	RI3	Calibration Check	Dissolved Manganese (Mn)	2009/07/29		105	%	80 - 120
			Dissolved Potassium (K)	2009/07/29		105	%	80 - 120
			Dissolved Sodium (Na)	2009/07/29		105	%	80 - 120
		MATRIX SPIKE	Dissolved Calcium (Ca)	2009/07/29		91	%	80 - 120
			Dissolved Iron (Fe)	2009/07/29		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2009/07/29		84	%	80 - 120
			Dissolved Manganese (Mn)	2009/07/29		90	%	80 - 120
			Dissolved Potassium (K)	2009/07/29		92	%	80 - 120
			Dissolved Sodium (Na)	2009/07/29		NC	%	80 - 120
		BLANK	Dissolved Calcium (Ca)	2009/07/29	<0.3		mg/L	
			Dissolved Iron (Fe)	2009/07/29	<0.06		mg/L	
			Dissolved Magnesium (Mg)	2009/07/29	<0.2		mg/L	
			Dissolved Manganese (Mn)	2009/07/29	<0.004		mg/L	
			Dissolved Potassium (K)	2009/07/29	<0.3		mg/L	
			Dissolved Sodium (Na)	2009/07/29	<0.5		mg/L	
		RPD	Dissolved Calcium (Ca)	2009/07/29	0.4		%	20
			Dissolved Iron (Fe)	2009/07/29	0.2		%	20
			Dissolved Magnesium (Mg)	2009/07/29	0.8		%	20
			Dissolved Manganese (Mn)	2009/07/29	0.6		%	20
			Dissolved Potassium (K)	2009/07/29	3.3		%	20
			Dissolved Sodium (Na)	2009/07/29	1.3 (2)		%	20
3309062	WW1	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/07/28		95	%	74 - 121
			D4-1,2-DICHLOROETHANE (sur.)	2009/07/28		90	%	70 - 121
			D8-TOLUENE (sur.)	2009/07/28		99	%	80 - 117
			Benzene	2009/07/28		99	%	70 - 130
			2-Butanone (MEK)	2009/07/28		71	%	70 - 130
			Carbon disulfide	2009/07/28		115	%	70 - 130
			Carbon tetrachloride	2009/07/28		82	%	70 - 130
			Chlorobenzene	2009/07/28		96	%	70 - 130
			Dichloromethane	2009/07/28		93	%	70 - 130
			Cyclohexanone	2009/07/28		71	%	70 - 130
			Ethyl acetate	2009/07/28		70	%	70 - 130
			Ethylbenzene	2009/07/28		103	%	70 - 130
			Ethyl ether	2009/07/28		102	%	70 - 130
			4-Methyl-2-pentanone (MIBK)	2009/07/28		82	%	70 - 130
			2-Nitropropane	2009/07/28		82	%	70 - 130
			Tetrachloroethene	2009/07/28		94	%	70 - 130
			Toluene	2009/07/28		98	%	70 - 130
			1,1,1-trichloroethane	2009/07/28		87	%	70 - 130
			1,1,2-trichloroethane	2009/07/28		74	%	70 - 130
			Trichloroethene	2009/07/28		93	%	70 - 130
			m & p-Xylene	2009/07/28		112	%	70 - 130
			o-Xylene	2009/07/28		104	%	70 - 130
		BLANK	4-BROMOFLUOROBENZENE (sur.)	2009/07/29		95	%	74 - 121
			D4-1,2-DICHLOROETHANE (sur.)	2009/07/29		89	%	70 - 121
			D8-TOLUENE (sur.)	2009/07/29		97	%	80 - 117
			Benzene	2009/07/29	<0.00040		mg/kg	
			2-Butanone (MEK)	2009/07/29	<0.050		mg/kg	
			Carbon disulfide	2009/07/29	<0.0040		mg/kg	
			Carbon tetrachloride	2009/07/29	<0.00040		mg/kg	
			Chlorobenzene	2009/07/29	<0.00040		mg/kg	
			Dichloromethane	2009/07/29	<0.0040		mg/kg	
			Cyclohexanone	2009/07/29	<0.50		mg/kg	
			Ethyl acetate	2009/07/29	<0.010		mg/kg	
			Ethylbenzene	2009/07/29	<0.00040		mg/kg	

QUANTUM ENVIRONMENTAL GROUP
Attention: GAVIN DOMITTER
Client Project #:
P.O. #:
Site Reference:

Quality Assurance Report (Continued)

Maxxam Job Number: EA938820

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3309062	WW1	BLANK	Ethyl ether	2009/07/29	<0.00040		mg/kg	
			4-Methyl-2-pentanone (MIBK)	2009/07/29	<0.025		mg/kg	
			2-Nitropropane	2009/07/29	<0.25		mg/kg	
			Tetrachloroethene	2009/07/29	<0.00040		mg/kg	
			Toluene	2009/07/29	<0.00040		mg/kg	
			1,1,1-trichloroethane	2009/07/29	<0.00040		mg/kg	
			1,1,2-trichloroethane	2009/07/29	<0.00040		mg/kg	
			Trichloroethene	2009/07/29	<0.00040		mg/kg	
			m & p-Xylene	2009/07/29	<0.00080		mg/kg	
			o-Xylene	2009/07/29	<0.00040		mg/kg	
		RPD [P95487-01]	Benzene	2009/07/29	NC		%	40
			2-Butanone (MEK)	2009/07/29	NC		%	40
			Carbon disulfide	2009/07/29	NC		%	40
			Carbon tetrachloride	2009/07/29	NC		%	40
			Chlorobenzene	2009/07/29	NC		%	40
			Dichloromethane	2009/07/29	NC		%	40
			Cyclohexanone	2009/07/29	NC		%	40
			Ethyl acetate	2009/07/29	NC		%	40
			Ethylbenzene	2009/07/29	NC		%	40
			Ethyl ether	2009/07/29	NC		%	40
			4-Methyl-2-pentanone (MIBK)	2009/07/29	NC		%	40
			2-Nitropropane	2009/07/29	NC		%	40
			Tetrachloroethene	2009/07/29	NC		%	40
			Toluene	2009/07/29	NC		%	40
			1,1,1-trichloroethane	2009/07/29	NC		%	40
			1,1,2-trichloroethane	2009/07/29	NC		%	40
			Trichloroethene	2009/07/29	NC		%	40
			m & p-Xylene	2009/07/29	NC		%	40
			o-Xylene	2009/07/29	NC		%	40
3309462	MKA	MATRIX SPIKE	Dissolved Sulphate (SO4)	2009/07/29		NC	%	80 - 120
		SPIKE	Dissolved Sulphate (SO4)	2009/07/29		102	%	80 - 120
		BLANK	Dissolved Sulphate (SO4)	2009/07/29	<1		mg/L	
		RPD	Dissolved Sulphate (SO4)	2009/07/29	5.0 (2)		%	20
3309464	MKA	MATRIX SPIKE	Dissolved Chloride (Cl)	2009/07/29		106	%	80 - 120
		SPIKE	Dissolved Chloride (Cl)	2009/07/29		103	%	80 - 120
		BLANK	Dissolved Chloride (Cl)	2009/07/29	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2009/07/29	1		%	20
3309524	MKA	MATRIX SPIKE	Dissolved Sulphate (SO4)	2009/07/29		N/C	%	80 - 120
		SPIKE	Dissolved Sulphate (SO4)	2009/07/29		104	%	80 - 120
		BLANK	Dissolved Sulphate (SO4)	2009/07/29	<1		mg/L	
		RPD	Dissolved Sulphate (SO4)	2009/07/29	0.2 (2)		%	20
3309528	MKA	MATRIX SPIKE	Dissolved Chloride (Cl)	2009/07/29		107	%	80 - 120
		SPIKE	Dissolved Chloride (Cl)	2009/07/29		102	%	80 - 120
		BLANK	Dissolved Chloride (Cl)	2009/07/29	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2009/07/29	0.3		%	20
3309578	JQ	Calibration Check	Dissolved Nitrate (N)	2009/07/29		100	%	80 - 120
			Dissolved Nitrite (N)	2009/07/29		97	%	80 - 120
		MATRIX SPIKE	Dissolved Nitrate (N)	2009/07/29		101	%	80 - 120
			Dissolved Nitrite (N)	2009/07/29		98	%	80 - 120
		BLANK	Dissolved Nitrate (N)	2009/07/29	<0.003		mg/L	
			Dissolved Nitrite (N)	2009/07/29	<0.003		mg/L	
		RPD	Dissolved Nitrate (N)	2009/07/29	1		%	20
			Dissolved Nitrite (N)	2009/07/29	NC		%	20
3309579	RW3	MATRIX SPIKE	Total Suspended Solids	2009/07/29		100	%	80 - 120
		SPIKE	Total Suspended Solids	2009/07/29		97	%	80 - 120

QUANTUM ENVIRONMENTAL GROUP
Attention: GAVIN DOMITTER
Client Project #:
P.O. #:
Site Reference:

Quality Assurance Report (Continued)

Maxxam Job Number: EA938820

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3309579	RW3	BLANK	Total Suspended Solids	2009/07/29	<1		mg/L	
		RPD	Total Suspended Solids	2009/07/29	NC (1)		%	20
3310365	AR6	SPIKE	F4SG (Heavy Hydrocarbons-Grav.)	2009/07/29		106	%	70 - 130
		BLANK	F4SG (Heavy Hydrocarbons-Grav.)	2009/07/29	<500		mg/kg	
		RPD	F4SG (Heavy Hydrocarbons-Grav.)	2009/07/29	20.6		%	50
3310443	SB8	Calibration Check	pH	2009/07/29		101	%	97 - 103
		RPD	pH	2009/07/29	0.7		%	5
3311547	KB9	MATRIX SPIKE	Total Ammonia (N)	2009/07/29		93	%	80 - 120
		SPIKE	Total Ammonia (N)	2009/07/29		107	%	86 - 110
		BLANK	Total Ammonia (N)	2009/07/29	<0.05		mg/L	
		RPD	Total Ammonia (N)	2009/07/29	NC		%	20
3311552	JA6	BLANK	E.Coli DST	2009/07/29	<1		mpn/100mL	
			Total Coliforms DST	2009/07/29	<1		mpn/100mL	
3322222	HW	Calibration Check	Biochemical Oxygen Demand	2009/08/01		95	%	81 - 119
		BLANK	Biochemical Oxygen Demand	2009/08/01	<2		mg/L	
3322227	HW	Calibration Check	Biochemical Oxygen Demand	2009/08/02		98	%	81 - 119
		BLANK	Biochemical Oxygen Demand	2009/08/02	<2		mg/L	

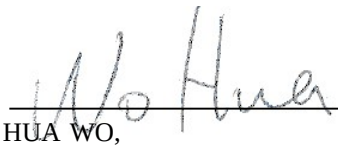
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
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.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
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.
(1) Detection limit raised based on sample volume used for analysis.
(2) Detection limits raised due to dilution to bring analyte within the calibrated range.

Validation Signature Page

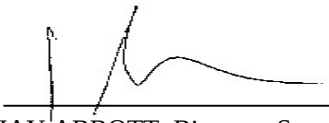
Maxxam Job #: A938820

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

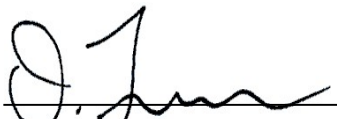
DIANE ZACHARKIW, Scientific Specialist



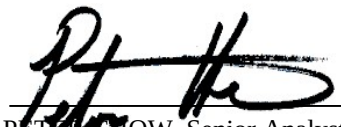
HUA WO,



JAY ABBOTT, Bioassay Supervisor



ORLA JORGENSEN, Organics Supervisor



PETER CHOW, Senior Analyst

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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. SCC and CALA have approved this reporting process and electronic report format.

321 PLEASE RUSH EMAIL RESULTS TO gdomitter@qmlp.ca

Maxxam Analytics

Calgary: 4000 19st St. NE, T2E 6P8 | Ph: (403) 291-3077 | Fax: (403) 735-2240 | Toll free: (800) 386-7247

Edmonton: 9331 – 48 Street, T6B 2R4 | Ph: (780) 465-1212 | Fax: (780) 450-4187 | Toll free: (877) 465-8889

www.maxxamanalytics.com

86424 **CHAIN OF CUSTODY**

A938820 Page: 1 of 1

Invoice To: Require Report? Yes ☑ No ☐

Company Name: Quantum Murray LP.
Contact Name: Gavin Domitter
Address: 100 - 3600 Viking Way, Richmond
Prov: BC PC:
Contact #s: Ph: (604) 314-4629 Fax: (604) 238-2236

Report To: (PLEASE EMAIL AS PER ABOVE)
AS PER INVOICE ADDRESS
Prov: PC:
Ph: Fax:

PO # / AFE #:
Quotation #:
Project #:
Project Name:
Location:
Sampler's Initials:

DETECTION LIMIT REQUIREMENTS:
Check the applicable criterion and indicate land use
☐ AT1
☐ CCME
☑ OTHER

REPORT DISTRIBUTION:
EMAIL ADDRESS(S):

SERVICE REQUESTED:
☑ RUSH (Please ensure you contact the lab to reserve)
Date Required: ASAP.
☐ REGULAR Turnaround (5 to 7 Days)

#	Sample Identification	Matrix S/W	Date & Time Sampled Year/Month/Day	Soil: Paint Filter ☒ Flashpoint ☒ pH (1:1)	Waters: Routine Water Package	Total PCB	TPH	~~[struck]~~	GC Solvent Scan (call to discuss)	pH, TSS, O&G, BOD5, coliforms	*HOLD for 60 Days	# of Containers Submitted
1	Un-named Pond	W			✓							
2	Roberts Lake	W			✓							
3	WTS Discharge Potable	W			~~MK~~					~~[struck]~~		
4	WWTS Discharge - waste water	W			~~WATS~~					~~[struck]~~		
5	Mill Surface	S	09/07/24			✓	✓					
6	Unknown #1	S	↓			✓						
7	Unknown #2	L	↓	✓					✓			
8												
9												
10												
11												
12												

SOILS (footnotes defined on back): BTEX F1-F4 | Sieve (75 micron) | Salinity 4 | Regulated Metals (CCME / AT1) | Assessment ICP Metals | ☐ Paint Filter ☒ Flashpoint ☒ pH (1:1) | TCLP ☐ BTEX ☐ Metals

WATERS (footnotes defined on back): ☐ BTEX F1 ☐ VOCs | ☐ BTEX F1-F2 ☐ BTEX F1-F4 | Routine Water Package ☐ Turb ☐ F | REGULATED METALS (CCME / AT1): Total ☐ Preserved ☐ Not Preserved; Dissolved ☐ Preserved ☐ Not Preserved ☐ Filtered ☐ Not Filtered | Mercury ☐ Total ☐ Dissolved | ☐ Ammonia ☐ TKN ☐ COD | ☐ TOC ☐ DOC

OTHER TEST(S)

*All samples are held for 60 calendar days after sample receipt. For long term storage please contact your project manager.

Maxxam Job #:

Relinquished By: [signature] Date/Time: 09/07/26 10:35 pm
Sign and Print:

COMMENTS/SPECIAL INSTRUCTIONS:

JARS USED & NOT SUBMITTED

Received By: 27/07/09 12:35h RT

CUSTODY SEAL (YES) / NO

Temperature			Ice
4	7	6	Y