MONTHLY UPDATE REPORT - PRIMROSE SOUTH
09-21-067-04 W4M

JANUARY 13, 2014

1 Introduction

The Canadian Natural Resources Limited Primrose South in situ oil sands project is located primarily in the Cold Lake Air Weapons Range approximately 65 km north-northeast of Bonnyville, Alberta. Canadian Natural operations staff discovered a flow to surface (FTS) bitumen emulsion at 09-21-067-04 W4M on June 24, 2013. The FTS area is beneath an unnamed water body within the Canadian Natural Primrose South production area.

On September 24, 2013, Alberta Environment and Sustainable Resource Development (ESRD) issued an Environmental Protection Order (EPO-2013-33/NR), requesting the preparation of a Comprehensive Remedial Plan (CRP), as well as the preparation of a monthly progress report. This report summarizes the progress towards the realization of this plan and includes data collected and reported up to December 31, 2013. The information in this report focuses on data collected since November 22, 2013.

2 Summary of Activities to Date

2.1 Individual Plan Submissions

As required by the EPO, the CRP includes the development, submission and implementation of several specific plans. The status of these plans is indicated below:

Table 1: Components of the Comprehensive Remedial Plan

Item	Plan Name	Due Date	Submission Date	Approval Date	Implementation Start Date	Completion Date	Section Discussed
1.	**Water Management Plan for Dewatering**	September 26, 2013	September 26, 2013	September 27, 2013	September 27, 2013	October 22, 2013	2.2
2.	**Water Body Monitoring Plan**	September 26, 2013	September 26, 2013	September 27, 2013	September 27, 2013	Ongoing	3.0
3.	**Erosion and Sedimentation Prevention Plan**	September 26, 2013	September 26, 2013	September 27, 2013	September 27, 2013	October 22, 2013	3.2
4.	**Phase II Environmental Assessment Plan**	October 15, 2013	October 3, 2013	October 17, 2013	January 6, 2014	Ongoing	3.3

Item	Plan Name	Due Date	Submission Date	Approval Date	Implementation Start Date	Completion Date	Section Discussed
5.	**Bitumen Emulsion Delineation and Containment Plan**	October 6, 2013	October 3, 2013	October 17, 2013	October 18, 2013	Ongoing	3.4
6.	**Amphibian Salvage Plan**	September 26, 2013	September 25, 2013	September 27, 2013	September 27, 2013	October 22, 2013	Complete
7.	**Fish and Fish Habitat Assessment Plan**	September 26, 2013	September 25, 2013	September 27, 2013	September 27, 2013	October 30, 2013	Complete
8.	**Wetlands Impact Assessment Plan**	September 30, 2013	September 25, 2013	September 27, 2013	September 27, 2013	October 30, 2013	Complete
9.	**Water Body Restoration Plan**	November 30, 2013	November 27, 2013	Pending	No later than April 1, 2014	Pending	N/A
10.	**Wildlife Management Plan**	N/A	Revised Plan October 23, 2013	October 23, 2013	October 23, 2013	Pending	3.5
11.	**Waste Management Plan**	N/A	Revised Plan October 24, 2013	October 24, 2013	October 24, 2013	Pending	3.6

2.2 Water Management for Dewatering

The water body was divided in four basins as indicated on Figure 1. Basins 1, 2 and 3 were dewatered while Basin 4 is being used for water storage. Three independent pumping systems were used to pump water out of Basins 1, 2 and 3. This configuration allowed Canadian Natural to adjust pumping rates in the various basins as laid out in the approved Water Management Plan for Dewatering.

Pumping started on September 27, 2013. The volume of water pumped from each basin is presented in Appendix A. On October 22, 2013, pumping was stopped.

Between November 22 and December 31, 2013, pumping was carried out intermittently and as needed, as water seeped into Basins 1, 2 and 3 from the surrounding higher areas. All water that was intermittently pumped from the water body during this time period was stored in a tank and trucked offsite for disposal. Between November 22 and December 31, 2013, the total fluid volume (bitumen emulsion and surface water) recovered from the 9-21 FTS site and disposed of at the Tervita Corporation Lindbergh, Alberta, plant, was 334 m^3; the volume of bitumen emulsion was 3 m^3. The cumulative total fluid volume (bitumen emulsion and surface water) recovered at the 9-21 FTS site between July 15 and December 31, 2013 was 1,872 m^3 and the cumulative volume of bitumen emulsion recovered was 308 m^3.

The dewatering activities took place in accordance to the conditions specified in the Water Management Plan for Dewatering and in the Erosion and Sedimentation Prevention Plan (Table 1, Items 1 and 3).

3 Water Body Monitoring

In accordance with the Water Body Monitoring Plan (Table 1, Item 2), an extensive water quality and water quantity monitoring program was implemented on September 27, 2013. This ongoing program is tailored to the level of activity taking place at the 9-21 FTS site and complements the ongoing water quality and quantity monitoring implemented in June 2013.

3.1 Dewatering Water Quality

Weekly water sampling was ended after November 5, 2013 due to freeze-up and completion of dewatering. During the dewatering program, water quality was within *Alberta Tier 1 Soil and Groundwater Remediation Guidelines* (wildlife) at all sampling locations. Sampling locations are shown on Figure 1 and water quality results are presented in Appendix B. Water quality sampling continued through December 2013 in one shallow groundwater well.

3.1.1 Dewatering Water Quantity

The amount of water pumped from Basins 1, 2 and 3 as of December 7, 2013, was 404,378 m^3. Sporadic pumping, which was done to drain seepage into Basin 1, was discontinued after November 24, 2013, due to freezing temperatures. Monitoring locations are illustrated on Figure 2.

3.1.2 Surface Water Quality

Water quality samples were collected weekly until November 5, 2013 from surface locations indicated on Figure 3. The samples were tested to ensure water quality in the receiving environment was not affected by the dewatering operations. Water quality results are presented in Appendix C.

Water quality from Basins 1, 2, 3 and 4 of the water body and the downstream fen south of Basin 1 were within freshwater aquatic life guidelines. Hydrocarbons were not detected in any sample collected in the water body or the fen.

3.1.3 Shallow Groundwater

Shallow groundwater quality samples were collected from one shallow drive-point piezometer well (13-DP4) on November 27 and December 3, 4, 10, 11 and 17, 2013 (Figure 4). Sampling was carried out on two consecutive days on December 3 and 4 and December 10 and 11, 2013 to obtain enough water for analysis. Water quality results are presented in Appendix C.

Water quality from the shallow groundwater locations was within freshwater aquatic life guidelines. Hydrocarbons were not detected in any sample collected in the shallow groundwater locations.

3.2 Erosion and Sedimentation Prevention

The dewatering activities took place in accordance to the conditions specified in the Erosion and Sedimentation Prevention Plan (Table 1, Item 3). All erosion and sediment control structures, which were set up during the dewatering program, were removed once pumping was suspended on October 22, 2013. However, containment structures such as the aquadams located in Basin 4 and at the south end of Basin 1 will be removed in spring 2014. There were no signs of erosion or sedimentation associated with the dewatering program.

Erosion and sediment control structures are currently not required as all remedial works are being completed within the dewatered water body. Any water that was intermittently collected from the water body, after the dewatering phase was suspended on October 22, 2013, was stored in tanks and disposed offsite.

3.3 Phase II Environmental Assessment

A plan for conducting a Phase II environmental site assessment (ESA) at the site was approved on October 17, 2013 by ESRD. Assessment of soils and shallow groundwater will be carried out in January 2014 when the bottom sediments are completely frozen to allow access, and once fissures have been delineated and bitumen seepage contained. Drilling to investigate soil stratigraphy and to establish geotechnical characteristics in Basin 2, to aid in the foundation design for the Temporary Workspace Containment Structure, was initiated in mid-December 2013. Soil information from this program will also be used in as part of the Phase II ESA. The shallow drilling in December 2013 was undertaken as part of the Bitumen Emulsion Delineation and Containment Plan. (Table 1, Item 4).

3.4 Bitumen Emulsion Delineation and Containment

3.4.1 Identification and Characterization of Release Point for Bitumen Flow to Surface

From November 22 to December 31, 2013, the following activities were carried out as part of the plan to identify and characterize the bitumen emulsion release point:

- A combination of ARGOs, snowmobiles and Sno-Cat® vehicles were used around Basins 1, 2 and 3 of the water body to compact the snow cover, driving the frost deeper to increase ice thickness, thus allowing access for larger equipment. Testing of ice thickness was undertaken daily in November and early December 2013 to confirm heavy equipment could safely access the excavation area.

- Excavation at the western shore of the water body, in the area of the suspected fissures, continued to December 20, 2013, when activities were halted for the holiday season. Two fissures were exposed in mineral soil (Figure 5). Fissure 1 is 19 m long and located entirely on the shore area immediately west of Basin 2. Fissure 2 is 105 m long and located within Basin 2. Fissure 2 splits into three short branches at its northeastern end. Further excavation north and south of Fissure 1 has not identified the presence of additional fissures, suggesting that Fissure 1 has been fully exposed and delineated. The southwestern end of Fissure 2 was exposed and delineated; the northeastern end has not yet been fully delineated.

- Excavated material was stockpiled in containment cells for temporary storage prior to trucking to landfill. Confirmatory samples collected in a grid pattern, from the base of the area excavated between November 22 and December 31, 2013 to remove material containing bitumen emulsion and to expose the fissures, were submitted for analysis of hydrocarbons.

- Excavation of west shoreline sediments impacted with bitumen emulsion north of the fissure excavation area commenced on November 27, 2013 (Figure 5). The sediments were scraped to a depth of approximately 30 cm based on the visual observation of bitumen emulsion, and confirmatory samples were collected in a grid pattern to be tested for hydrocarbons. Excavated material was stockpiled in containment cells for temporary storage prior to trucking to landfill. The shoreline sediment excavation is ongoing.

3.4.2 Containment Structure Measures to Contain Bitumen Emulsion During Delineation

Due to frozen conditions and the slow seepage of bitumen emulsion from the fissure, the temporary containment of bitumen emulsion during fissure exposure and material excavation was not required. A plan to manage unanticipated water seepage into the excavation is in preparation; water recovered from the excavation is currently collected in depressions within the excavation, removed by vacuum truck before it freezes, and disposed at the Tervita Lindbergh disposal facility.

3.4.3 Final Design for Permanent Containment of Bitumen Emulsion

A preliminary plan for construction of a containment structure is in preparation. The structure is to be located in Basin 1 to isolate the fully exposed fissures and to provide a temporary work space for completing temporary bitumen emulsion containment berms. Drilling to determine the geotechnical quality of the mineral soils commenced on December 18, 2013 and will be completed in early January 2014. Between December 18 and 20, 2013, 19 geotechnical boreholes, between 6 and 10 m deep, were drilled around the exposed fissures.

To date, 6,360 1 m^3 sand-filled tote bags, for construction of the containment structure around the final exposed fissure, have been filled and stored at a nearby staging area. The tote bag filling program was completed on December 16, 2013.

Given the current locations and lengths of the exposed fissure, the final alignment and size of the Temporary Workspace Containment Structure will be modified from that planned in the Bitumen Emulsion Delineation and Containment Plan (Table 1, Item 5).

3.4.4 Schedule of Implementation

The specified schedule of implementation was provided in the approved Bitumen Emulsion and Delineation Plan; there have been no major deviations to date.

3.5 Wildlife Management

Wildlife management activities between November 22 and December 31, 2013 included maintaining perimeter fencing, installing and maintaining and frequently relocating wildlife scare cannons and conducting daily inspections. Large mammals are the main species of concern as most other species are not found near the site due to winter conditions.

3.6 Waste Management

Waste generated as part of the remediation program includes liquid bitumen emulsion, vegetation containing bitumen emulsion, oily absorbents, fluids and soil and sediment containing bitumen emulsion. All waste was collected in bags, bins or barrels or was trucked to lined containment cells for

temporary storage. Waste is tested to ensure that it meets landfill requirements and is suitable to transport by truck. All waste is manifested for transportation and is disposed at certified waste management facilities. Soils near waste storage areas onsite are tested prior to collection and will be assessed following completion of the remediation program.

- A total of 200, 1 m^3 tote bags were filled with impacted vegetation and solidified bitumen emulsion collected from the bottom of the drained water body. The bags were transported to the lined Tervita bins located on Pad AC-21 (Figure 1) for offsite disposal as per the Waste Management Plan (Table 1, Item 11). The Tervita bins containing the totes were transported to Tervita Edmonton between November 20 and 26, 2013.

- Two lined containment cells (Cells A and B) were constructed on Pad AC21 located south of the water body between October 27 and November 22, 2013. A third lined containment cell (Cell C) was constructed at the beginning of December 2013 at former lease 13-22 located on the east side of the water body. Cell C was constructed to hold organic and mineral soils that could not be transported to the landfill due to high water content. Soils forming the base of the cells were sampled prior to cell installation to provide baseline soil quality information. Soil temporarily stockpiled in Cells A and B continue to be transported to the landfill for disposal. Soils in Cell C will be transported to the landfill for disposal in spring 2014, after the material has been dewatered to meet landfill criteria.

- Trucks continued hauling impacted material to Tervita Bonnyville between November 23 and December 21, 2013. During that time period, 17,482 tonnes of soil were transported to the landfill. To date, a cumulative total of 19,655 tonnes of soil containing bitumen emulsion has been taken to Tervita Bonnyville. Based on the bitumen content of the soil, a cumulative total of 70 tonnes of bitumen emulsion has been removed from the site with the impacted soils.

- Daily landfill composite samples and paint filter test samples were collected from soil being trucked to landfill. All paint filter tests passed criteria.

4 Conclusions

The implementation of the CRP started on September 27, 2013 upon approval by ESRD of specific components of the plan as indicated in Table 1.

The data collected as of December 31, 2013 indicate that the dewatering of the water body took place as planned with no adverse effects observed on the hydrology and water quality in the surrounding environment.

Preparation of containment cells and infrastructure associated with the remedial excavation were constructed. Excavation of impacted soil and sediment at the western shore of the water body has been ongoing and two separate fissures were exposed; one on the foreshore and the second within the water body. The excavation of the fissures is not yet complete and scraping of impacted sediments along the shoreline is also underway.

The work is progressing as planned and the objectives as required by the EPO are being achieved within the required time frame.

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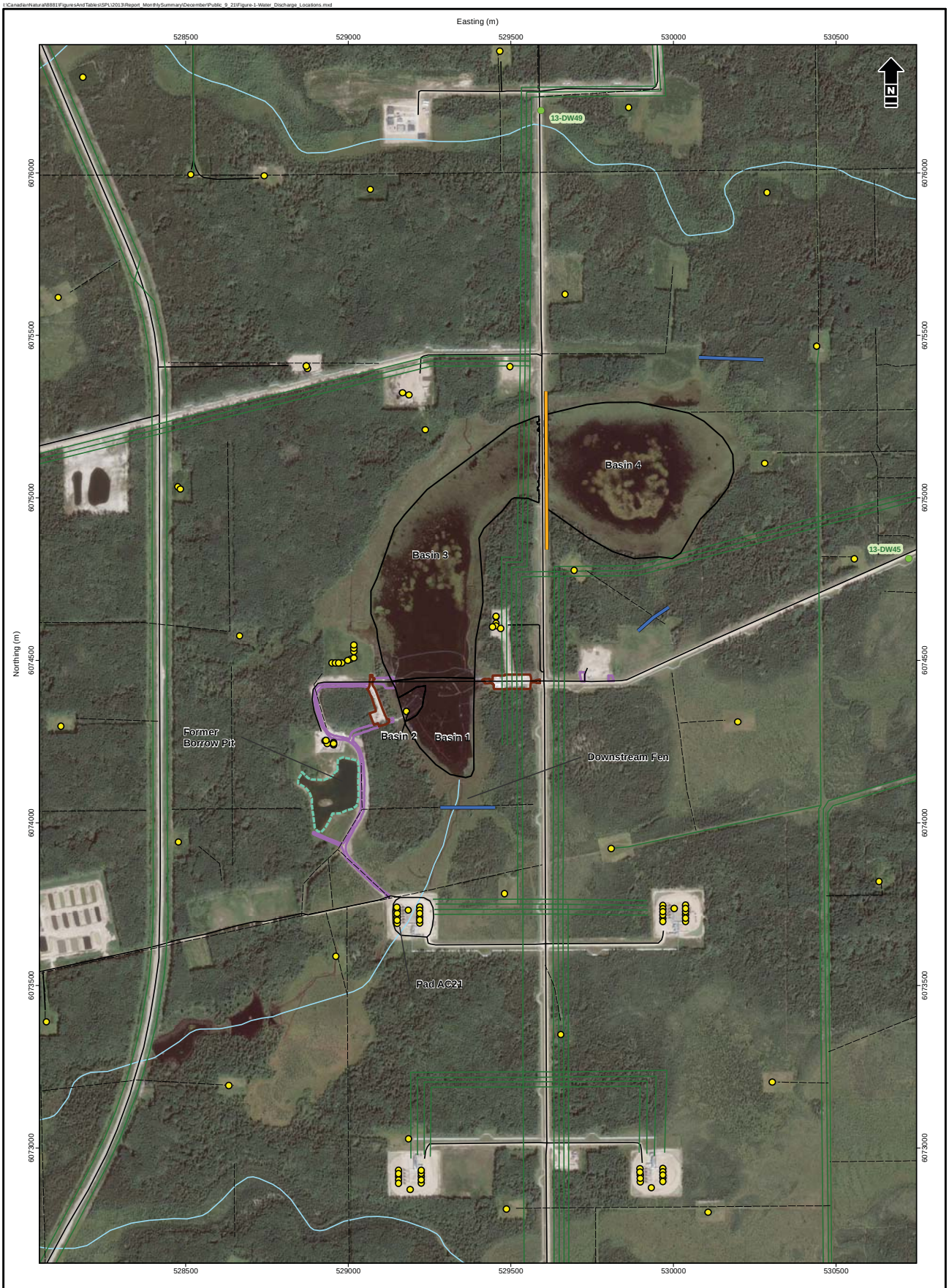

- Basin Boundary
- Old Borrow Area
- Access
- Matted Area
- Watercourse
- Aqua Dam
- Aqua Dam (Completed on October 30)
- Road
- Cut Line
- Pipeline
- Discharge Outlet Monitoring Location (Discontinued on November 12)
- Production Well

1:11,000

110 0 110 220 m

NAD 1983 UTM Zone 12N

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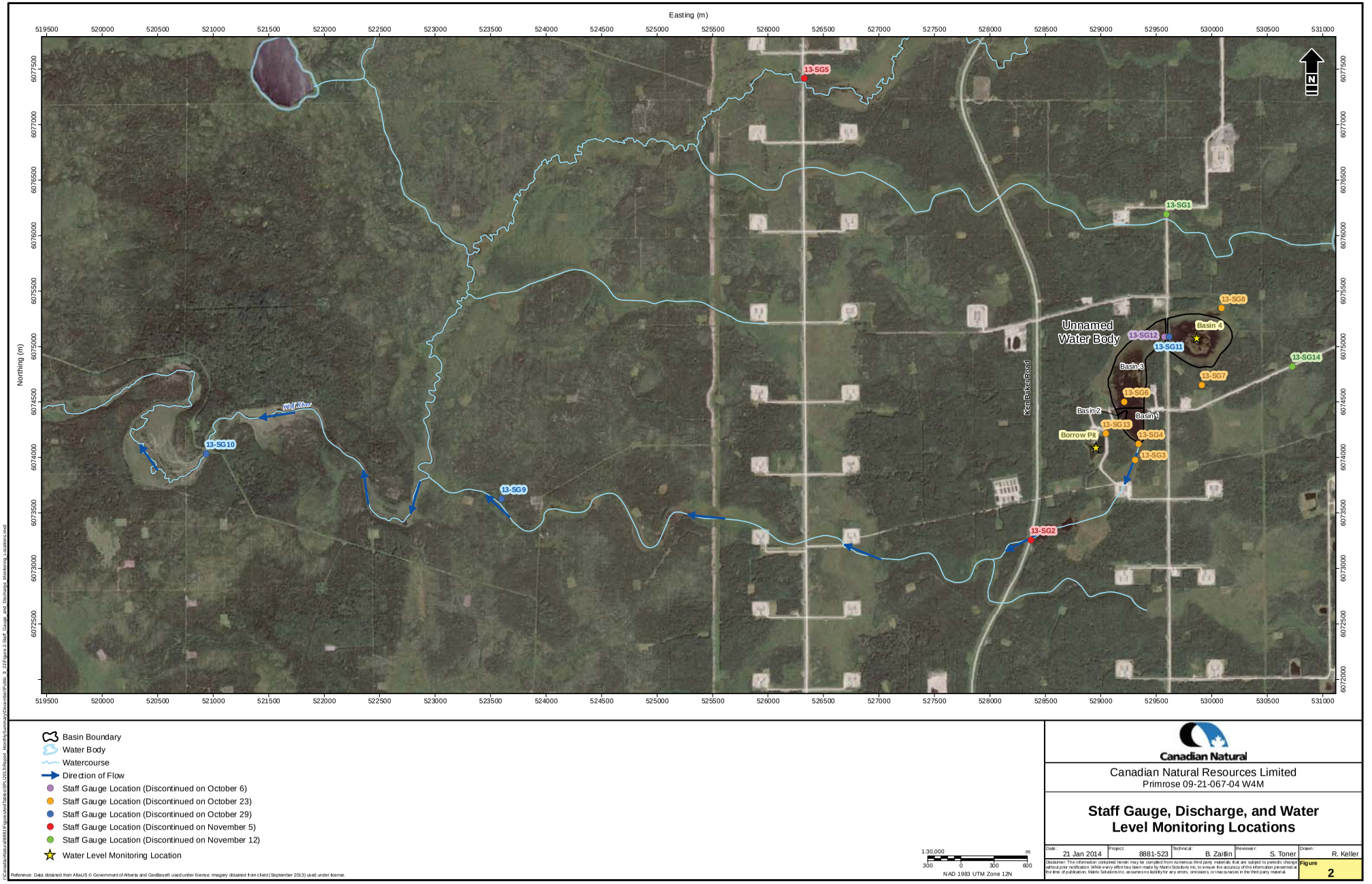
Primrose 09-21-067-04 W4M

Water Discharge Locations

Date:	Project:	Technical:	Reviewer:	Drawn:
21 Jan 2014	8881-523	B. Zaitlin	S. Toner	R. Keller

Figure 1



Basin Boundary
Water Body
Watercourse
Direction of Flow
Staff Gauge Location (Discontinued on October 6)
Staff Gauge Location (Discontinued on October 23)
Staff Gauge Location (Discontinued on October 29)
Staff Gauge Location (Discontinued on November 5)
Staff Gauge Location (Discontinued on November 12)
Water Level Monitoring Location

Reference: Data obtained from AltaLIS © Government of Alberta and GeoBase® used under license. Imagery obtained from client (September 2013) used under license.

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m
300 0 300 600
NAD 1983 UTM Zone 12N

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Primrose 09-21-067-04 W4M

Staff Gauge, Discharge, and Water Level Monitoring Locations

Date:	Project:	Technical:	Reviewer:	Drawn:
21 Jan 2014	8881-523	B. Zaitlin	S. Toner	R. Keller

Figure 2

I:\Canada\Natural\8881\Figures\ArcFiles\GIS\2013\Report Monthly\Summary\Documents\Public 9_21\Figure 2-Staff Gauge and Discharge Monitoring Locations.mxd

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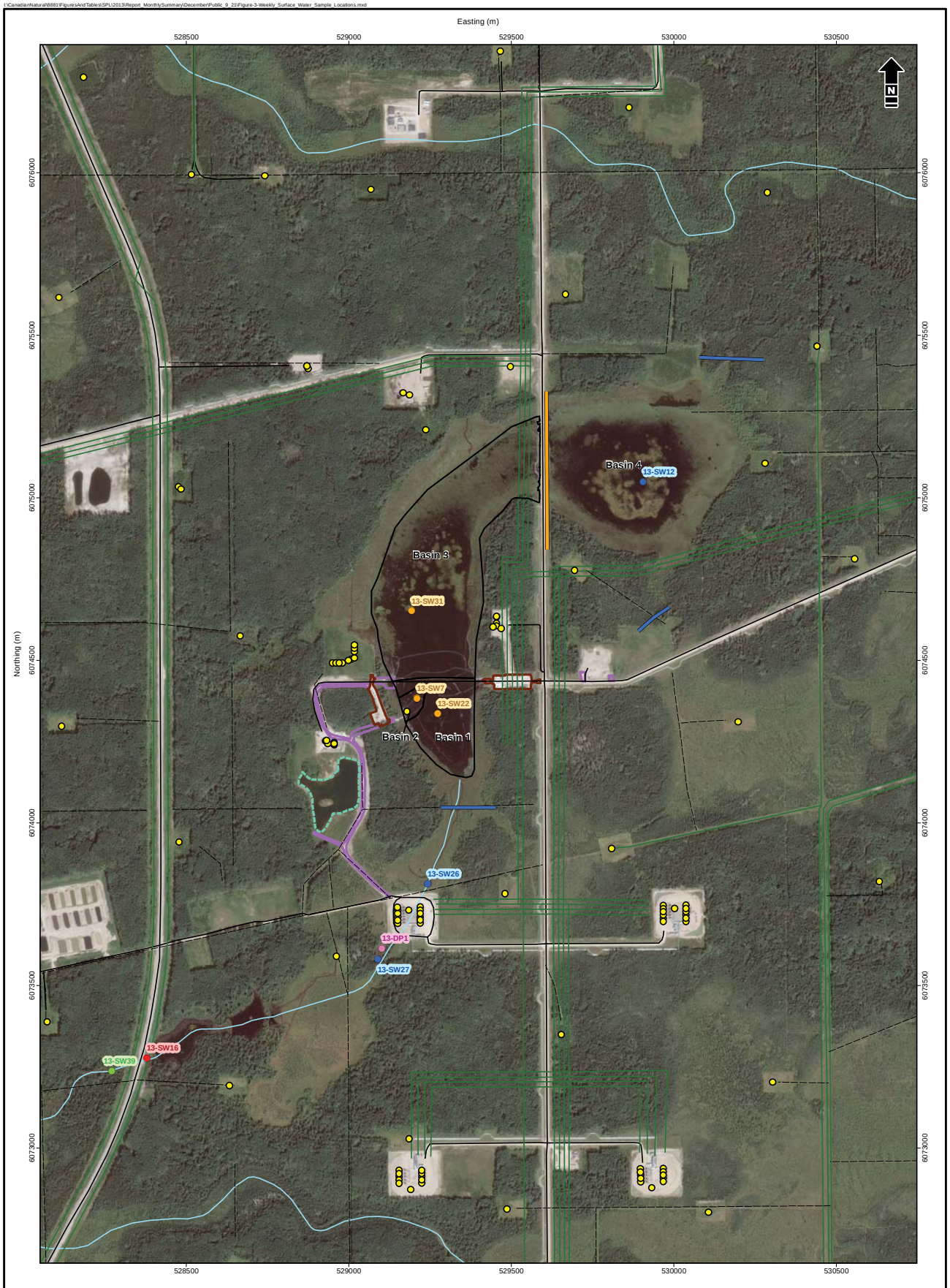

- Basin Boundary
- Old Borrow Area
- Access
- Matted Area
- Watercourse
- Aqua Dam
- Aqua Dam (Completed on October 30)
- Road
- Cut Line
- Pipeline
- Weekly Surface Water Monitoring Location (Discontinued on October 9)
- Weekly Surface Water Monitoring Location (Discontinued on October 29)
- Weekly Surface Water Monitoring Location (Discontinued on November 5)
- Weekly Surface Water Monitoring Location (Discontinued on November 12)
- Drivepoint Piezometer Sample Location (Discontinued on October 29)
- Production Well

1:11,000
110 0 110 220 m
NAD 1983 UTM Zone 12N

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Weekly Surface Water Monitoring Locations as of November 22, 2013

Date:	Project:	Technical:	Reviewer:	Drawn:
21 Jan 2014	8881-523	S. Toner	H. de Pennart	R. Keller

Figure 3

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- Basin Boundary
- Old Borrow Area
- Access
- Matted Area
- Watercourse
- Aqua Dam
- Aqua Dam (Completed on October 30)
- Road
- Cut Line
- Pipeline
- Drivepoint Piezometer Sample Location
- Discontinued Drivepoint Piezometer Sample Location
- Production Well

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110 0 110 220 m
NAD 1983 UTM Zone 12N

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Primrose 09-21-067-04 W4M

Weekly Drivepoint Piezometer Sample Locations

Date:	Project:	Technical:	Reviewer:	Drawn:
21 Jan 2014	8881-523	B. Zaitlin	S. Toner	R. Keller

Figure 4

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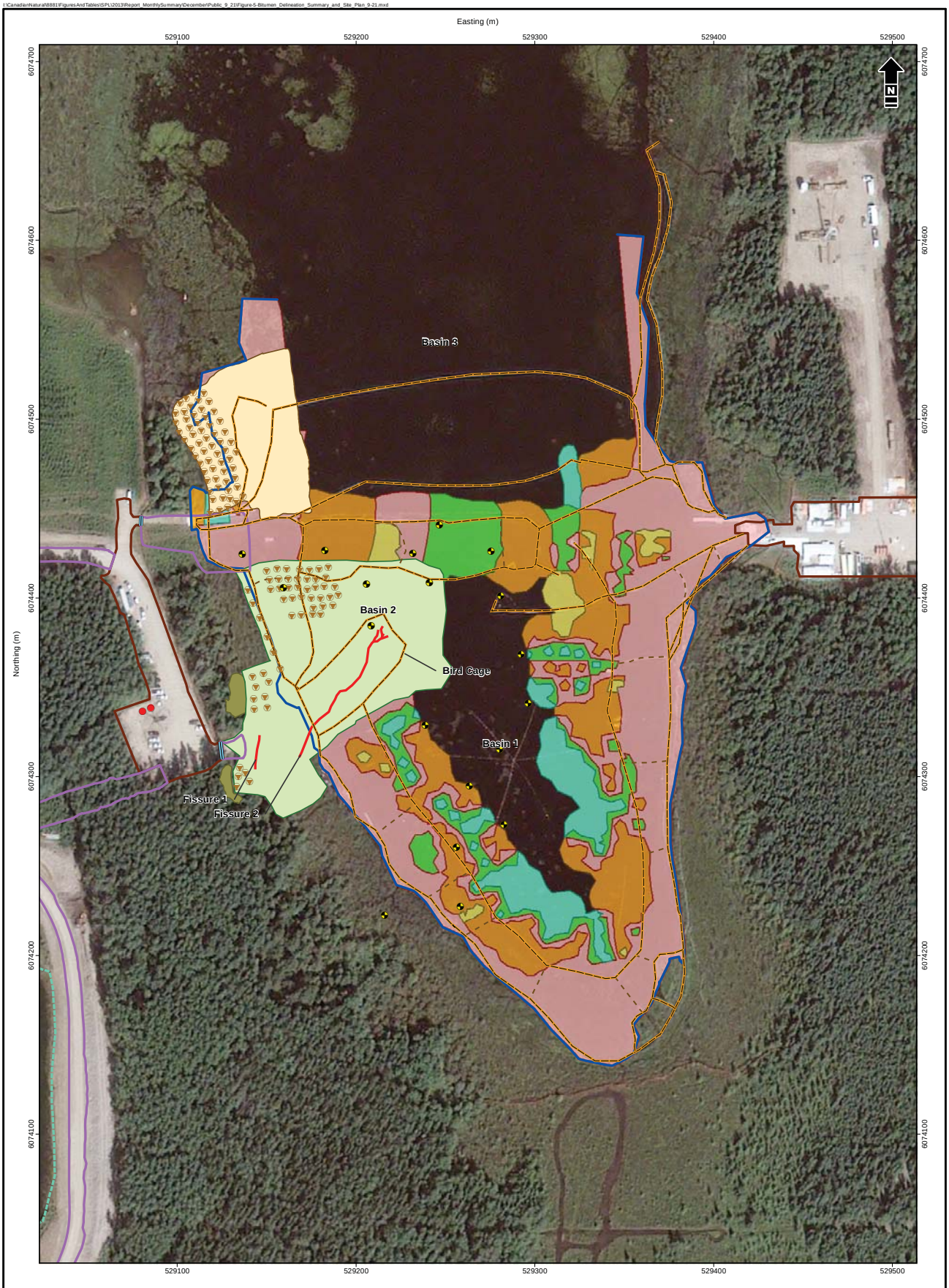

- Excavation to 30cm
- Excavation to Clay
- Potentially clean peat
- Old Borrow Area

Recommended Removal Option

- 1 - Manual Soil Removal and Full Vegetation Removal
- 2 - Manual Soil Removal and Partial Vegetation Removal
- 3 - Mechanical Soil Removal and Full Vegetation Removal
- 4 - Mechanical Soil Removal and Partial Vegetation Removal
- 5 - No Remediation Required

- Access
- Rig Matting
- Boom
- Gate
- Exposed fissure
- Silt Fence
- Edge of Bitumen Emulsion Survey Assessment

- Baseline Floor Sample
- Excavation Floor Sample
- Borehole

Excavation to 30 cm - 5,102 m^2
Excavation to Clay - 11,509 m^2

Note: Removal Option Numbers (1 through 5) are described in Table 1 and presented in Appendix A.

1:2,000
m
20 0 20 40
NAD 1983 UTM Zone 12N

Reference: Imagery obtained from client (September 2013).

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Bitumen Delineation Summary and Site Plan 9-21

Date:	Project:	Technical:	Reviewer:	Drawn:
21 Jan 2014	8881-523	A. Ward	P. Hum	R. Keller

Figure 5

APPENDIX A

DEWATERING AND WATER LEVEL DATA

Figure A-1: Water Levels in the Wolf River and Burnt Lake Drainages

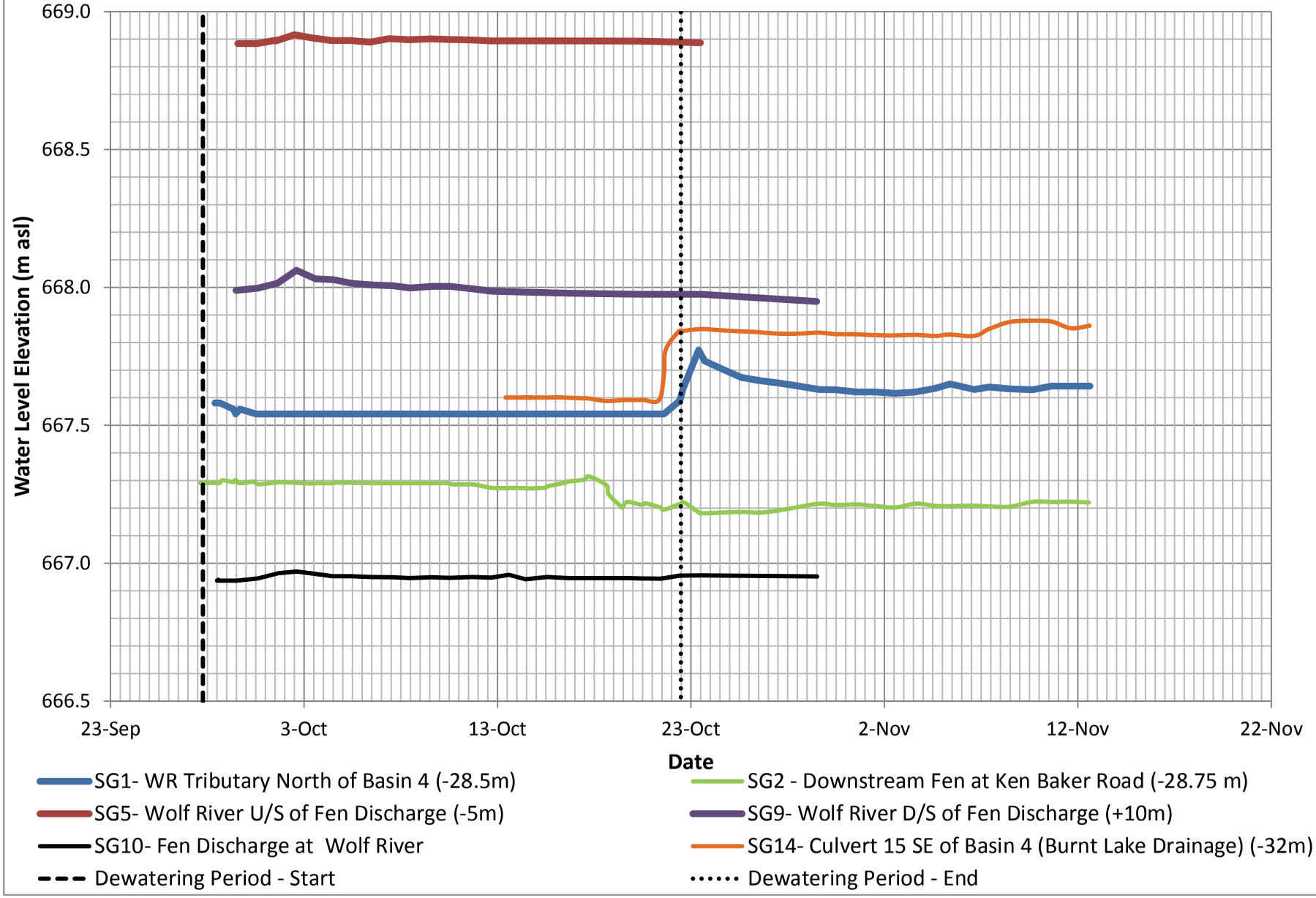

Table A-1: Daily Flow Volumes

CNRL Primrose 09-21 Water Body: Dewatering Phase

Date	Daily Total Discharge (m^3/day)	Cumulative Pumped (m^3)	Daily Total Discharge m^3/day	Cumulative Pumped (m^3)	Daily Total Discharge m^3/day	Cumulative Pumped (m^3)	Daily Volume from Water Body (m^3/day)	Cumulative Total from Water Body (m^3)
	Basin 1		Basin 2		Basin 3			
Design Rate:	**5,800**	-	**430**	-	**15,000**	-	**21,230**	
27-Sep-13	838	838	180	180	375	375	1,393	1,393
28-Sep-13	5,277	6,115	1,184	1,364	5,431	5,806	11,892	13,285
29-Sep-13	2,830	8,945	450	1,814	7,072	12,878	10,352	23,637
30-Sep-13	3,696	12,641	124	1,938	8,767	21,645	12,587	36,224
01-Oct-13	4,242	16,883	399	2,337	12,618	34,263	17,259	53,483
02-Oct-13	5,388	22,271	524	2,861	12,120	46,383	18,032	71,515
03-Oct-13	6,336	28,607	414	3,275	11,180	57,563	17,930	89,445
04-Oct-13	4,832	33,439	213	3,488	10,858	68,421	15,903	105,348
05-Oct-13	3,954	37,393	455	3,943	9,713	78,134	14,122	119,470
06-Oct-13	5,190	42,583	462	4,405	18,515	96,649	24,167	143,637
07-Oct-13	3,856	46,439	475	4,880	20,754	117,403	25,085	168,722
08-Oct-13	3,516	49,955	538	5,418	24,084	141,487	28,138	196,860
09-Oct-13	4,970	54,925	468	5,886	23,992	165,479	29,430	226,290
10-Oct-13	5,940	60,865	160	6,046	22,813	188,292	28,913	255,203
11-Oct-13	5,588	66,453	1,194	7,240	22,026	210,318	28,808	284,011
12-Oct-13	5,122	71,575	2,041	9,281	22,665	232,983	29,828	313,839
13-Oct-13	6,117	77,692	1,142	10,423	22,400	255,383	29,659	343,498
14-Oct-13	2,110	79,802	0	10,423	15,453	270,836	17,563	361,061
15-Oct-13	0	79,802	0	10,423	11,198	282,034	11,198	372,259
16-Oct-13	1,201	81,003	0	10,423	7,010	289,044	8,211	380,470
17-Oct-13	676	81,679	0	10,423	1,900	290,944	2,576	383,046
18-Oct-13	615	82,294	0	10,423	3,660	294,604	4,275	387,321
19-Oct-13	873	83,167	0	10,423	4,261	298,865	5,134	392,455
20-Oct-13	704	83,871	0	10,423	4,729	303,594	5,433	397,888
21-Oct-13	577	84,448	0	10,423	3,716	307,310	4,293	402,181
22-Oct-13	233	**84,681**	0	**10,423**	1,964	**309,274**	2,197	**404,378**

APPENDIX B

WATER QUALITY DATA – PUMPED WATER

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	27-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	---
13-DW10	Pump from Basin 1	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<2.0	---	0.66
13-DW10	Pump from Basin 1	28-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.32	<0.1	<0.2	<0.2	1.2	---	0.75
13-DW10	Pump from Basin 1	28-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.74
13-DW10	Pump from Basin 1	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.82
13-DW10	Pump from Basin 1	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.0	---	0.74
13-DW10 dup	Pump from Basin 1	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.97
13-DW10	Pump from Basin 1	28-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.95
13-DW10	Pump from Basin 1	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	4.7	1.3
13-DW10	Pump from Basin 1	28-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	1.1
13-DW10	Pump from Basin 1	28-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	3.3	1.3
13-DW10	Pump from Basin 1	28-Sep-13	23:00	---	---	---	---	---	---	---	---	---	---	---
13-DW10	Pump from Basin 1	29-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.2	<0.2	<1	---	1
13-DW10	Pump from Basin 1	29-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW10	Pump from Basin 1	29-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW10	Pump from Basin 1	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.29	<0.2	<1	---	1.3
13-DW10	Pump from Basin 1	29-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.94
13-DW10	Pump from Basin 1	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW10	Pump from Basin 1	30-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.95
13-DW10	Pump from Basin 1	30-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.77
13-DW10	Pump from Basin 1	30-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW10	Pump from Basin 1	30-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.68
13-DW10 dup	Pump from Basin 1	30-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.65
13-DW10	Pump from Basin 1	30-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW10	Pump from Basin 1	30-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.64
13-DW10	Pump from Basin 1	30-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.68
13-DW10	Pump from Basin 1	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.65
13-DW10	Pump from Basin 1	01-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.69
13-DW10	Pump from Basin 1	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW10	Pump from Basin 1	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW10	Pump from Basin 1	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.57
13-DW10	Pump from Basin 1	01-Oct-13	15:00	0.00058	0.0022	0.00055	<0.004	0.11	<0.1	<0.2	<0.2	<1	2.7	0.55
13-DW10	Pump from Basin 1	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.58
13-DW10	Pump from Basin 1	01-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW10	Pump from Basin 1	01-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	0.16	<0.1	<0.2	<0.2	<1	---	0.65
13-DW10	Pump from Basin 1	01-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.64
13-DW10	Pump from Basin 1	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.81
13-DW10	Pump from Basin 1	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW10	Pump from Basin 1	02-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.3
13-DW10	Pump from Basin 1	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW10	Pump from Basin 1	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.71
13-DW10	Pump from Basin 1	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.59
13-DW10	Pump from Basin 1	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW10	Pump from Basin 1	02-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW10	Pump from Basin 1	02-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW10 dup	Pump from Basin 1	02-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	<0.1
13-DW10	Pump from Basin 1	02-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	02-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW10	Pump from Basin 1	02-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW10	Pump from Basin 1	03-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW10	Pump from Basin 1	03-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW10 dup	Pump from Basin 1	03-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW10	Pump from Basin 1	03-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW10	Pump from Basin 1	03-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.65
13-DW10	Pump from Basin 1	03-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<1	---
13-DW10	Pump from Basin 1	03-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW10	Pump from Basin 1	03-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW10	Pump from Basin 1	03-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW10	Pump from Basin 1	03-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW10	Pump from Basin 1	03-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.57
13-DW10	Pump from Basin 1	03-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW10	Pump from Basin 1	03-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW10	Pump from Basin 1	04-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW10	Pump from Basin 1	04-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW10	Pump from Basin 1	04-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW10	Pump from Basin 1	04-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.66
13-DW10	Pump from Basin 1	04-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	0.1	<0.1	<0.2	<0.2	<1	---	0.80
13-DW10	Pump from Basin 1	04-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.78
13-DW10	Pump from Basin 1	04-Oct-13	11:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	2	2
13-DW10	Pump from Basin 1	04-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW10	Pump from Basin 1	04-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.94
13-DW10	Pump from Basin 1	04-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.84
13-DW10	Pump from Basin 1	04-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.74
13-DW10	Pump from Basin 1	04-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.78
13-DW10	Pump from Basin 1	04-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW10	Pump from Basin 1	04-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW10	Pump from Basin 1	05-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.79
13-DW10	Pump from Basin 1	05-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.85
13-DW10	Pump from Basin 1	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW10	Pump from Basin 1	05-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.73
13-DW10	Pump from Basin 1	05-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	2	1.9
13-DW10	Pump from Basin 1	05-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.8
13-DW10 dup	Pump from Basin 1	05-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.73
13-DW10	Pump from Basin 1	05-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.14	<0.1	0.28	<0.2	<1	---	0.58
13-DW10	Pump from Basin 1	05-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	0.56	<1	---	0.52
13-DW10	Pump from Basin 1	05-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.58
13-DW10	Pump from Basin 1	05-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	1.3	0.63
13-DW10	Pump from Basin 1	05-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.7
13-DW10	Pump from Basin 1	05-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW10	Pump from Basin 1	05-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW10	Pump from Basin 1	06-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW10	Pump from Basin 1	06-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW10	Pump from Basin 1	06-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.49
13-DW10	Pump from Basin 1	06-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.32	<0.2	<1	1.3	0.47
13-DW10	Pump from Basin 1	06-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<2	0.9
13-DW10	Pump from Basin 1	06-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.32	<0.2	<1	---	0.51
13-DW10	Pump from Basin 1	06-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW10	Pump from Basin 1	06-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW10	Pump from Basin 1	06-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	<0.1
13-DW10	Pump from Basin 1	06-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
13-DW10	Pump from Basin 1	06-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	4	0.64
13-DW10	Pump from Basin 1	06-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.68
13-DW10	Pump from Basin 1	06-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.83
13-DW10	Pump from Basin 1	06-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 $^{TT}C_6$-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	07-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	<0.2	<0.2	1.1	---	0.69
13-DW10 dup	Pump from Basin 1	07-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	0.22	<0.2	1.2	---	0.64
13-DW10	Pump from Basin 1	07-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	<0.2	<0.2	1.1	---	0.76
13-DW10	Pump from Basin 1	07-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW10	Pump from Basin 1	07-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.23	<0.2	<1	2	0.69
13-DW10	Pump from Basin 1	07-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.86
13-DW10	Pump from Basin 1	07-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.68
13-DW10	Pump from Basin 1	07-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.2	<0.2	1.4	---	0.9
13-DW10	Pump from Basin 1	07-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.74
13-DW10	Pump from Basin 1	07-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.63
13-DW10	Pump from Basin 1	07-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<2	0.8
13-DW10	Pump from Basin 1	08-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	1.3	0.83
13-DW10	Pump from Basin 1	08-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<1	2.4
13-DW10	Pump from Basin 1	08-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	0.16	<0.1	<0.2	<0.2	1.1	---	0.81
13-DW10	Pump from Basin 1	08-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	<0.2	<0.2	1.2	---	0.81
13-DW10	Pump from Basin 1	09-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.81
13-DW10 dup	Pump from Basin 1	09-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.84
13-DW10	Pump from Basin 1	09-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.88
13-DW10	Pump from Basin 1	09-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	1.3
13-DW10	Pump from Basin 1	09-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	<1	0.55
13-DW10	Pump from Basin 1	09-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<1	1.4
13-DW10	Pump from Basin 1	09-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.78
13-DW10	Pump from Basin 1	09-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.81
13-DW10	Pump from Basin 1	09-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.95
13-DW10	Pump from Basin 1	09-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW10	Pump from Basin 1	09-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.87
13-DW10	Pump from Basin 1	10-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.34	0.23	1.1	---	0.9
13-DW10	Pump from Basin 1	10-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.88
13-DW10	Pump from Basin 1	10-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW10	Pump from Basin 1	10-Oct-13	5:00	---	---	---	---	---	---	---	---	1.1	---	0.82
13-DW10	Pump from Basin 1	10-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	0.2	0.23	1	<1	0.85
13-DW10	Pump from Basin 1	10-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<2	0.9
13-DW10	Pump from Basin 1	10-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.76
13-DW10	Pump from Basin 1	10-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	0.22	<0.2	<1	---	0.86
13-DW10	Pump from Basin 1	10-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	0.24	<0.2	1	---	0.78
13-DW10	Pump from Basin 1	10-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	<1	0.8
13-DW10	Pump from Basin 1	10-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.27	<0.2	1.2	---	0.72
13-DW10	Pump from Basin 1	10-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	1
13-DW10	Pump from Basin 1	10-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.77
13-DW10	Pump from Basin 1	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.68
13-DW10	Pump from Basin 1	11-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.77
13-DW10	Pump from Basin 1	11-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	0.2	<0.2	1.3	---	0.65
13-DW10	Pump from Basin 1	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	<0.2	<0.2	1.3	---	0.66
13-DW10	Pump from Basin 1	11-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.32	0.23	1.1	2	0.67
13-DW10	Pump from Basin 1	11-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.7	<1	1.3
13-DW10	Pump from Basin 1	11-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.2	0.38	0.26	1.3	---	0.67
13-DW10	Pump from Basin 1	11-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.21	<0.2	1.3	---	0.67
13-DW10 dup	Pump from Basin 1	11-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.2	<0.2	1.3	---	0.61
13-DW10	Pump from Basin 1	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	0.65	<0.1	<0.2	<0.2	<1	1.3	0.59
13-DW10	Pump from Basin 1	11-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.63	<0.1	<0.2	<0.2	1.2	---	0.63
13-DW10	Pump from Basin 1	11-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	0.47	<0.1	<0.2	<0.2	<1	---	0.82
13-DW10	Pump from Basin 1	11-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.61
13-DW10	Pump from Basin 1	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.7
13-DW10	Pump from Basin 1	12-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.62
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 $^{TT}C_6$-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	12-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.23	<0.2	1	---	0.86
13-DW10 dup	Pump from Basin 1	12-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.19	0.35	0.21	<1	---	0.85
13-DW10	Pump from Basin 1	12-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	1.1	---	0.69
13-DW10	Pump from Basin 1	12-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.45	0.19	0.37	0.25	1.1	<1	1
13-DW10	Pump from Basin 1	12-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.9	<2	1.2
13-DW10	Pump from Basin 1	12-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.2	0.45	0.32	1.1	---	1
13-DW10	Pump from Basin 1	12-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.48	<0.2	<1	<1	0.7
13-DW10	Pump from Basin 1	12-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.92
13-DW10	Pump from Basin 1	12-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW10	Pump from Basin 1	12-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.72
13-DW10	Pump from Basin 1	13-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW10 dup	Pump from Basin 1	13-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.83
13-DW10	Pump from Basin 1	13-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW10	Pump from Basin 1	13-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW10	Pump from Basin 1	13-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.81
13-DW10	Pump from Basin 1	13-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.72
13-DW10	Pump from Basin 1	13-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW10	Pump from Basin 1	13-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.99
13-DW10	Pump from Basin 1	14-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.67
13-DW10A	Basin 1 Discharge into Storage Tank	25-Oct-13	14:51	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	0.39	<0.2	1.6	4	5.5
13-DW11	E Overland discharge from Basin 1	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	3.3	0.78
13-DW11	E Overland discharge from Basin 1	29-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.27	<0.2	<1	<1	0.65
13-DW11	E Overland discharge from Basin 1	30-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.69
13-DW11	E Overland discharge from Basin 1	30-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.65
13-DW11	E Overland discharge from Basin 1	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.49
13-DW11	E Overland discharge from Basin 1	01-Oct-13	15:00	0.00043	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW11	E Overland discharge from Basin 1	01-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW11	E Overland discharge from Basin 1	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.57
13-DW12	W Overland discharge from Basin 1	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	<1	0.87
13-DW12	W Overland discharge from Basin 1	29-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.63
13-DW12	W Overland discharge from Basin 1	30-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.7
13-DW12	W Overland discharge from Basin 1	30-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.62
13-DW12	W Overland discharge from Basin 1	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.51
13-DW12	W Overland discharge from Basin 1	01-Oct-13	15:00	0.00055	<0.002	0.00047	<0.004	<0.1	<0.1	<0.2	<0.2	<1	3.3	0.5
13-DW12	W Overland discharge from Basin 1	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.55
13-DW20	Pump from Basin 2	28-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.2	<0.2	<2.0	---	0.68
13-DW20	Pump from Basin 2	28-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.68
13-DW20	Pump from Basin 2	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	<0.2	<0.2	<2.0	---	0.63
13-DW20	Pump from Basin 2	28-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	---	0.61
13-DW20	Pump from Basin 2	28-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	0.1	<0.1	<0.2	<0.2	<1	2	0.63
13-DW20	Pump from Basin 2	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.67
13-DW20	Pump from Basin 2	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.2	<0.2	1.1	---	0.63
13-DW20	Pump from Basin 2	28-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.64
13-DW20	Pump from Basin 2	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	2	0.66
13-DW20	Pump from Basin 2	28-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	3.3	0.71
13-DW20	Pump from Basin 2	28-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	1.3	0.57
13-DW20	Pump from Basin 2	28-Sep-13	23:00	---	---	---	---	---	---	---	---	---	---	---
13-DW20	Pump from Basin 2	29-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW20	Pump from Basin 2	29-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	0.35	<0.1	<0.2	<0.2	<1	---	0.74
13-DW20	Pump from Basin 2	29-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.73
13-DW20	Pump from Basin 2	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	0.22	<0.2	<1	---	0.67
13-DW20	Pump from Basin 2	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW20	Pump from Basin 2	30-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.88
13-DW20	Pump from Basin 2	30-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.61
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 $^{TT}C_6$-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW20	Pump from Basin 2	30-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.58
13-DW20	Pump from Basin 2	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.53
13-DW20	Pump from Basin 2	01-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	1.1
13-DW20	Pump from Basin 2	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW20 dup	Pump from Basin 2	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	3.3	0.65
13-DW20	Pump from Basin 2	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.48	<0.1	<0.2	<0.2	1.1	---	0.58
13-DW20	Pump from Basin 2	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.70
13-DW20	Pump from Basin 2	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	4	0.64
13-DW20	Pump from Basin 2	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.92
13-DW20	Pump from Basin 2	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.65
13-DW20	Pump from Basin 2	01-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW20	Pump from Basin 2	01-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.61
13-DW20	Pump from Basin 2	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW20	Pump from Basin 2	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW20	Pump from Basin 2	02-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW20	Pump from Basin 2	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW20	Pump from Basin 2	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.68
13-DW20	Pump from Basin 2	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.64
13-DW20	Pump from Basin 2	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.71
13-DW20	Pump from Basin 2	02-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.63
13-DW20	Pump from Basin 2	03-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	<0.2	0.4	<1	<1	0.58
13-DW20	Pump from Basin 2	03-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.6
13-DW20	Pump from Basin 2	04-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	47	12
13-DW20	Pump from Basin 2	05-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.27	<0.2	---	---	---
13-DW20	Pump from Basin 2	05-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.27	<0.2	1.2	2.7	1.9
13-DW20	Pump from Basin 2	06-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.21	<0.2	<1	2.7	0.85
13-DW20	Pump from Basin 2	07-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	1.3	0.83
13-DW20	Pump from Basin 2	08-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	<1	0.53
13-DW20	Pump from Basin 2	08-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.32	<0.2	1.1	<1	0.6
13-DW20	Pump from Basin 2	09-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	<1	0.64
13-DW20	Pump from Basin 2	09-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	<1	0.62
13-DW20	Pump from Basin 2	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.77
13-DW20	Pump from Basin 2	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	0.98	0.1	0.22	<0.2	1.3	---	2.9
13-DW20	Pump from Basin 2	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	2	0.77
13-DW20	Pump from Basin 2	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	0.98	0.1	0.22	<0.2	1.3	12	2.9
13-DW20	Pump from Basin 2	12-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	1	1.3	1.1
13-DW20	Pump from Basin 2	12-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.23	0.7	<0.2	1.2	6.7	6.8
13-DW20	Pump from Basin 2	13-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	1.6	5.2	2.1	<1	7.3	0.97
13-DW21	Basin 2 Discharge Line before Filtration	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.12	0.11	<0.2	<0.2	<1	<1	0.65
13-DW21	Basin 2 Discharge Line before Filtration	28-Sep-13	23:00	---	---	---	---	---	---	---	---	---	---	---
13-DW21	Basin 2 Discharge Line before Filtration	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	<0.2	<0.2	2.7	72	22
13-DW21	Basin 2 Discharge Line before Filtration	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW21	Basin 2 Discharge Line before Filtration	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.9	---	13
13-DW21	Basin 2 Discharge Line before Filtration	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.3
13-DW21	Basin 2 Discharge Line before Filtration	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.73
13-DW21	Basin 2 Discharge Line before Filtration	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW21	Basin 2 Discharge Line before Filtration	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW21	Basin 2 Discharge Line before Filtration	06-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.22	<0.2	<1	1.3	1.1
13-DW21	Basin 2 Discharge Line before Filtration	07-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.59
13-DW21	Basin 1 Discharge Line before Filtration	14-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.35	0.34	---	---	---
13-DW21	Basin 1 Discharge Line before Filtration	17-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	4	0.93
13-DW21	Basin 1 Discharge Line before Filtration	17-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	<1	0.97
13-DW21	Basin 1 Discharge Line before Filtration	18-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.5	<1	0.78
13-DW21	Basin 1 Discharge Line before Filtration	19-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.89	0.23	1.4	2	1.4
13-DW21	Basin 1 Discharge Line before Filtration	19-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.24	<0.2	1.5	11	5.4
13-DW21	Basin 1 Discharge Line before Filtration	20-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	---	---	---	---	---	---
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 $^{TT}C_6$-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW21a	Basin 1 Discharge Line before Filtration	21-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	---	---	---	---	---	---
13-DW21a	Basin 1 Discharge Line before Filtration	21-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	19	5.3
13-DW22	Basin 2 Discharge Line after Filtration	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.19	0.13	<0.2	<0.2	<1	2	0.58
13-DW22	Basin 2 Discharge Line after Filtration	28-Sep-13	23:00	---	---	---	---	---	---	---	---	---	---	---
13-DW22	Basin 2 Discharge Line after Filtration	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	<1	0.66
13-DW22	Basin 2 Discharge Line after Filtration	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW22	Basin 2 Discharge Line after Filtration	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	3.8
13-DW22	Basin 2 Discharge Line after Filtration	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	2.3
13-DW22	Basin 2 Discharge Line after Filtration	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW22	Basin 2 Discharge Line after Filtration	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW22	Basin 2 Discharge Line after Filtration	14-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.25	<0.2	---	---	---
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.29	<0.2	9.4	---	2.7
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	2.7	---	1.10
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.65
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.17	<0.1	<0.2	<0.2	1.3	---	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	3.3	0.55
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.67
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.69
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.47
13-DW23 dup	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	0.14	<0.1	<0.2	<0.2	<1	---	0.47
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.49
13-DW23	Basin 2 Discharge Line after Carbon Treatment	30-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.84
13-DW23	Basin 2 Discharge Line after Carbon Treatment	30-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.63
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.84
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.84
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.83
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.1	<0.1	<0.2	<0.2	<1	---	0.93
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.95
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.97
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.98
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.77
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.93
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.7
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.98
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.84
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW23 dup	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.82
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.77
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.86
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.93
13-DW23	Basin 2 Discharge Line after Carbon Treatment	04-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.84
13-DW23	Basin 2 Discharge Line after Carbon Treatment	04-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.83
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.72
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 $^{TT}C_6$-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	11:00	---	---	---	---	---	---	---	---	<1	1.3	2.2
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.3
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.75
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.22	<0.2	<1	<1	0.88
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.9
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	2
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.91
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.77
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	<1	0.98
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	<1	0.89
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	1.6
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.77
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	1.3	1.1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.21	0.24	<1	<1	0.9
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	<0.2	<0.2	1.1	<1	0.81
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	<1	0.86
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.95
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	<1	0.82
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	<1	0.81
13-DW23	Basin 2 Discharge Line after Carbon Treatment	10-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.7
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	0.22	<0.2	<1	<1	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.99
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.22	<0.2	1.1	---	0.72
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	1.3	<0.1	<0.2	<0.2	<1	---	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	0.22	<0.2	<1	---	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	2	0.99
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.22	<0.2	1.1	1.3	0.72
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	1.3	<0.1	<0.2	<0.2	<1	1.3	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.25	<0.2	1	<1	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	<1	0.93
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.33	0.25	1.3	1.3	6.9
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.27	<0.2	<1	<1	1.7
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.74
13-DW23	Basin 2 Discharge Line after Carbon Treatment	13-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.3
13-DW23	Basin 2 Discharge Line after Carbon Treatment	13-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	3.3	0.77
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.98
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.74
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.86
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	<0.27	<0.36	<1	---	0.47
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.2	<0.26	<1	---	0.82
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.81
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.78
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.69
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.79
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	1.4
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<1	2.5
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	16-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	2.9
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	16-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	16-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	2
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	16-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.2
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	2
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	1.6
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	<1	1.1
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	<1	1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	1.1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	<1	0.84
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	---	1.5
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.5	<1	1.4
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	---	0.98
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	1.8
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.22	<0.2	1.3	<1	1.3
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.8
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.81
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.5	<1	3.1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.5	---	1.2
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.4
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	1.5
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	2.0	1.5
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	1.3
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	0.22	1.0	2.0	8.0
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	<1	7.2
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.56	<0.2	1.3	---	2.6
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	2.8
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	1.6
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	4.4
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	4.0	2.4
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	1.9
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	4.7	1.1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.18	<0.1	<0.2	<0.2	<1	---	1.6
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	22-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	2.4
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	22-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.25	<0.2	1.3	<1	2.1
13-DW25	E Overland Discharge from Basin 2	28-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	1.3	0.71
13-DW25	E Overland Discharge from Basin 2	28-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.49
13-DW25	E Overland Discharge from Basin 2	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.95
13-DW25 dup	E Overland Discharge from Basin 2	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.96
13-DW25	E Overland Discharge from Basin 2	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	1
13-DW25	E Overland Discharge from Basin 2	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.82
13-DW30	Pump from Basin 3 (North)	27-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	---
13-DW30	Pump from Basin 3 (North)	28-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.66
13-DW30 dup	Pump from Basin 3 (North)	28-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.66
13-DW30	Pump from Basin 3 (North)	28-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.67
13-DW30	Pump from Basin 3 (North)	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.66
13-DW30	Pump from Basin 3 (North)	28-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW30	Pump from Basin 3 (North)	28-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.7
13-DW30	Pump from Basin 3 (North)	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30	Pump from Basin 3 (North)	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.83
13-DW30	Pump from Basin 3 (North)	28-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30	Pump from Basin 3 (North)	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.68
13-DW30	Pump from Basin 3 (North)	28-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.9
13-DW30	Pump from Basin 3 (North)	28-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.72
13-DW30	Pump from Basin 3 (North)	28-Sep-13	23:00	---	---	---	---	---	---	---	---	<1	---	1.00
13-DW30	Pump from Basin 3 (North)	29-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.1	<0.2	<0.2	<1	---	0.99
13-DW30	Pump from Basin 3 (North)	29-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30	Pump from Basin 3 (North)	29-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.83
13-DW30	Pump from Basin 3 (North)	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.69
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30	Pump from Basin 3 (North)	29-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW30 dup	Pump from Basin 3 (North)	29-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.78
13-DW30	Pump from Basin 3 (North)	29-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.78
13-DW30	Pump from Basin 3 (North)	29-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.66
13-DW30	Pump from Basin 3 (North)	29-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW30	Pump from Basin 3 (North)	29-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	29-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.66
13-DW30	Pump from Basin 3 (North)	29-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.74
13-DW30	Pump from Basin 3 (North)	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.77
13-DW30	Pump from Basin 3 (North)	30-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.61
13-DW30	Pump from Basin 3 (North)	30-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.67
13-DW30	Pump from Basin 3 (North)	30-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.50
13-DW30	Pump from Basin 3 (North)	30-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.69
13-DW30	Pump from Basin 3 (North)	30-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.40
13-DW30	Pump from Basin 3 (North)	30-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW30	Pump from Basin 3 (North)	30-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW30	Pump from Basin 3 (North)	30-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	30-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.71
13-DW30	Pump from Basin 3 (North)	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.61
13-DW30	Pump from Basin 3 (North)	01-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30	Pump from Basin 3 (North)	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30	Pump from Basin 3 (North)	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.64
13-DW30	Pump from Basin 3 (North)	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30	Pump from Basin 3 (North)	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW30	Pump from Basin 3 (North)	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	4	1.4
13-DW30	Pump from Basin 3 (North)	01-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30	Pump from Basin 3 (North)	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30	Pump from Basin 3 (North)	01-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30	Pump from Basin 3 (North)	01-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW30	Pump from Basin 3 (North)	01-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW30	Pump from Basin 3 (North)	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	0.37	<0.1	<0.2	<0.2	<1	---	0.64
13-DW30	Pump from Basin 3 (North)	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30	Pump from Basin 3 (North)	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.1	<0.2	<0.2	<1	---	0.55
13-DW30	Pump from Basin 3 (North)	02-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.26	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30	Pump from Basin 3 (North)	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.55
13-DW30	Pump from Basin 3 (North)	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30	Pump from Basin 3 (North)	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30	Pump from Basin 3 (North)	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.53
13-DW30	Pump from Basin 3 (North)	02-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30	Pump from Basin 3 (North)	02-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW30	Pump from Basin 3 (North)	02-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30	Pump from Basin 3 (North)	02-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30	Pump from Basin 3 (North)	02-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	03-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30	Pump from Basin 3 (North)	03-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	03-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30	Pump from Basin 3 (North)	03-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.49
13-DW30	Pump from Basin 3 (North)	03-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30	Pump from Basin 3 (North)	03-Oct-13	9:00	---	---	---	---	---	---	---	---	<1	---	0.51
13-DW30	Pump from Basin 3 (North)	03-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30 dup	Pump from Basin 3 (North)	03-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	03-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30	Pump from Basin 3 (North)	03-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW30	Pump from Basin 3 (North)	03-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30	Pump from Basin 3 (North)	04-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30 dup	Pump from Basin 3 (North)	04-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.63
13-DW30	Pump from Basin 3 (North)	04-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 $^{TT}C_6$-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30	Pump from Basin 3 (North)	04-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW30	Pump from Basin 3 (North)	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	06-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30a	Pump from Basin 3 (North)	29-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.89
13-DW30a	Pump from Basin 3 (North)	29-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	1.6
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.72
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.89
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	2.7
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.18	<0.1	<0.2	<0.2	<1	1.3	1.6
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
13-DW30a dup	Pump from Basin 3 (North)	30-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.1
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.82
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.6
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.77
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.72
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.17	<0.1	<0.2	<0.2	<1	<1	1.2
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.7	1.3	0.58
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.63
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.3
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.26	<0.2	<1	---	0.48
13-DW30a	Pump from Basin 3 (North)	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30a dup	Pump from Basin 3 (North)	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.77
13-DW30a	Pump from Basin 3 (North)	06-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30a	Pump from Basin 3 (North)	07-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30a	Pump from Basin 3 (North)	13-Oct-13	15:00	---	---	---	---	---	---	---	---	<1	---	0.76
13-DW30a	Pump from Basin 3 (North)	14-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.60
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.51
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.64
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.49
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.47
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	17:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.5	<1	1.5
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.72
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	1.00
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.23	<0.2	<1	---	0.72
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.26	<0.2	<1	---	0.52
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.48
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.64
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.46
13-DW30c dup	Pump from Basin 3 (North)	06-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.46
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.51
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	17:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<2	1.00
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.49
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.49
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.2	<0.2	<1	---	0.5
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.63
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.64
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.64
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	17:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<2	0.7
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.78
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.49
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.47
13-DW30c dup	Pump from Basin 3 (North)	08-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.51
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.52
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.53
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	<1	0.59
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	0.15	<0.1	0.25	<0.2	1.1	---	0.5
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.46
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.45
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.22	0.33	0.25	<1	---	0.44
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	<1	0.59
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	17:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<1	0.6
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	<0.2	0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	<0.2	0.2	<1	---	0.58
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.21	<0.2	<1	---	0.65
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	<0.2	0.2	<1	---	0.58
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.63
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.57
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30c dup	Pump from Basin 3 (North)	09-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	<0.1
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.58
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	1.3	0.52
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	17:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.7	<1	0.8
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.50
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.64
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.32	0.21	<1	---	0.51
13-DW30c dup	Pump from Basin 3 (North)	10-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.28	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.94
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.47
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.46
13-DW30c dup	Pump from Basin 3 (North)	10-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.45
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	15:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.5	<2	0.5
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.24	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.43
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.4
13-DW30c dup	Pump from Basin 3 (North)	11-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.45
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.64
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.24	<0.2	<1	1.3	0.44
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.4
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.4
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	0.68	<0.1	<0.2	<0.2	<1	1.3	0.39
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	15:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	0.3	<0.1	0.5	<1	0.8
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.1	<0.2	<0.2	<1	---	0.43
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.84
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.26	<0.2	<1	---	0.61
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.25	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	0.28	<1	---	0.71
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.25	<0.2	<1	---	0.6
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.46	<0.1	<0.2	<0.2	<1	<1	0.69
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.2	0.42	0.26	<1	---	0.55
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30c dup	Pump from Basin 3 (North)	12-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.42
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	15:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.7	<1	0.9
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.74	0.33	<1	---	0.46
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.35
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.36
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.2	<0.2	<1	---	0.66
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.36
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.32
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<3.0	0.76
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	5:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.7	<1	1
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	<0.27	<0.36	<1	---	0.56
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	<0.2	<0.26	<1	---	0.46
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.38
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.42
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.41
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	6.7	2.5
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	0.55	<1	---	0.59
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.42
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.44
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	15:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<1	1.1
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	17:00	---	---	---	---	---	---	---	---	<1	---	0.43
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.74
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.73
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30c dup	Pump from Basin 3 (North)	15-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.45
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.19	0.37	0.22	<1	---	0.71
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.3	<0.2	<1	---	1.2
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.51
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	11:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	15	0.8
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	1.1
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.2
13-DW30c dup	Pump from Basin 3 (North)	16-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.88
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.3
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.67
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.97
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.94
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.55
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.57
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.84
13-DW30c dup	Pump from Basin 3 (North)	17-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.94
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.68
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.2
13-DW30c dup	Pump from Basin 3 (North)	18-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.79
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 $^{TT}C_6$-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.54
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.76
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.78
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.27	<0.2	<1	4	1.2
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.6	---	1.1
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.7
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c dup	Pump from Basin 3 (North)	19-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.0	1.3	0.64
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.83
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.70
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	2.7	0.50
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.93
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.50
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW30c dup	Pump from Basin 3 (North)	20-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.2
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.74
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.2
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.55
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.73
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30c dup	Pump from Basin 3 (North)	21-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.5
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.63
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.6
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.7
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	2
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	1
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.2	<0.1	<0.2	<0.2	<1	2	0.92
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	0.21	<0.1	<0.2	<0.2	<1	---	0.85
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	0.23	<0.1	<0.2	<0.2	<1	---	0.82
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	3.9
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.74
13-DW30c dup	Pump from Basin 3 (North)	22-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.69
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	47	15
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 $^{TT}C_6$-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW31	NW Overland Discharge from Basin 2	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.16	<0.1	<0.2	<0.2	<2.0	2	0.71
13-DW31	NW Overland Discharge from Basin 2	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.66
13-DW31	NW Overland Discharge from Basin 2	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.64
13-DW31	NW Overland Discharge from Basin 2	29-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.62
13-DW31	NW Overland Discharge from Basin 2	30-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.18	<0.1	<0.2	<0.2	<1	<1	0.57
13-DW31	NW Overland Discharge from Basin 2	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.25	<0.1	<0.2	<0.2	<1	6	0.51
13-DW31	NW Overland Discharge from Basin 2	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.51
13-DW31	NW Overland Discharge from Basin 2	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.6
13-DW31	NW Overland Discharge from Basin 2	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.53
13-DW31	NW Overland Discharge from Basin 2	03-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW31	NW Overland Discharge from Basin 2	07-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW32	NE Overland Discharge from Basin 2	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	2	0.74
13-DW32	NE Overland Discharge from Basin 2	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.63
13-DW32	NE Overland Discharge from Basin 2	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.64
13-DW32	NE Overland Discharge from Basin 2	29-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.58
13-DW32	NE Overland Discharge from Basin 2	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.89
13-DW32	NE Overland Discharge from Basin 2	30-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.58
13-DW32	NE Overland Discharge from Basin 2	30-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW32	NE Overland Discharge from Basin 2	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.15	<0.1	<0.2	<0.2	<1	<1	0.53
13-DW32	NE Overland Discharge from Basin 2	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW32	NE Overland Discharge from Basin 2	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.54
13-DW32	NE Overland Discharge from Basin 2	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	0.17	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW33	Outflow of North Aquadam	14-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	18	4.5
13-DW33	Outflow of North Aquadam	15-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	1.1
13-DW33	Outflow of North Aquadam	16-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	15	4.5
13-DW33a	Outflow of North Aquadam	17-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	400	45
13-DW33a	Outflow of North Aquadam	17-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	4.7	1.7
13-DW33a	Outflow of North Aquadam	18-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	37	8.9
13-DW33a	Outflow of North Aquadam	18-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	44	13
13-DW33a	Outflow of North Aquadam	19-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	19	4.2
13-DW33a	Outflow of North Aquadam	19-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	93	48
13-DW33a	Outflow of North Aquadam	20-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	6.7	5
13-DW33a	Outflow of North Aquadam	20-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	13	4.6
13-DW33a	Outflow of North Aquadam	21-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	23	18
13-DW33a	Outflow of North Aquadam	21-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	35	16
13-DW33a	Outflow of North Aquadam	22-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	17	1.9
13-DW33a	Outflow of North Aquadam	22-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	19	4
13-DW33a	Outflow of North Aquadam	23-Oct-13	1:00	<0.0004	0.00043	<0.0004	<0.00080	<0.1	<0.1	<0.2	<0.2	1.8	5.3	2.6
13-DW33a	Outflow of North Aquadam	23-Oct-13	3:00	<0.0004	<0.0004	<0.0004	<0.00080	<0.1	<0.1	<0.2	<0.2	<1	36	15
13-DW45	Culvert 15 along E-W Road (@ SG-14)	22-Oct-13	---	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	2.6	3.3	6
13-DW45	Culvert 15 along E-W Road (@ SG-14)	23-Oct-13	---	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	---	---	---	2.2	2	4.3
13-DW45	Culvert 15 along E-W Road (@ SG-14)	29-Oct-13	---	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.5	3.3	2.5
13-DW45	Culvert 15 along E-W Road (@ SG-14)	05-Nov-13	---	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	1.2	---	---
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	22-Oct-13	---	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	3.1	10	7.5
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	23-Oct-13	---	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	---	---	---	3	2	4.4
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	29-Oct-13	---	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	1.6
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	05-Nov-13	---	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
Minimal Detection Limit				**0.0004**	**0.002**	**0.0004**	**0.004**	**0.1**	**0.1**	**0.2**	**0.2**	**2**	**1**	**1**
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

Notes:

--- - not analyzed

NS - guideline not specified

* - Alberta Tier 1 Soils and Groundwater Remediation Guidelines - Surface Water Guidelines (AENV, 2010)

Italics - indicates values do not meet applicable guidelines

APPENDIX B2.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW10	Pump from Basin 1	28-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	30-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	30-Sep-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10 dup	Pump from Basin 1	30-Sep-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	01-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	01-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.011	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	02-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	03-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	03-Oct-13	7:00	<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	0.03	<0.2	<0.09	<0.2	<0.2	0.02	<0.5
13-DW10	Pump from Basin 1	03-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	04-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	04-Oct-13	11:00	<0.2	<0.2	<0.2	0.01	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	0.02	<0.2	<0.09	<0.2	<0.2	0.02	<0.5
13-DW10	Pump from Basin 1	04-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	05-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	05-Oct-13	7:00	<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	0.03	<0.2	<0.09	<0.2	<0.2	0.02	<0.5
13-DW10	Pump from Basin 1	05-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	06-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	06-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW10	Pump from Basin 1	06-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	07-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	08-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	08-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW10	Pump from Basin 1	09-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	10-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	10-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW10	Pump from Basin 1	10-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	11-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	11-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW10	Pump from Basin 1	11-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	12-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	12-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW10	Pump from Basin 1	12-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	13-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	13-Oct-13	21:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	14-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10A	Basin 1 Discharge into Storage Tank	25-Oct-13	14:51	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	0.034	<0.0075	0.011	<0.050	<0.0085	<0.10	<0.050	***0.037***	<0.20
13-DW11	E Overland discharge from Basin 1	28-Sep-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW11	E Overland discharge from Basin 1	30-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW11	E Overland discharge from Basin 1	30-Sep-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW11	E Overland discharge from Basin 1	01-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW11	E Overland discharge from Basin 1	01-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.017	<0.050	<0.0085	0.24	<0.050	<0.020	<0.20
13-DW11	E Overland discharge from Basin 1	02-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	28-Sep-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	30-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	30-Sep-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	01-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.013	<0.050	<0.0085	0.33	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	01-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.013	<0.050	<0.0085	0.23	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	02-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX B2.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW20	Pump from Basin 2	28-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.011	0.13	<0.0085	0.26	0.094	<0.020	<0.20
13-DW20	Pump from Basin 2	30-Sep-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.11	<0.0085	0.22	0.1	<0.020	<0.20
13-DW20	Pump from Basin 2	01-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.12	<0.0085	0.23	0.12	<0.020	<0.20
13-DW20	Pump from Basin 2	01-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.11	<0.0085	0.2	0.11	<0.020	<0.20
13-DW20	Pump from Basin 2	02-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.12	<0.0085	0.22	0.12	<0.020	<0.20
13-DW20	Pump from Basin 2	03-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.1	<0.0085	0.17	0.097	<0.020	<0.20
13-DW20	Pump from Basin 2	03-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.012	0.11	<0.0085	0.19	0.11	<0.020	<0.20
13-DW20	Pump from Basin 2	04-Oct-13	19:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.078	<0.0085	0.24	0.069	<0.020	<0.20
13-DW20	Pump from Basin 2	05-Oct-13	21:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.23	<0.050	***0.059***	<0.20
13-DW20	Pump from Basin 2	06-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.078	<0.0085	0.15	0.075	<0.020	<0.20
13-DW20	Pump from Basin 2	07-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.095	<0.0085	0.18	0.11	<0.020	<0.20
13-DW20	Pump from Basin 2	08-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.072	<0.0085	0.11	0.087	<0.020	<0.20
13-DW20	Pump from Basin 2	08-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.07	<0.0085	<0.10	0.068	<0.020	<0.20
13-DW20	Pump from Basin 2	09-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.076	<0.0085	0.14	0.081	<0.020	<0.20
13-DW20	Pump from Basin 2	09-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.069	<0.0085	0.13	0.074	<0.020	<0.20
13-DW20	Pump from Basin 2	11-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.088	<0.0085	0.15	0.083	<0.020	<0.20
13-DW20	Pump from Basin 2	11-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.066	<0.0085	0.13	0.067	<0.020	<0.20
13-DW20	Pump from Basin 2	12-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW20	Pump from Basin 2	12-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.063	<0.0085	0.11	0.095	<0.020	<0.20
13-DW20	Pump from Basin 2	13-Oct-13	5:00	0.15	<0.10	<0.20	***0.026***	0.0098	<0.0085	<0.0085	<0.0085	0.0095	0.033	<0.0075	0.026	0.2	<0.0085	0.25	***0.42***	***0.051***	<0.20
13-DW21	Basin 2 Discharge Line before Filtration	28-Sep-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.12	<0.0085	0.26	0.089	<0.020	<0.20
13-DW21	Basin 2 Discharge Line before Filtration	05-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.083	<0.0085	0.16	0.072	<0.020	<0.20
13-DW21	Basin 2 Discharge Line before Filtration	06-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.086	<0.0085	0.16	0.083	<0.020	<0.20
13-DW21	Basin 2 Discharge Line before Filtration	07-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.092	<0.0085	0.18	0.08	<0.020	<0.20
13-DW21	Basin 1 Discharge Line before Filtration	17-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW21	Basin 1 Discharge Line before Filtration	17-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW21	Basin 1 Discharge Line before Filtration	18-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW21	Basin 1 Discharge Line before Filtration	19-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	0.029	<0.0075	<0.010	0.088	<0.0085	0.11	0.22	***0.035***	<0.20
13-DW21	Basin 1 Discharge Line before Filtration	19-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	0.094	<0.020	<0.20
13-DW21a	Basin 1 Discharge Line before Filtration	21-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.013	<0.050	<0.0085	<0.10	0.11	<0.020	<0.20
13-DW22	Basin 2 Discharge Line after Filtration	28-Sep-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.11	<0.0085	0.23	0.079	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	11:00	<0.10	<0.10	<0.21	<0.010	<0.0089	<0.0089	<0.0089	<0.0089	<0.0078	<0.0089	<0.0078	<0.010	<0.052	<0.0089	<0.10	<0.052	<0.021	<0.21
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	04-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	04-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	04-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	5:00	<0.10	<0.10	<0.028	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX B2.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	5:00	<0.10	<0.10	<0.21	<0.010	<0.0089	<0.0089	<0.0089	<0.0089	<0.0078	<0.0089	<0.0078	<0.010	<0.052	<0.0089	<0.10	<0.052	<0.021	<0.21
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	23:00	<0.11	<0.11	<0.21	<0.011	<0.0091	<0.0091	<0.0091	<0.0091	<0.0080	<0.0091	<0.0080	<0.011	<0.053	<0.0091	<0.11	<0.053	<0.021	<0.21
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	10-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	13-Oct-13	1:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	13-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	0.2	0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	16-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	22-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25	E Overland Discharge from Basin 2	28-Sep-13	3:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25	E Overland Discharge from Basin 2	28-Sep-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25	E Overland Discharge from Basin 2	01-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25 dup	E Overland Discharge from Basin 2	01-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25	E Overland Discharge from Basin 2	02-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25	E Overland Discharge from Basin 2	02-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX B2.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW30	Pump from Basin 3 (North)	28-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	30-Sep-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	01-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	01-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	02-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	02-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	03-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	04-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	04-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	04-Oct-13	17:00	<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	<0.02	<0.2	<0.09	<0.2	<0.2	<0.02	<0.5
13-DW30C	Pump from Basin 3 (North)	05-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	06-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	06-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	06-Oct-13	17:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	17:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	15:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	15:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	15:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	11:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	0.0086	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX B2.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	28-Sep-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	30-Sep-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	01-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	01-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	02-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	02-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	28-Sep-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	30-Sep-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	01-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	01-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	02-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	02-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33	Outflow of North Aquadam	14-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33	Outflow of North Aquadam	15-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33	Outflow of North Aquadam	16-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	17-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	17-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33	Outflow of North Aquadam	18-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33	Outflow of North Aquadam	18-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	19-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	19-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	20-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	20-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	21-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	21-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	22-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	22-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	23-Oct-13	1:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	23-Oct-13	3:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW45	Culvert 15 along E-W Road (@ SG-14)	22-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW45	Culvert 15 along E-W Road (@ SG-14)	23-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW45	Culvert 15 along E-W Road (@ SG-14)	29-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW45	Culvert 15 along E-W Road (@ SG-14)	05-Nov-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	22-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	23-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	29-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	05-Nov-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Minimal Detection Limit				**0.1**	**0.1**	**0.2**	**0.01**	**0.0085**	**0.0085**	**0.0085**	**0.0085**	**0.0075**	**0.0085**	**0.0075**	**0.01**	**0.05**	**0.0085**	**0.1**	**0.05**	**0.02**	**0.2**
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

Notes:

--- - not analyzed

NS - not specified

* - Alberta Environment Surface Water Quality Guidelines for use in Alberta (AENV, 1999)

Italics - indicates values do not meet applicable guidelines

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	28-Sep-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1	---	0.74
13-DW10 dup	Pump from Basin 1	28-Sep-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	---	0.97
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.1	---	0.23
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	27
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30	Pump from Basin 3 (North)	28-Sep-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<2.0	---	0.66
13-DW30 dup	Pump from Basin 3 (North)	28-Sep-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<2.0	---	0.66
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	2	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	10	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	0
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.47
13-DW23 dup	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	0.14	<0.10	<0.20	<0.20	<1.0	---	0.47
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30	Pump from Basin 3 (North)	29-Sep-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.71
13-DW30 dup	Pump from Basin 3 (North)	29-Sep-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1	---	0.78
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.07
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	9
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	30-Sep-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2	0.68
13-DW10 dup	Pump from Basin 1	30-Sep-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.65
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.03
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	5
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.75
13-DW30a dup	Pump from Basin 3 (North)	30-Sep-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<100	<0.10	<0.20	<0.20	---	---	---
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	---	---	---
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	---	---	---
13-DW20	Pump from Basin 2	01-Oct-13	5:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.61
13-DW20 dup	Pump from Basin 2	01-Oct-13	5:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1	3.3	0.65
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.04
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	6
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW25	E Overland Discharge from Basin 2	01-Oct-13	11:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.95
13-DW25 dup	E Overland Discharge from Basin 2	01-Oct-13	11:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.96
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	0	0.01
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	1
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	02-Oct-13	17:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DW10 dup	Pump from Basin 1	02-Oct-13	17:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	---	---	---
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	---	---	---
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	9:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.82
13-DW23 dup	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	9:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.82
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	0
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	03-Oct-13	3:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.5
13-DW10 dup	Pump from Basin 1	03-Oct-13	3:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	---	---	---
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	---	---	---
13-DW30	Pump from Basin 3 (North)	03-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.5
13-DW30 dup	Pump from Basin 3 (North)	03-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	---	---	---
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	---	---	---
13-DW30	Pump from Basin 3 (North)	04-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.54
13-DW30 dup	Pump from Basin 3 (North)	04-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.63
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.09
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	15
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30A	Pump from Basin 3 (North)	05-Oct-13	5:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.54
13-DW30A dup	Pump from Basin 3 (North)	05-Oct-13	5:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.77
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.23
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	35
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	05-Oct-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.8
13-DW10 dup	Pump from Basin 1	05-Oct-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.73
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.07
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	9
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.46
13-DW30c dup	Pump from Basin 3 (North)	06-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.46
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	07-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	<0.20	<0.20	1.1	---	0.69
13-DW10 dup	Pump from Basin 1	07-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	0.22	<0.20	1.2	---	0.64
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	0.02	---	---	0.1	---	0.05
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	8
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.47
13-DW30c dup	Pump from Basin 3 (North)	08-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.1	---	0.51
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.04
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	09-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	---	0.81
13-DW10 dup	Pump from Basin 1	09-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	---	0.84
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.2	---	0.03
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	4
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.57
13-DW30c dup	Pump from Basin 3 (North)	09-Oct-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.32	0.21	<1.0	---	0.51
13-DW30c dup	Pump from Basin 3 (North)	10-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.28	<0.20	<1.0	---	0.51
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	0.03	0.04	---	---	---	0
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	0
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.46
13-DW30c dup	Pump from Basin 3 (North)	10-Oct-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.48
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.02
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	11-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.21	<0.20	1.3	---	0.67
13-DW10 dup	Pump from Basin 1	11-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.2	<0.20	1.3	---	0.61
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	0.01	---	0	---	0.06
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	9
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.4
13-DW30c dup	Pump from Basin 3 (North)	11-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.45
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.05
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	12-Oct-13	3:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.23	<0.20	1	---	0.86
13-DW10 dup	Pump from Basin 1	12-Oct-13	3:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.19	0.35	0.21	<1.0	---	0.85
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	0.05	0.12	---	---	---	0.01
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	1
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	13:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.6
13-DW30c dup	Pump from Basin 3 (North)	12-Oct-13	13:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.54
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.06
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	13-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.58
13-DW10 dup	Pump from Basin 1	13-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.83
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.25
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	35
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.69
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.79
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.1
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	14
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.67
13-DW30c dup	Pump from Basin 3 (North)	15-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.45
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.22
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	1.2
13-DW30c dup	Pump from Basin 3 (North)	16-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	1
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.2
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	18
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.2	---	0.84
13-DW30c dup	Pump from Basin 3 (North)	17-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.2	---	0.94
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0	---	0.1
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	<1.0	1.1
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.2	<1.0	1
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.1	---	0.1
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	10
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	1.2
13-DW30c dup	Pump from Basin 3 (North)	18-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	1
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.2
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	18
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.22	<0.20	1.3	<1.0	1.3
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.2	---	0.8
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.1	---	0.5
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	48
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	***Poor***
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	1.4
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	---	1.5
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.1
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	7
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	3:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.53
13-DW30c dup	Pump from Basin 3 (North)	19-Oct-13	3:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.66
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.13
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	22
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	0.22	1.0	2.0	8.0
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	<1.0	7.2
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.1	---	0.8
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.59
13-DW30c dup	Pump from Basin 3 (North)	20-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.53
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.06
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	4.4
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	4	2.4
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	2
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	59
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	***Poor***
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	0.11	<0.10	<0.20	<0.20	<1.0	---	0.66
13-DW30c dup	Pump from Basin 3 (North)	21-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	1.5
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.84
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	78
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	***Poor***
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	0.12	<0.10	<0.20	<0.20	<1.0	---	0.74
13-DW30c dup	Pump from Basin 3 (North)	22-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.62
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.12
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	18
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX B4.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW10	Pump from Basin 1	30-Sep-13	15:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10 dup	Pump from Basin 1	30-Sep-13	15:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW25	E Overland Discharge from Basin 2	01-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25 dup	E Overland Discharge from Basin 2	01-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX B5.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	$F1C_6$-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW10	Maxxam	Pump from Basin 1	03-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.65
13-DW10	Exova	Pump from Basin 1	03-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<1	---
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	---
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	---
13-DW10	Maxxam	Pump from Basin 1	04-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.78
13-DW10	Exova	Pump from Basin 1	04-Oct-13	11:00		<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	2	2
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	---	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	1.22
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	88
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	***Poor***
13-DW10	Maxxam	Pump from Basin 1	05-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.73
13-DW10	Exova	Pump from Basin 1	05-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	2	1.9
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	1.17
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	89
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW10	Maxxam	Pump from Basin 1	06-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.32	<0.20	<1.0	1.3	0.47
13-DW10	Exova	Pump from Basin 1	06-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.8	<2	0.9
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.43
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	08-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.3	1.3	0.83
13-DW10	Exova	Pump from Basin 1	08-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.8	<1	2.4
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.5	---	1.57
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	97
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW10	Maxxam	Pump from Basin 1	09-Oct-13	7:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	<1.0	0.55
13-DW10	Exova	Pump from Basin 1	09-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.8	<1	1.4
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.5	---	0.85
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	87
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW30c	Maxxam	Pump from Basin 3 (North)	04-Oct-13	17:00		<0.0004	<0.002	<0.0004	<0.004	0.12	<0.10	<0.20	<0.20	<1.0	---	0.47
13-DW30c	Exova	Pump from Basin 3 (North)	04-Oct-13	17:00		<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.5	<1	1.5
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	---	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	1.03
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	***Poor***
13-DW30c	Maxxam	Pump from Basin 3 (North)	06-Oct-13	17:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.51
13-DW30c	Exova	Pump from Basin 3 (North)	06-Oct-13	17:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.6	<2	1
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.49
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	65
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***

APPENDIX B5.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Maxxam	Pump from Basin 3 (North)	07-Oct-13	17:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.64
13-DW30c	Exova	Pump from Basin 3 (North)	07-Oct-13	17:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.6	<2	0.70
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.06
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	9
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	08-Oct-13	17:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.0	<1.0	0.59
13-DW30c	Exova	Pump from Basin 3 (North)	08-Oct-13	17:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.6	<1	0.6
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	0.4	---	0.01
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	2
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	09-Oct-13	17:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	1.3	0.52
13-DW30c	Exova	Pump from Basin 3 (North)	09-Oct-13	17:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.7	<1	0.8
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	0.4	---	0.28
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	42
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW10	Maxxam	Pump from Basin 1	10-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	0.2	0.23	1.0	<1.0	0.85
13-DW10	Exova	Pump from Basin 1	10-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.8	<2	0.9
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	0.2	---	0.05
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	6
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	10-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.45
13-DW30c	Exova	Pump from Basin 3 (North)	10-Oct-13	15:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.5	<2	0.5
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.05
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	11-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.32	0.23	1.1	2	0.67
13-DW10	Exova	Pump from Basin 1	11-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.7	<1	1.3
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	0.4	---	0.63
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	64
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW30c	Maxxam	Pump from Basin 3 (North)	11-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	0.68	<0.10	<0.20	<0.20	<1.0	1.3	0.39
13-DW30c	Exova	Pump from Basin 3 (North)	11-Oct-13	15:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	0.3	<0.1	0.5	<1	0.8
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.41
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX B5.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW10	Maxxam	Pump from Basin 1	12-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	0.45	0.19	0.37	0.25	1.1	<1.0	1
13-DW10	Exova	Pump from Basin 1	12-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.9	<2	1.2
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	0.2	---	0.2
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	18
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	12-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.42
13-DW30c	Exova	Pump from Basin 3 (North)	12-Oct-13	15:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.7	<1	0.9
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.48
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	13-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<3.0	0.76
13-DW30c	Exova	Pump from Basin 3 (North)	13-Oct-13	5:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.7	<1	1
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.24
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	27
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW23a	Maxxam	---	14-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	1.4
13-DW23a	Exova	---	14-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.2	<0.20	<0.10	<0.10	0.8	<1	2.5
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	1.1
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	56
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW30c	Maxxam	Pump from Basin 3 (North)	14-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.44
13-DW30c	Exova	Pump from Basin 3 (North)	14-Oct-13	15:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.6	<1	1.1
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.66
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	15-Oct-13	11:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.71
13-DW30c	Exova	Pump from Basin 3 (North)	15-Oct-13	11:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.6	15	0.8
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	---	0.5
					Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	0.09
					Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	12
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good

APPENDIX B6.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW10	Maxxam	Pump from Basin 1	03-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	03-Oct-13	7:00		<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	0.03	<0.2	<0.09	<0.2	<0.2	0.02	<0.5
					Detection Limit (DL)	0.1	0.1	0.2	0.009	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.045	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	05-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	05-Oct-13	7:00		<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	0.03	<0.2	<0.09	<0.2	<0.2	0.02	<0.5
					Detection Limit (DL)	0.1	0.1	0.2	0.009	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.045	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	06-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	06-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	08-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.01	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	08-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30C	Maxxam	Pump from Basin 3 (North)	04-Oct-13	17:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Exova	Pump from Basin 3 (North)	04-Oct-13	17:00		<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	<0.02	<0.2	<0.09	<0.2	<0.2	<0.02	<0.5
					Detection Limit (DL)	0.1	0.1	0.2	0.009	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.045	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX B6.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW30C	Maxxam	Pump from Basin 3 (North)	06-Oct-13	17:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Exova	Pump from Basin 3 (North)	06-Oct-13	17:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	08-Oct-13	17:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Exova	Pump from Basin 3 (North)	08-Oct-13	17:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	10-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	10-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	10-Oct-13	15:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Exova	Pump from Basin 3 (North)	10-Oct-13	15:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	11-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	11-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	11-Oct-13	15:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Exova	Pump from Basin 3 (North)	11-Oct-13	15:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	12-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	12-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX B6.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW30c	Maxxam	Pump from Basin 3 (North)	12-Oct-13	15:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Exova	Pump from Basin 3 (North)	12-Oct-13	15:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW23a	Maxxam	Basin 2 Discharge Line after Carbon Treatment	14-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Exova	Basin 2 Discharge Line after Carbon Treatment	14-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	0.20	0.10	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	***Poor***	***Poor***	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX B7.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
Trip Blank	28-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	1.3	<0.10
Trip Blank	28-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Trip Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Trip Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
Trip Blank	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Trip Blank	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	---	<0.10
Trip Blank	01-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Trip Blank	02-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	03-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	04-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	04-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	05-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	05-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	06-Oct-13	---	---	---	---	---	---	---	---	<1.0	<1.0	<0.10
Trip Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
Trip Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	<0.10
Trip Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.14	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	0.32	0.21	<1.0	<1.0	<0.10
Trip Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.10	<0.20	<0.20	<1.0	<3.0	<0.10
Trip Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Trip Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	0.16	0.34	<0.20	<1.0	<1.0	<0.10
Trip Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Trip Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	17-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	17-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.18	<0.10	<0.20	<0.20	<1.0	1.3	0.11
Trip Blank	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	6	<0.10
Trip Blank	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
		0.0004	**0.002**	**0.0004**	**0.004**	**0.1**	**0.1**	**0.2**	**0.2**	**1**	**1**	**0.1**

APPENDIX B7.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
Field Blank	28-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	<1.0	<0.10
Field Blank	28-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Field Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	1.3	<0.10
Field Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Field Blank	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	0.34
Field Blank	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Field Blank	01-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Field Blank	01-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	---	<0.10
Field Blank	02-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	02-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2	<0.10
Field Blank	03-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	03-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
Field Blank	03-Oct-13	---	---	---	---	---	---	---	---	<1.0	---	0.24
Field Blank	04-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	04-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.15
Field Blank	05-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	05-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Field Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.14
Field Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.20	0.2	<1.0	<1.0	<0.10
Field Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	0.20	0.22	<1.0	<1.0	<0.10
Field Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Field Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.17	<0.10	<0.20	<0.20	<1.0	<1.0	0.12
Field Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	<0.10
Field Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	17-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	17-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Spike	03-Oct-13	0.053	0.053	0.048	0.15	<0.1	---	---	---	---	---	---
Spike	04-Oct-13	0.053	0.050	0.047	0.15	<0.1	---	---	---	---	---	---
Spike	04-Oct-13	0.043	0.043	0.041	0.13	<0.1	<0.71	<1.4	<1.4	---	---	---
Spike	05-Oct-13	0.051	0.052	0.047	0.16	<0.1	---	---	---	---	---	---
Spike	07-Oct-13	0.043	0.045	0.041	0.14	<0.1	---	---	---	---	---	---
Spike	10-Oct-13	0.036	0.041	0.038	0.13	<0.1	0.78	1.4	0.35	---	---	---
Spike	11-Oct-13	0.039	0.041	0.039	0.13	0.65	1	1.9	0.57	---	---	---
Spike	11-Oct-13	0.039	0.037	0.036	0.108	<0.20	<0.20	<0.1	<0.1	---	---	---
Spike	16-Oct-13	0.048	0.051	0.047	0.16	<0.1	0.61	1	<0.20	---	---	---
Spike	16-Oct-13	0.042	0.041	0.04	0.13	<0.1	0.72	1.3	0.26	---	---	---
Spike	16-Oct-13	0.046	0.044	0.042	0.122	<0.20	<0.20	0.8	<0.1	---	---	---
		0.0004	**0.002**	**0.0004**	**0.004**	**0.1**	**0.1**	**0.2**	**0.2**	**1**	**1**	**0.1**

Notes:

--- - not analyzed

APPENDIX B8.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
Trip Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.01	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.012	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
		0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2

APPENDIX B8.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
Field Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0097	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
		0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2

Notes:

--- - not analyzed

APPENDIX C

WATER QUALITY DATA – WATER BODIES AND WATERCOURSES

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	24-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-SW16	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.0	---	---
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.1	---	---
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.7	---	---
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.9	89	32
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.6	17	14
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.3	3.3	7.5
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	6.3	6.7	9.4
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	6.3	6.7	11
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.1	21	12
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.2	3.3	7.4
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6	6	5
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6	<1.0	5.4
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	5.9	3.3	5.7
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	5.8	3.3	6.6
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.1	4.7	8.5
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.1	6.7	8.3
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.6	21	10
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.46	<0.20	6.7	53	21
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.9	5.3	9
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.5	16	1.5
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.8	66	16
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	0.22	6.8	33	20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.8	1.3	9.8
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	0.33	<0.20	6.8	2	10
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.7	2.7	11
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.2	0.41	0.24	6.9	11	9.9
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6	1.3	7.9
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.12	0.55	<0.26	6.6	3.3	8.7
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.4	9.3	11
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.3	4.7	12
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.8	5.3	3.7
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	4.3	6.7	5.1
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.7	1.3	1.1
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.3	1.3	2.2
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	4.6	3.3	2.3
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.6	3.3	3.4
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3.6	2.7	1.4
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.3	17	6.2
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	4.1	3.3	2.6
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	4	2.7	1.4
13-SW26	Downstream Fen Upstream of Pad 21	10	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	---	---	---	---	---	---
13-SW26	Downstream Fen Upstream of Pad 21	---	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	8.5	210	54
13-SW26	Downstream Fen Upstream of Pad 21	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.4	290	100
13-SW26	Downstream Fen Upstream of Pad 21	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.9	47	9.4
13-SW26	Downstream Fen Upstream of Pad 21	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.4	6.7	2.7
13-SW26	Downstream Fen Upstream of Pad 21	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.3	4.7	2.8
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3	15	11
13-SW26	Downstream Fen Upstream of Pad 21	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	4.1	6.7	3.1
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.9	4.7	2.3
13-SW26	Downstream Fen Upstream of Pad 21	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.2	<0.20	1.7	15	6.5
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.5	4	1.2
13-SW26	Downstream Fen Upstream of Pad 21	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	2	0.95
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	2	1.9
13-SW26	Downstream Fen Upstream of Pad 21	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	11	4.7
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	<0.20	<0.20	1.6	3.3	1.5
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-SW26	Downstream Fen Upstream of Pad 21	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.5	8.7	2.6
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.7	8.7	3
13-SW26	Downstream Fen Upstream of Pad 21	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.2	7.3	2.8
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.7	36	19
13-SW26	Downstream Fen Upstream of Pad 21	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.24	<0.20	1.5	6	1
13-SW26	Downstream Fen Upstream of Pad 21	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.2	<1.0	0.7
13-SW26	Downstream Fen Upstream of Pad 21	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	0.27	0.38	1.3	49	14
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	<0.27	<0.38	1.1	51	17
13-SW26	Downstream Fen Upstream of Pad 21	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1	10	2.9
13-SW26	Downstream Fen Upstream of Pad 21	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	6.7	7.7
13-SW26	Downstream Fen Upstream of Pad 21	---	16-Oct-13	<0.00040	***0.0022***	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	4	1.6
13-SW26	Downstream Fen Upstream of Pad 21	---	17-Oct-13	<0.00040	***0.0045***	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2	3.3	1.8
13-SW26	Downstream Fen Upstream of Pad 21	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.3	8	2.8
13-SW26	Downstream Fen Upstream of Pad 21	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.0	21	4.5
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.4	25	14
13-SW26	Downstream Fen Upstream of Pad 21	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.8	6	2.9
13-SW26	Downstream Fen Upstream of Pad 21	---	21-Oct-13	<0.0004	***0.0052***	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3	220	30
13-SW26	Downstream Fen Upstream of Pad 21	---	22-Oct-13	<0.0004	***0.0029***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.1	33	7
13-SW26	Downstream Fen Upstream of Pad 21	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.1	29	4.1
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.1	4.7	1.4
13-SW7	Basin 1	50	25-Sep-13	0.00041	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW7	Basin 1	110	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW7 dup	Basin 1	110	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW7	Basin 1	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.1	---	---
13-SW7	Basin 1	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	0.14	<0.20	<0.20	1.2	---	---
13-SW7 dup	Basin 1	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.8	---	---
13-SW7	Basin 1	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW7	Basin 1	---	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.6	4	2.2
13-SW7	Basin 1	---	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
13-SW7	Basin 1	---	01-Oct-13	0.0022	***0.0079***	0.0021	0.012	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.5
13-SW7	Basin 1	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.97
13-SW7	Basin 1	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.69
13-SW7	Basin 1	---	04-Oct-13	0.00043	0.0011	<0.0004	0.0015	<0.1	<0.10	<0.20	<0.20	<1.0	2	0.66
13-SW7	Basin 1	---	05-Oct-13	<0.0004	0.00096	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.66
13-SW7	Basin 1	50	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1	2	0.64
13-SW7	Basin 1	50	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.4	1.3	0.77
13-SW7	Basin 1	50	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.4	6	0.74
13-SW7 dup	Basin 1	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.20	<0.20	6.7	7.3	9.7
13-SW22	Basin 1	50	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW22	Basin 1	100	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	0.23	<0.20	<1.0	---	---
13-SW22	Basin 1	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW22	Basin 1	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW22	Basin 1	---	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	1.3
13-SW22	Basin 1	---	01-Oct-13	<0.0004	<0.002	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.51
13-SW22	Basin 1	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.61
13-SW22	Basin 1	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2	1.5
13-SW22	Basin 1	---	04-Oct-13	<0.0004	0.00049	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.49
13-SW22	Basin 1	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.59
13-SW22	Basin 1	50	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.65
13-SW22	Basin 1	50	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.5	3.3	0.88
13-SW22	Basin 1	50	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2	1.7
13-SW23	Basin 1	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	0.14	<0.10	<0.20	<0.20	<1.0	---	0.47
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-SW31	Basin 3	50	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW31	Basin 3	130	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW31	Basin 3	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW31	Basin 3	---	28-Sep-13	0.0005	***0.0021***	0.00042	0.0026	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW31	Basin 3	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW31	Basin 3	---	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	1.6
13-SW31	Basin 3	---	01-Oct-13	<0.00040	0.00045	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.7
13-SW31 dup	Basin 3	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	5.3	1.7
13-SW31	Basin 3	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	6	0.51
13-SW31	Basin 3	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.6
13-SW31	Basin 3	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.48
13-SW31	Basin 3	---	05-Oct-13	<0.0004	0.0012	<0.0004	0.00095	<0.1	<0.10	<0.20	<0.20	<1.0	7.3	1.2
13-SW31	Basin 3	50	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	7.3	1.2
13-SW31	Basin 3	50	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
13-SW31	Basin 3	50	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2	0.43
13-SW12	Basin 4	surface	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2	---
13-SW12	Basin 4	depth	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW12	Basin 4	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW12	Basin 4	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW12	Basin 4	---	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.99
13-SW12	Basin 4	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	20	7.8
13-SW12	Basin 4	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	22	0.63
13-SW12	Basin 4	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.5
13-SW12	Basin 4	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2	0.76
13-SW12	Basin 4	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.64
13-SW12	Basin 4	50	06-Oct-13	<0.0004	<0.002	0.00055	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	15	2.1
13-SW12	Basin 4	50	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.1	13	1.3
13-SW12	Basin 4	50	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	<0.20	<0.20	1.1	<1.0	0.67
13-SW12	Basin 4	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.0	<1.0	0.43
13-SW12	Basin 4	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.56
13-SW12	Basin 4	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.2	0.42	0.24	<1.0	2.7	0.5
13-SW12	Basin 4	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.28	<0.20	<1.0	<1.0	0.53
13-SW12	Basin 4	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	0.55	0.2	<1.0	<1.0	0.58
13-SW12	Basin 4	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	4.0	0.64
13-SW12	Basin 4	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.66
13-SW12	Basin 4	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.57
13-SW12	Basin 4	---	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	3.3	0.73
13-SW12	Basin 4	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2.0	1.2
13-SW12	Basin 4	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.77
13-SW12	Basin 4	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.54
13-SW12	Basin 4	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.88
13-SW12	Basin 4	---	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	1.1
13-SW12	Basin 4	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	1.1	11	2.8
13-SW42	Discharge Fen Upstream of Wolf River		29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.9	---	---
13-SW42	Discharge Fen Upstream of Wolf River	---	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	8	17
13-SW42	Discharge Fen Upstream of Wolf River	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.2	17	50
13-SW42	Discharge Fen Upstream of Wolf River	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.3	2	11
13-SW42	Discharge Fen Upstream of Wolf River	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.1	4	11
13-SW42	Discharge Fen Upstream of Wolf River	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.9	6	14
13-SW42	Discharge Fen Upstream of Wolf River	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.9	6.7	15
13-SW42	Discharge Fen Upstream of Wolf River	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.2	6	13
13-SW42	Discharge Fen Upstream of Wolf River	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.2	4	10
13-SW42	Discharge Fen Upstream of Wolf River	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.1	5.3	18
13-SW42	Discharge Fen Upstream of Wolf River	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.9	2	10
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-SW42	Discharge Fen Upstream of Wolf River	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	31	45
13-SW42	Discharge Fen Upstream of Wolf River	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.26	<0.10	0.28	<0.20	2.1	210	56
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.31	<0.10	0.2	<0.20	1.9	190	130
13-SW42	Discharge Fen Upstream of Wolf River	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.2	22	32
13-SW42	Discharge Fen Upstream of Wolf River	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.1	33	31
13-SW42	Discharge Fen Upstream of Wolf River	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.6	3.3	11
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.31	<0.20	1.7	6	14
13-SW42	Discharge Fen Upstream of Wolf River	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	4	14
13-SW42	Discharge Fen Upstream of Wolf River	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	14	21
13-SW42	Discharge Fen Upstream of Wolf River	---	16-Oct-13	<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	1.8	21	39.8
13-SW42	Discharge Fen Upstream of Wolf River	---	17-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2	9.3	24
13-SW42	Discharge Fen Upstream of Wolf River	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.1	23	28
13-SW42	Discharge Fen Upstream of Wolf River	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.9	10	21
13-SW42	Discharge Fen Upstream of Wolf River	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	0.12	0.62	<0.20	1.7	3.3	11
13-SW42	Discharge Fen Upstream of Wolf River	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.7	47	46
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	16	23
13-SW42	Discharge Fen Upstream of Wolf River	---	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.3	4.7	13
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.4	4.7	12
13-SW42	Discharge Fen Upstream of Wolf River	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.1	3.3	9.8
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.1	10	20
13-SW42	Discharge Fen Upstream of Wolf River	---	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2	10	25
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2	19	32
13-SW43	Wolf River Downstream	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	1.5
13-SW43	Wolf River Downstream	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	4.7	2
13-SW43	Wolf River Downstream	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	11	2.2
13-SW43	Wolf River Downstream	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.6	4	1.8
13-SW43	Wolf River Downstream	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	1.5
13-SW43	Wolf River Downstream	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	4.7	1.7
13-SW44	Wolf River Upstream	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	4	1.2
13-SW44	Wolf River Upstream	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2	1
13-SW44	Wolf River Upstream	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.1	<1.0	1.2
13-SW44	Wolf River Upstream	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.6	1.3	1
13-SW44	Wolf River Upstream	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.1	<1.0	1
13-SW44	Wolf River Upstream	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	1.3
13-SW27	Downstream Fen Downstream of Pad 21	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.27	<0.20	2.9	7.3	8.6
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.5	5.3	8.9
13-SW27	Downstream Fen Downstream of Pad 21	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	<0.27	<0.38	2	37	11
13-SW27	Downstream Fen Downstream of Pad 21	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.35	0.22	1.7	8.7	8.1
13-SW27	Downstream Fen Downstream of Pad 21	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	66	12
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.4	4.7	1.8
13-SW27	Downstream Fen Downstream of Pad 21	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.1	10	7.3
13-SW27	Downstream Fen Downstream of Pad 21	---	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.3	77	23
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	17-Oct-13	<0.00040	***0.0047***	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	25	7.3
13-SW27	Downstream Fen Downstream of Pad 21	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.3	6	7.4
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.5	11	8.3
13-SW27	Downstream Fen Downstream of Pad 21	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.6	6.7	8.2
13-SW27	Downstream Fen Downstream of Pad 21	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.6	12	9.1
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.1	6	7.6
13-SW27	Downstream Fen Downstream of Pad 21	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.7	67	19
13-SW27	Downstream Fen Downstream of Pad 21	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.7	37	8.3
13-SW27	Downstream Fen Downstream of Pad 21	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.6	4	7.7
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-SW39	Downstream Fen West of Ken Baker Road	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	18	6	4.2
13-SW39	Downstream Fen West of Ken Baker Road	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	18	2	1.6
13-SW39	Downstream Fen West of Ken Baker Road	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	18	71	27
13-SW39	Downstream Fen West of Ken Baker Road	---	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.3	290	56
13-SW39	Downstream Fen West of Ken Baker Road	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	7.2	51	12
13-SW39	Downstream Fen West of Ken Baker Road	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	7.1	300	48
13-SW39	Downstream Fen West of Ken Baker Road	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	4.6	1.3	3
13-SW39	Downstream Fen West of Ken Baker Road	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.7	78	18
13-SW39	Downstream Fen West of Ken Baker Road	---	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.9	49	9.6
13-SW39	Downstream Fen West of Ken Baker Road	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	5.5	4.7	3.2
13-SW39	Downstream Fen West of Ken Baker Road	---	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	4.2	1.3	2
13-SW39	Downstream Fen West of Ken Baker Road	---	05-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.9	---	---
13-SW46	NE Control Lake	---	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	9.3	---
13-SW47	Borrow Pit	---	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	---
13-DP1	Drive point southwest of Pad 21		28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.71	<1.4	<1.4	4.2	550	250
13-DP1	Drive point southwest of Pad 21	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	175	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	---	---	---	---	---	---
13-DP1	Drive point southwest of Pad 21	---	01-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	126	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.5	1200	190
13-DP1	Drive point southwest of Pad 21	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.71	<1.4	<1.4	4.9	540	780
13-DP1	Drive point southwest of Pad 21	138	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	150	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.10	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	158	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	164	08-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	---	---	---	---	---	---
13-DP1	Drive point southwest of Pad 21	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	---	---	---	---	---	---
13-DP1	Drive point southwest of Pad 21	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.1	650	240
13-DP1	Drive point southwest of Pad 21	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3.3	350	290
13-DP1	Drive point southwest of Pad 21	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.6	770	390
13-DP1	Drive point southwest of Pad 21	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.3	430	570
13-DP1	Drive point southwest of Pad 21	---	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.7	1500	1200
13-DP1	Drive point southwest of Pad 21	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.8	350	130
13-DP1	Drive point southwest of Pad 21	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.8	290	400
13-DP1	Drive point southwest of Pad 21	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3	780	590
13-DP1	Drive point southwest of Pad 21	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.7	870	250
13-DP1	Drive point southwest of Pad 21	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.6	730	430
13-DP2	Drive point SW of Basin 4		28-Sep-13	<0.0004	0.0015	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	5.7	4600	<0.10
13-DP2	Drive point SW of Basin 4		29-Sep-13	<0.0004	0.00057	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.4	---	<0.10
13-DP2	Drive point SW of Basin 4	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.2	3000	<0.10
13-DP2	Drive point SW of Basin 4	191	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	---	---	---	---	---	---
13-DP2	Drive point SW of Basin 4	---	01-Oct-13	<0.0004	0.0007	<0.0004	<0.0008	<0.1	<0.77	<1.6	<1.6	3.6	---	---
13-DP2	Drive point SW of Basin 4	205	02-Oct-13	<0.0004	<0.64	<0.0004	<0.0008	<0.1	---	---	---	---	---	---
13-DP2	Drive point SW of Basin 4	134	08-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.4	170	160
13-DP2	Drive point SW of Basin 4	---	15-Oct-13	<0.0004	<0.0020	<0.0004	<0.0040	<0.1	<0.10	0.26	<0.20	1.3	97	27
13-DP2	Drive point SW of Basin 4	Exova	15-Oct-13	<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.9	120	49.7
13-DP2	Drive point SW of Basin 4	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3.5	890	810
13-DP2	Drive point SW of Basin 4	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.7	75	35
13-DP2 dup	Drive point SW of Basin 4	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.5	74	30
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DP3	Drive point S of Basin 3 near E Ladder Road		28-Sep-13	<0.0004	***0.0033***	<0.0004	<0.0008	<0.1	<0.10	0.25	<0.20	2.7	---	<0.10
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2	---	<0.10
13-DP3	Drive point S of Basin 3 near E Ladder Road	87	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.2	2000	970
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	30-Sep-13	<0.0004	0.0010	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.9	700	63
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	01-Oct-13	<0.0004	0.00089	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.2	560	280
13-DP3	Drive point S of Basin 3 near E Ladder Road	96	02-Oct-13	<0.0004	0.00057	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.2	590	61
13-DP3	Drive point S of Basin 3 near E Ladder Road	115	08-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.9	380	180
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	15-Oct-13	<0.0004	<0.0020	<0.0004	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	---	---	---	---	---	---
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	28-Sep-13	<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.4	---	<0.10
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	28-Sep-13	<0.0004	0.0011	<0.0004	<0.0008	<0.1	<0.10	0.24	<0.20	3	---	<0.10
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.9	740	270
13-DP4	Drive point N of Basin 3 near E Ladder Road	75	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.2	400	140
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13	<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	490	300
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13	<0.0004	0.0016	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.1	450	270
13-DP4	Drive point N of Basin 3 near E Ladder Road	82	02-Oct-13	<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1400	69
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	02-Oct-13	---	---	---	---	---	---	---	---	1.5	3300	250
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.79
13-DP4	Drive point N of Basin 3 near E Ladder Road	117	08-Oct-13	<0.0004	0.0012	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.8	160	190
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	15-Oct-13	<0.0004	<0.002	<0.0004	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	800	550
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.8	220	44
13-DP4	Drive point N of Basin 3 near E Ladder Road	140	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	63	26
13-DP4	Drive point N of Basin 3 near E Ladder Road	1315	05-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	12-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	19-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	---	---	---	---	---	---
13-DP5	Drive point W side of Basin 3	---	28-Sep-13	<0.0004	***0.16***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.7	51000	<0.10
13-DP5	Drive point W side of Basin 3	---	29-Sep-13	<0.0004	***0.220***	0.0006	<0.004	<0.1	<0.10	<0.20	<0.20	5.5	1400	620
13-DP5	Drive point W side of Basin 3	85	30-Sep-13	<0.00040	***0.150***	0.0005	<0.0040	<0.1	<0.10	<0.20	<0.20	4.5	830	360
13-DP5	Drive point W side of Basin 3	---	01-Oct-13	<0.0004	***0.100***	0.00045	<0.0008	<0.1	<0.10	<0.20	<0.20	4.8	840	550
13-DP5	Drive point W side of Basin 3	91	02-Oct-13	<0.0004	***0.025***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	4.5	410	490
13-DP5	Drive point W side of Basin 3	110	08-Oct-13	<0.0004	***0.003***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP5	Drive point W side of Basin 3	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP5	Drive point W side of Basin 3	---	22-Oct-13	<0.0004	0.00065	<0.0004	<0.0008	<0.1	---	---	---	---	---	---
13-DP6	Drive point S side of Basin 3	---	28-Sep-13	<0.0004	***0.08***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	16	1000	2700
13-DP6	Drive point S side of Basin 3	---	29-Sep-13	<0.0004	***0.0026***	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.8	130	63
13-DP6	Drive point S side of Basin 3	78	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.5	200	64
13-DP6	Drive point S side of Basin 3	---	01-Oct-13	<0.0004	0.0013	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.8	100	37
13-DP6	Drive point S side of Basin 3	105	02-Oct-13	<0.0004	0.0018	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2	67	16
13-DP6	Drive point S side of Basin 3	98	08-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.7	52	59
13-DP6	Drive point S side of Basin 3	---	15-Oct-13	<0.00040	<0.0020	<0.0004	<0.0040	<0.1	<0.10	<0.20	<0.20	2	240	120
13-DP6	Drive point S side of Basin 3	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.6	29	15
13-DP6	Drive point S side of Basin 3	108	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.3	78	32
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 [TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DP7	Drive point E side of Basin 3	---	28-Sep-13	<0.0004	***0.018***	<0.0004	<0.0008	<0.1	0.14	<0.20	<0.20	5.1	---	<0.10
13-DP7	Drive point E side of Basin 3	---	29-Sep-13	<0.0004	***0.010***	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.3	1000	990
13-DP7	Drive point E side of Basin 3	101	30-Sep-13	<0.00040	***0.008***	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.3	340	230
13-DP7	Drive point E side of Basin 3	---	01-Oct-13	<0.0004	***0.010***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.3	950	510
13-DP7	Drive point E side of Basin 3	104	02-Oct-13	<0.0004	0.002	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.6	770	260
13-DP7	Drive point E side of Basin 3	120	08-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	4.2	---	460
13-DP7	Drive point E side of Basin 3	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.4	40	59
13-DP7	Drive point E side of Basin 3	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	---	---	---	---	---	---
13-DP7	Drive point E side of Basin 3	225	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.11	<0.23	<0.23	---	---	---
Minimal Detection Limit				**0.0004**	**0.002**	**0.0004**	**0.004**	**0.1**	**0.1**	**0.2**	**0.2**	**1**	**1**	**0.1**
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

Notes:

--- - not analyzed

NS - guideline not specified

* - Alberta Environment Surface Water Quality Guidelines for use in Alberta (AENV, 1999)

Italics - indicates values do not meet applicable guidelines

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW16	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW26	Downstream Fen Upstream of Pad 21	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	23-Oct-13	<0.12	<0.12	<0.24	<0.012	<0.010	<0.010	<0.010	<0.010	<0.0089	<0.010	<0.0089	<0.012	<0.060	<0.010	<0.12	<0.060	<0.024	<0.24
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	50	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.13	<0.050	<0.020	<0.20
13-SW7	Basin 1	110	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	110	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	0.015	<0.0085	<0.0085	<0.030	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.26	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.32	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	0.019	<0.0075	<0.010	<0.050	<0.0085	<0.10	0.054	<0.020	<0.20
13-SW7	Basin 1	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.18	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.011	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	50	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	50	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	50	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	50	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	50	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	100	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW22	Basin 1		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	50	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	50	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	50	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	50	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	130	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	50	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	50	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	50	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.011	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	surface	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	depth	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	50	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	50	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	50	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW12	Basin 4	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.011	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	16-Oct-13	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-SW42	Discharge Fen Upstream of Wolf River	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW44	Wolf River Upstream	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW44	Wolf River Upstream	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW44	Wolf River Upstream	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW44	Wolf River Upstream	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW44	Wolf River Upstream	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW44	Wolf River Upstream	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21		22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	03-Oct-13	<0.21	<0.21	<0.42	<0.021	<0.018	<0.018	<0.018	<0.018	<0.016	<0.018	<0.016	<0.021	<0.10	<0.018	<0.21	<0.10	<0.042	<0.42
13-SW39	Downstream Fen West of Ken Baker Road	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	05-Nov-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.012	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	126	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.17	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.18	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	04-Oct-13	<0.32	<0.32	<0.64	<0.032	<0.027	<0.027	<0.027	<0.027	<0.024	<0.027	<0.024	<0.032	<0.16	<0.027	<0.32	<0.16	<0.064	<0.64
13-DP1	Drive point southwest of Pad 21	138	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.14	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	19-Oct-13	<0.13	<0.13	<0.25	<0.013	<0.011	<0.011	<0.011	<0.011	<0.0094	<0.011	<0.0094	<0.013	<0.063	<0.011	<0.13	<0.063	<0.025	<0.25
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DP1	Drive point southwest of Pad 21	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.01	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	23-Oct-13	<0.15	<0.15	<0.29	<0.015	<0.013	<0.013	<0.013	<0.013	<0.011	<0.013	<0.011	<0.015	<0.074	<0.013	<0.15	<0.074	<0.029	<0.29
13-DP2	Drive point SW of Basin 4		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2	Drive point SW of Basin 4		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2	Drive point SW of Basin 4		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2	Drive point SW of Basin 4	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2	Drive point SW of Basin 4	---	15-Oct-13	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DP2	Drive point SW of Basin 4	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2	Drive point SW of Basin 4	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2 dup	Drive point SW of Basin 4	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.013	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3 dup	Drive point S of Basin 3 near E Ladder Road	86.5	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.13	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road	95.5	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.014	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.021	<0.050	<0.0085	0.15	0.067	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	75	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.13	<0.050	<0.020	<0.20
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	82	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	140	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	1315	05-Nov-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	12-Nov-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP5	Drive point W side of Basin 3		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	***0.025***	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-DP5	Drive point W side of Basin 3		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.012	<0.050	<0.0085	0.2	<0.050	<0.020	<0.20
13-DP5	Drive point W side of Basin 3	85	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.2	<0.050	<0.020	<0.20
13-DP5	Drive point W side of Basin 3	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.2	<0.050	<0.020	<0.20
13-DP5	Drive point W side of Basin 3	91	02-Oct-13	<0.11	<0.11	<0.22	<0.011	<0.0094	<0.0094	<0.0094	<0.0094	<0.0083	<0.0094	<0.0083	<0.011	<0.056	<0.0094	0.15	<0.056	<0.022	<0.22
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DP6	Drive point S side of Basin 3		28-Sep-13	<0.20	<0.20	<0.40	<0.020	<0.017	<0.017	<0.017	<0.017	<0.015	<0.017	<0.015	*0.031*	<0.10	<0.017	<0.20	<0.10	<0.040	<0.59
13-DP6	Drive point S side of Basin 3		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.1	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	78	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	105	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.13	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	108	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP7	Drive point E side of Basin 3		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.014	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP7	Drive point E side of Basin 3		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-DP7	Drive point E side of Basin 3	101	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP7	Drive point E side of Basin 3	---	01-Oct-13	<0.11	<0.11	<0.22	<0.011	<0.0093	<0.0093	<0.0093	<0.0093	<0.0082	<0.0093	<0.0082	<0.011	<0.055	<0.0093	0.13	<0.055	<0.022	<0.22
13-DP7	Drive point E side of Basin 3	104	02-Oct-13	<0.12	<0.12	<0.23	<0.012	<0.0099	<0.0099	<0.0099	<0.0099	<0.0087	<0.0099	<0.0087	<0.012	<0.058	<0.0099	0.13	<0.058	<0.023	<0.23
13-DP7	Drive point E side of Basin 3	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Minimal Detection Limit				**0.1**	**0.1**	**0.2**	**0.01**	**0.0085**	**0.0085**	**0.0085**	**0.0085**	**0.0075**	**0.0085**	**0.0075**	**0.01**	**0.05**	**0.0085**	**0.1**	**0.05**	**0.02**	**0.2**
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

Notes:

--- - not analyzed

NS - not specified

* - Alberta Environment Surface Water Quality Guidelines for use in Alberta (AENV, 1999)

Italics - indicates values do not meet applicable guidelines

APPENDIX C3.

SURFACE WATER QUALITY RESULTS - TOTAL METALS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Hg mg/L
13-SW12	Basin 4	surface	25-Sep-13	0.00000072
13-SW46	NE Control Lake	---	25-Sep-13	0.0000010
13-SW47	Borrow Pit	---	25-Sep-13	0.00000045
Minimal Detection Limit				-
AENV Freshwater Aquatic Life*				**0.000013[f]/ 0.000005[g]**

Notes:

--- - not analyzed

[f] - acute aquatic life guideline from Alberta Environment Surface Water Quality Guidelines for Use in

[g] - chronic aquatic life guideline from Alberta Environment Surface Water Quality Guidelines for Use i

* - Alberta Environment Surface Water Quality Guidelines for Use in Alberta (AENV, 1999)

Italics - indicates values do not meet applicable guidelines

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW7	Basin 1	110	25-Sep-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW7 dup	Basin 1	110	25-Sep-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	---	---
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	---
13-SW16	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.0	---	---
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.1	---	---
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	---	---
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.1	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	2	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	---
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	28-Sep-13		<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.4	---	<0.10
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	28-Sep-13		<0.0004	0.0011	<0.0004	<0.0008	<0.1	<0.10	0.24	<0.20	3.0	---	<0.10
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	---	0.5
				Absolute Difference[a]	---	0.0003	---	---	---	---	---	---	0.4	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-SW7	Basin 1	---	28-Sep-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	0.14	<0.20	<0.20	1.2	---	---
13-SW7 dup	Basin 1	---	28-Sep-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.8	---	---
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	---	---
				Absolute Difference[a]	---	---	---	---	---	---	---	---	1.6	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	---
13-SW12	Basin 4	---	29-Sep-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1	---	---
13-SW12 dup	Basin 4	---	29-Sep-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1	---	---
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	---	---
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	---
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.6	17	14
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.3	3.3	7.5
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.3	13.7	6.5
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	5	---	60
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	6.3	6.7	9.4
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	5.3	1.7
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	1.4	7.7
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	23	139
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13		<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	490	300
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13		<0.0004	0.0016	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.1	450	270
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	0.0002	---	---	---	---	---	---	---	40	30
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	9	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	6.3	6.7	9.4
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	6.3	6.7	11
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0	0	1.6
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	0	0	16
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW31	Basin 3	---	01-Oct-13		<0.00040	0.00045	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.7
13-SW31 dup	Basin 3	---	01-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	5.3	1.7
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	1
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	83
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DP4	Drive point N of Basin 3 near E Ladder Road	82	02-Oct-13		<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1400	69
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	02-Oct-13		---	---	---	---	---	---	---	---	1.5	3300	250
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	---	---	---	---	---	---	---	---	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	1900	181
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	81	113
				Duplicate Sample Results Evaluation	---	---	---	---	---	---	---	---	Good	***Poor***	***Poor***
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6	6	5
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6	<1.0	5.4
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0	---	0.4
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	0	---	8
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	5.9	3.3	5.7
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	5.8	3.3	6.6
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.1	0	0.9
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	2	---	15
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	04-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.3	4.7	2.8
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	04-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3	15	11
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.7	10.3	8.2
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	119
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.1	4.7	8.5
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.1	6.7	8.3
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0	2	0.2
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	0	---	2
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	05-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	4.1	6.7	3.1
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	05-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.9	4.7	2.3
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.2	2	0.8
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	30
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.10	<0.10	<0.20	<0.20	6.6	21	10
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.10	<0.10	0.46	<0.20	6.7	53	21
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.1	32	11
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	2	86	71
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW26	Downstream Fen Upstream of Pad 21	---	06-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.10	<0.10	0.2	<0.20	1.7	15	6.5
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	06-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.10	<0.10	<0.20	<0.20	1.5	4	1.2
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.2	11	5.3
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	138
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW26	Downstream Fen Upstream of Pad 21	---	07-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	2	0.95
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	07-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	2	1.9
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0	0	0.95
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	67
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.9	5.3	9
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.5	16	1.5
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.4	10.7	7.5
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	6	100	143
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW26	Downstream Fen Upstream of Pad 21	---	08-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	11	4.7
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	08-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	<0.20	<0.20	1.6	3.3	1.5
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.2	7.7	3.2
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	103
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW7	Basin 1	50	08-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.4	6	0.74
13-SW7 dup	Basin 1	---	08-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.20	<0.20	6.7	7.3	9.7
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	5.3	1.3	8.96
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	20	172
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	0.22	6.8	33	20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.8	1.3	9.8
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0	31.7	10.2
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	0	---	68
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW26	Downstream Fen Upstream of Pad 21	---	09-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.5	8.7	2.6
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	09-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	8.7	3
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.2	0	0.4
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	0	14
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	0.33	<0.20	6.8	2	10
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.7	2.7	11
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.1	0.7	1
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	10
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	10-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.2	7.3	2.8
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	10-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.7	36	19
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.5	28.7	16.2
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	133	149
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW42	Discharge Fen Upstream of Wolf River	---	11-Oct-13		<0.0004	<0.002	<0.0004	<0.004	0.26	<0.10	0.28	<0.20	2.1	210	56
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	11-Oct-13		<0.0004	<0.002	<0.0004	<0.004	0.31	<0.10	0.2	<0.20	1.9	190	130
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	0.05	---	0.08	---	0.2	20	74
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	10	80
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-SW27	Downstream Fen Downstream of Pad 21	---	12-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.27	<0.20	2.9	7.3	8.6
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	12-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.5	5.3	8.9
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.4	2	0.3
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	32	3
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW26	Downstream Fen Upstream of Pad 21	---	13-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	0.27	0.38	1.3	49	14
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	13-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	<0.27	<0.38	1.1	51	17
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.2	2	3
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	4	19
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW42	Discharge Fen Upstream of Wolf River	---	14-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.6	3.3	11
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	14-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.31	<0.20	1.7	6	14
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.1	2.7	3
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	24
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	15-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	66	12
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	15-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.4	4.7	1.8
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.3	61.3	10.2
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	148
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.8	5.3	3.7
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	4.3	6.7	5.1
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.5	1.4	1.4
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	23	32
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	17-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.3	77	23
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	17-Oct-13		<0.00040	0.0047	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	25	7.3
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.6	52	15.7
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	102	104
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW27	Downstream Fen Downstream of Pad 21	---	18-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.3	6	7.4
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	18-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.5	11	8.3
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.2	5	0.9
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	59	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	19-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.0	21	4.5
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	19-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.4	25	14
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.4	4	9.5
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	17	103
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW27	Downstream Fen Downstream of Pad 21	---	20-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	20-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	---	---	---
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	---	---	---
13-SW42	Discharge Fen Upstream of Wolf River	---	21-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.3	4.7	13
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	21-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.4	4.7	12
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0.1	0	1
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	8
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DP2	Drive point SW of Basin 4	---	22-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.7	75	35
13-DP2 dup	Drive point SW of Basin 4	---	22-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.5	74	30
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	---	1	5
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	1	15
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	23-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.1	29	4.1
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	23-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.1	4.7	1.4
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0	24.3	2.7
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	98
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW42	Discharge Fen Upstream of Wolf River	---	23-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.1	3.3	9.8
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	23-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.1	10	20
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0	6.7	10.2
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	---	68
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-SW42	Discharge Fen Upstream of Wolf River	---	29-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2	10	25
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	29-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2	19	32
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference[a]	---	---	---	---	---	---	---	---	0	9	7
				Absolute Relative Percent Difference (RPD)[a]	---	---	---	---	---	---	---	---	---	62	25
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW7	Basin 1	110	25-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	110	25-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW7	Basin 1	---	28-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	---	28-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW7	Basin 1	---	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.26	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	---	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3 dup	Drive point S of Basin 3 near E Ladder Road	86.5	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.13	<0.050	<0.020	<0.20
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	0.02	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	02-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	82	02-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.1	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	0.01	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz[a]anthracene	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	Benzo[g,h,i]perylene	Benzo[a]pyrene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline
		cm			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
13-SW26	Downstream Fen Upstream of Pad 21	---	04-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	04-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	05-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	05-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	06-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	06-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW26	Downstream Fen Upstream of Pad 21	---	07-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	07-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	08-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	08-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW7	Basin 1	50	08-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	50	08-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	10-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	10-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz[a]anthracene	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	Benzo[g,h,i]perylene	Benzo[a]pyrene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline
		cm			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
13-SW42	Discharge Fen Upstream of Wolf River	---	11-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	11-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	12-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	12-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	13-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	13-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW42	Downstream Fen Downstream of Pad 21	---	14-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Downstream Fen Downstream of Pad 21	---	14-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	15-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	15-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz[a]anthracene	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	Benzo[g,h,i]perylene	Benzo[a]pyrene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline
		cm			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
13-SW27	Downstream Fen Downstream of Pad 21	---	17-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	17-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	18-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	18-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	19-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	19-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	20-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	20-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW42	Discharge Fen Upstream of Wolf River	---	21-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	21-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DP2	Drive point SW of Basin 4	---	22-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2 dup	Drive point SW of Basin 4	---	22-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW42	Discharge Fen Upstream of Wolf River	---	22-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	22-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	23-Oct-13		<0.12	<0.12	<0.24	<0.012	<0.010	<0.010	<0.010	<0.010	<0.0089	<0.010	<0.0089	<0.012	<0.060	<0.010	<0.12	<0.060	<0.024	<0.24
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	23-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW42	Discharge Fen Upstream of Wolf River	---	23-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	23-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW42	Discharge Fen Upstream of Wolf River	---	29-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	29-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX C6.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW42	Maxxam	Discharge Fen Upstream of Wolf River	---	16-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	14	21
13-SW42	Exova	Discharge Fen Upstream of Wolf River	---	16-Oct-13		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	1.8	21	39.8
					Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.5	7	18.8
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	40	62
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX C7.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Depth	Sample	MSI Sample	Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz[a]anthracene	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	Benzo[g,h,i]perylene	Benzo[a]pyrene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline
			cm	Date	Number	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
13-SW42	Maxxam	Discharge Fen Upstream of Wolf River	---	16-Oct-13	08881131016342	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Exova	Discharge Fen Upstream of Wolf River	---	16-Oct-13	08881131016375Z	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
Detection Limit (DL)						0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**						0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*						---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*						---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation						Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX C8.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
Field Blank	25-Sep-13	<0.004	<0.002	<0.004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
Field Blank	25-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	---
Field Blank	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.29
Field Blank	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
Field Blank	29-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.24
Field Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
Field Blank	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.46
Field Blank	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	3.3	1.5
Field Blank	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	01-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	01-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.20	<0.20	<1.0	1.3	0.12
Field Blank	01-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20			
Field Blank	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	<0.10
Field Blank	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Field Blank	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.13
Field Blank	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.32
Field Blank	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.14	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.14
Field Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.19	0.4	<0.20	<1.0	<3.0	0.13
Field Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	0.35	<0.20	<1.0	<1.0	<0.10
Field Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.27
Field Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	0.46	<0.20	<1.0	1.3	<0.10
Field Blank	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.13
Field Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	<0.10
Field Blank	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	5.3	<0.10
Field Blank	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	2	<0.10
Trip Blank	25-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	---
Trip Blank	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
Trip Blank	29-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank dup	29-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
Trip Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	---
Trip Blank	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.24
Trip Blank	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.12
Trip Blank	01-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.18
Detection Limit (DL)		**0.0004**	**0.0004**	**0.0004**	**0.0008**	**0.1**	**0.1**	**0.2**	**0.2**	**1**	**1**	**0.1**

APPENDIX C8.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
Trip Blank	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	---
Trip Blank	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.12
Trip Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3	<1.0	<0.10
Trip Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.48	<0.10	<0.20	<0.20	<1.0	<1.0	0.14
Trip Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Trip Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.4	0.22	<1.0	<1.0	<0.10
Trip Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<3.0	<0.10
Trip Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	4	0.1
Trip Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2	<0.10
Trip Blank	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Trip Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	22-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
Trip Blank	22-Oct-13	---	---	---	---	---	---	---	---	<1.0	<1.0	<0.10
Trip Blank	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	4.7	<0.10
Trip Blank	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Detection Limit (DL)		**0.0004**	**0.0004**	**0.0004**	**0.0008**	**0.1**	**0.1**	**0.2**	**0.2**	**1**	**1**	**0.1**

Notes:

--- - not analyzed

APPENDIX C9.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
Field Blank	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank2	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)		0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2

APPENDIX C9.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
Trip Blank	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.01	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank dup	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)		0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2

Notes:

--- - not analyzed