

Technical Memo

To : Mal Wensierski

Date : 3/17/2014

Lafarge Canada Inc.

Re. : 2013 Monitoring Summary

6509 Airport Road, Mississauga, ON L4V 1S7

Project: Oro Pit

CC:

From : Andrew Pentney

As requested we are providing a summary of the groundwater monitoring program results for the Oro Pit.

Program Requirements.

The approved monitoring program, as listed on the Site Plan, for the pit consists of the following:

Issues Pertaining to Groundwater

As recommended by the hydrogeological consultant (referenced on drawing 1 of 6), the following measures pertaining to groundwater will be taken:

- a) bi-monthly monitoring of water table for first year of operation and quarterly reading thereafter. Wells to be included in monitoring program are M6, DC-1, DC-2, DC-4 and DC-5;*
- b) water samples will be obtained from monitors M6 and DC-4 prior to commencement of excavation. Samples will be analyzed for major ions, pH, conductivity and alkalinity;*
- c) with permission of the owners, water levels in domestic wells within 300m of the site will be measured prior to commencement of extraction;*
- d) additional hydrogeological investigations and a permit to take water will be obtained prior to the commencement of washing operations. A monitoring well will be installed in the same aquifer from which the wash water will be extracted;*
- e) additional monitoring stations will be added as extraction activity proceeds if deemed necessary through consultation with the Ministry of Natural Resources and/or the Ministry of the Environment;*
- f) all monitoring data will be made available to the government agencies upon request;*
- g) with permission of the home owners, water samples from domestic wells within 300m of the site will be obtained and analyzed for parameters such as: general chemistry, phenols, lubricants, fuels and solvents;*
- h) in the event of a containment spill, the licensee will invoke spill contingency measures as outlined in the "recommended procedures for prevention and mitigating of containment spills in gravel pits".*

Notes on Conditions of the Ontario Municipal Board Approval:

Hydrogeology

The licensee will conduct a water quantity and quality monitoring program in accordance with groundwater monitoring established by Dixon Hydrogeology to the satisfaction of the Ministry of Natural Resources.

The Licencee will ensure that the excavation remains at least 1.5 meters above the high water table in addition to an allowance for anticipated water table mounding as verified through the monitoring program.

The Licencee will ensure that any application to the MOE for a Permit To Take Water assesses cumulative impact on private wells.

The Licencee will ensure that, if calcium chloride is used as a dust suppressant, its annual application will be limited to meet the MOE Policy 15.08, as amended from time to time. Where calcium chloride is being used as a dust suppressant, it will be included in the annual monitoring downgradient.

The Licencee will implement a spills cleanup program as approved by the MOE in the recommended procedures for the prevention and mitigation of contaminant spills in gravel pits.

In addition, it is our understanding that the groundwater monitoring program established by Dixon Hydrogeology is detailed in the Dixon Hydrogeology Limited report, January 1992: *Oro Seventh Line Aggregate Pits, Hydrogeological Study*, and consists of the following:

- 1. The water-table elevation should be monitored at each property. Initially, measurements should be taken bi-monthly to establish seasonal fluctuations, after which at least quarterly measurements should be taken to assess/verify impacts on the water levels. If impacts warrant, the monitoring schedule should be altered. Observation wells should be located at the upgradient and downgradient sides of the property. Existing wells constructed on some of the properties would be used in a monitoring network.*
- 2. At properties with a washing operation, water levels should be monitored at an observation well constructed in the same aquifer as the production well. Monitoring should be monthly during the operating season.*
- 3. Extractions should remain at least 1.5 m above the high water table elevation in the spring plus an allowance for the anticipated water-table mounding which is estimated to be up to 1 m and should be verified by monitoring water levels.*
- 4. The cumulative impact on pertinent private wells should be assessed when washing operation wells are tested, prior to applying for a Permit To Take Water.*
- 5. Water samples should be obtained from existing and proposed wells and observation wells on each property and analyzed to document background water quality. The analysis should include general chemical parameters and phenols. Water quality monitoring should be conducted on a yearly basis.*
- 6. With the permission of the owners, background water quality should be established for private wells located within 300 m of the extraction properties, and additionally for private wells on the Sixth, Seventh and Eighth Lines between County Road 11 and Bass Lake Sideroad. The analyses should include general chemical parameters, phenols, fuels, lubricants, and solvents. If on-site water quality monitoring indicates an impact on the water quality, downgradient private wells should be monitored, again with the permission of the owners.*
- 7. If calcium chloride is used as a dust suppressant, its annual application should be limited to 808 kg/Ha to meet the Ministry of the Environment Policy 15-08. Chloride concentrations should be analyzed annually at the downgradient property boundary where calcium chloride is being used as a dust suppressant. This would be included in the annual monitoring discussed in Recommendation 5 above.*

Site Activities To Date

Site preparation for the start of operations (access road building, clearing, berm construction, etc.) at the Oro Pit began in March 2013. To date no actual gravel extraction has occurred, extraction activities are

expected to begin in 2014. No water taking has occurred to date or is planned (e.g. for aggregate washing) on-site in the near future. No Permit To Take Water application has been made for the site to date.

Monitoring completed to date at the Oro Pit includes the following:

- Private well survey and water quality sampling within 300 m (or more) of the Oro Pit, including properties on Sixth and Seventh Lines between County Road 11 (Old Barrie Road) and Bass Lake Sideroad. Sample parameters consist of analysis suites that include major ions (including calcium and chloride), pH, conductivity and alkalinity, general chemistry, phenols, lubricants, fuels and solvents.
- Bi-monthly monitoring of water levels at on-site monitoring wells M6, DC-1, DC-2, DC-4 and DC-5.
- Pre-extraction water quality sampling at wells M6 and DC-4, parameters consist of analysis suites that include major ions (including calcium and chloride), pH, conductivity and alkalinity, general chemistry, phenols, lubricants, fuels and solvents.

The site location and monitoring network is shown in **Figure 1** (attached).

Monitoring Results Summary

The private well survey was initiated in November 2012. Landowner contact was initiated in three ways. First a survey letter and response form was delivered door to door by Lafarge Canada Inc. (Lafarge) personnel on November 26, 2012. This was followed up by a door to door survey by Groundwater Science Corp. personnel on February 21, 2013, in which a second contact letter and survey form was delivered. Copies of the survey letters are attached for reference. Secondly, Lafarge also contacted tenants on the (Lafarge owned) Norman and Roehner Pit properties directly. Thirdly, additional contact was made by Lafarge through a Public Liaison Committee meeting held on March 18, 2013.

A map showing the survey area, addresses and some property status information is attached. The survey response to date is also summarized on the attached table. Water quality samples were obtained at 4 residences. Individual results were provided by letter to the respective residents by Lafarge, copies of the letters and results are attached for reference. Comments regarding individual well water quality are provided in the respective letters. No significant water quality concerns were noted. Due to access limitations at the time of the survey, no water level monitoring was completed at private wells. However, water level information is available for each of these wells at the time of construction through the Ministry of the Environment (MOE) water well record database (as shown on the summary table).

In addition, based on the reported well construction obtained through the survey and water well record information available from the MOE, all of the 4 wells sampled are completed in deep confined aquifers. This means that all of the wells are completed in sand and gravel layers (aquifers) that are much deeper than the proposed pit (which will remain above the water table), and that one or more thick clay layers (aquitards) occur between the eventual pit floor and the water supply aquifers. The aquitard layers “protect” the lower aquifer(s) by limiting the vertical movement of water (and potential impacts). There is no direct “connection” expected between the water table at the pit and these water supply wells. This also means that water levels measured in the wells would not represent the water table condition at the pit.

Baseline conditions, including water levels (available through the MOE database) and water quality as obtained through this survey, at each of these private wells has now been established.

On-site monitoring locations are shown on **Figure 1**. Water level monitoring at on-site wells M6 DC-1, DC-2, DC-4 and DC-5 was initiated in December 2012 and has continued on a bi-monthly basis to date. The program intent is to continue water level monitoring on a bi-monthly basis in 2014. A summary of the water level monitoring results, in both table and hydrograph format is attached. As illustrated, water

level elevations in 2013 were consistent with historical elevations (1991). The overall data set represents natural baseline conditions.

Water quality sampling at M6 and DC-4 was completed in February 2013, prior to operational activities at the site. A copy of the sampling results (laboratory report) are attached to this memo. The sample results represent natural baseline conditions at the site. No significant water quality concerns are noted. The results indicate that the groundwater quality within the water table system on-site is slightly hard, however meets the MOE drinking water health related guidelines. It is our understanding calcium chloride is, or will be, used at the site. Future annual water quality sampling will include both on-site monitors as specified on the Site Plan and a downgradient (off-site) monitor (as per Dixon recommendations), likely OW1 on the Greek Pit.

Attached:

Figure 1: Site Location

Appendix A: Survey Letters and Forms

Survey Area Map

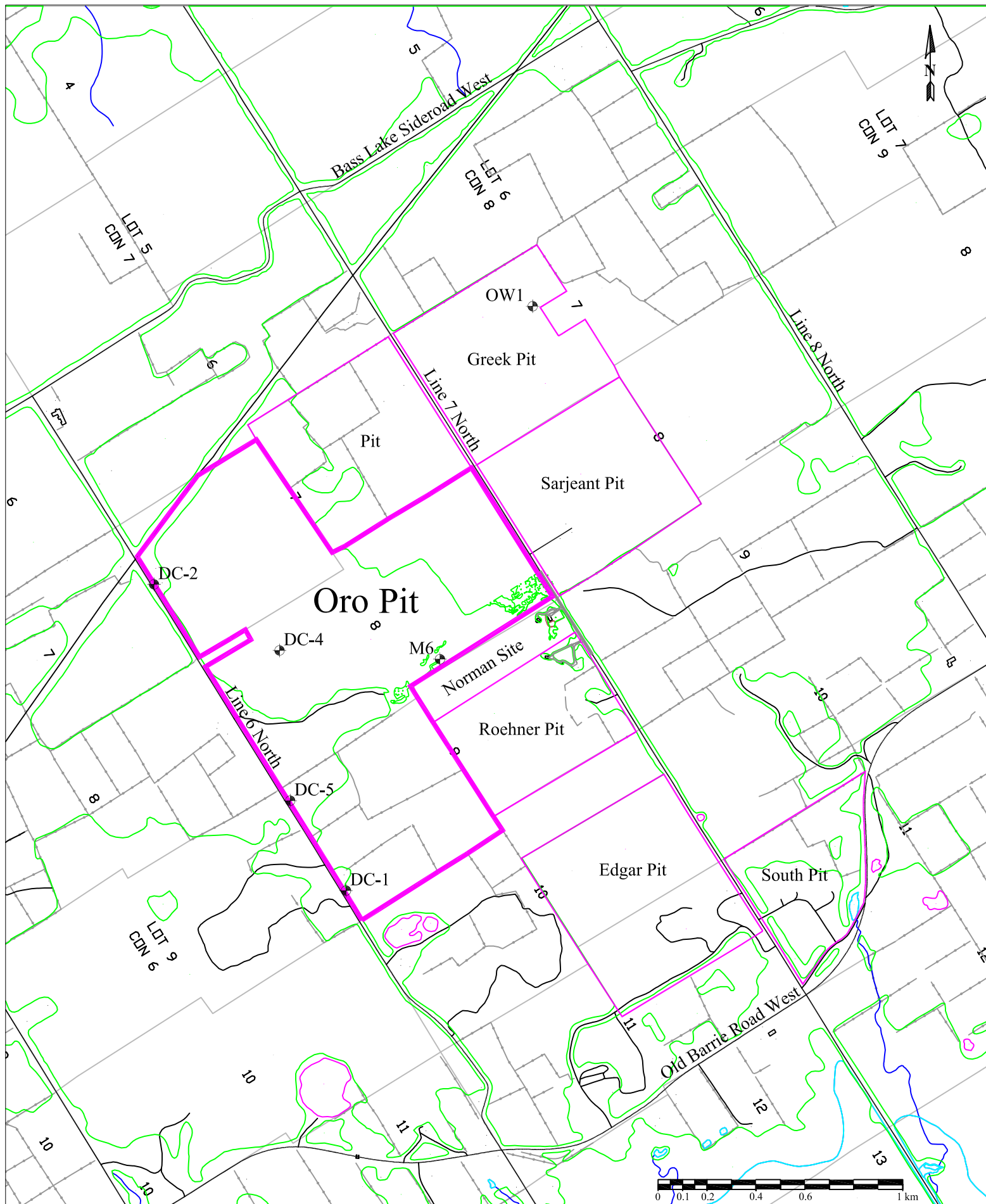
Survey Response Summary

Well Owner Letters

Appendix B: Water Level Summary Table

Water Level Hydrographs

On-site Water Quality Sampling Results



- Pit licence boundary (approx)
- river, stream, pond
- treeline
- monitoring well location

modified from: OBM mapping, Site Plan
UNDER LICENSE, WITHOUT PREJUDICE OR ENDORSEMENT,
FROM THE QUEEN'S PRINTER OF ONTARIO, 2005

March 2014
Scale: as shown

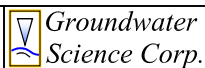
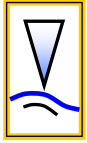


Figure 1: Site Location

Lafarge Canada Inc.
Oro Pit Monitoring Program

Appendix A



Groundwater Science Corp.

24 Erb Street East,
Waterloo, ON N2J 1L6
Phone: (519) 746-6916
Fax: (519) 884-5996

November 19, 2012

**RE: Private Water Well Survey
Residences Within 300 m of the Lafarge Canada Inc. Oro Pit.**

Dear Resident:

Groundwater Science Corp. and Lafarge Canada Inc. are completing a baseline survey of private water wells within 300 m of the Oro Pit site. The survey includes properties along Line 6 Road North and Line 7 Road North, Township of Oro-Medonte, Simcoe County. Your residence is in the monitoring area. The baseline survey is being completed in preparation for operation of the site.

The monitoring includes the completion of a water well survey form, obtaining a water quality sample from the well, and, measuring the water level in the well (if the well is easily accessible). The results will provide baseline information for the area prior to extraction at the Oro Pit.

Participation in the private water well monitoring program is voluntary; this letter is to inform you of the monitoring program and to request your participation. Please inform the Lafarge Canada Inc. representative, Eric Isenor (in person, or, at 705-792-1775, extension 102) if you would like to participate in the program and to provide your phone number. A representative of Groundwater Science Corp. would then contact you to schedule the monitoring visit.

A representative of Groundwater Science Corp. will obtain the water quality sample and water level measurement on the scheduled date. Attached to this letter is a survey response form. If you are interested in participating please complete and return the survey form (only). The form can be returned either to Eric Isenor at your convenience; faxed to our Waterloo, Ontario office (519) 884-5996; or, to the Groundwater Science Corp. representative at the time of the monitoring visit.

If you have any questions regarding the monitoring or require assistance with the survey form, please call Andrew Pentney, P.Geo. at 519-746-6916 (Waterloo).

Thank-you in advance for your consideration in this matter.

Sincerely,

Andrew Pentney, P.Geo.
Hydrogeologist.

Water Well Survey Sheet

Project: Oro Pit Baseline Monitoring

Date: _____

Some personal information (name, address and phone number) is collected as part of this survey for the sole purpose of identifying and communicating with the respondent. There will be no electronic copy made of this personal information and it will not be disclosed to third parties or referenced in the environmental study report.

☐ I consent to the collection and use of the following personal information for the above stated purpose.

Respondent: _____

Emergency Locate (Road) No.: _____

Mailing Address: _____

Telephone No.: _____

1. How old is the house? _____**2. How old is the well?** _____**3. Water Use:**Domestic ☐ Pool ☐ Livestock ☐ Garden ☐ other: _____

Well Water Treatment (filter, softener, etc.): _____

4. Alternative Water Sources Used:Bottled ☐ Cistern ☐ Bulk Delivery ☐ other: _____**5. Well Water Quality and Quantity Comments:**

Quality (colour, odour, taste, staining, etc.) _____

Quantity (does the well go dry?) _____

Has the well ever been tested for quality or quantity? _____

Test Results: _____

6. Water Well Record:Do you have a copy of the MOE Water Well Record? ☐ yes (include copy) ☐ no

Who drilled the well? _____

7. Sketch Map of Well Location (show road, driveway, house, well, septic bed and north arrow)**8. Well Construction:****Well Type**Drilled ☐Dug ☐**Well Casing**Cement Tile ☐Steel ☐Buried ☐

Diameter: _____

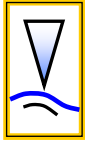
Describe well access (easy / not easy): _____

Well Depth: _____

9. Pump Details:Type: jet ☐ submersible ☐ other ☐ intake setting: _____**10. Monitoring:**

Would you like to have water level measurements taken at your well? _____

Requested by: _____ Date: _____



Groundwater Science Corp.

24 Erb Street East,
Waterloo, ON N2J 1L6
Phone: (519) 746-6916
Fax: (519) 884-5996

February 21, 2013

**RE: Private Water Well Survey
Residences Within 300 m of the Lafarge Canada Inc. Oro Pit.**

Dear Resident:

Groundwater Science Corp. and Lafarge Canada Inc. are completing a baseline survey of private water wells within 300 m of the Oro Pit site. The survey includes properties along Line 6 Road North and Line 7 Road North, Township of Oro-Medonte, Simcoe County. Your residence is in the monitoring area. The baseline survey is being completed in preparation for operation of the site. A survey letter was delivered in December 2012, this is a second (final) request for participation.

The monitoring includes the completion of a water well survey form, obtaining a water quality sample from the well, and, measuring the water level in the well (if the well is easily accessible). The results will provide baseline information for the area prior to extraction at the Oro Pit.

Participation in the private water well monitoring program is voluntary; this letter is to inform you of the monitoring program and to request your participation. Please inform the Lafarge Canada Inc. representative, Mark Lambie (705-792-1775) if you would like to participate in the program and to provide your phone number. A representative of Groundwater Science Corp. would then contact you to schedule the monitoring visit.

A representative of Groundwater Science Corp. will obtain the water quality sample and water level measurement on the scheduled date. Attached to this letter is a survey response form. If you are interested in participating please complete and return the survey form (only). The form can be returned either to Mark Lambie at your convenience; faxed to our Waterloo, Ontario office (519) 884-5996, emailed at the address listed below; or directly to the Groundwater Science Corp. representative at the time of the monitoring visit. We would like to finalize the survey by March 8, 2013, please submit your response prior to that date.

If you have any questions regarding the monitoring or require assistance with the survey form, please call Andrew Pentney, P.Geo. at 519-746-6916 (Waterloo).

Thank-you in advance for your consideration in this matter.

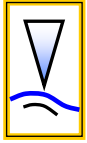
Sincerely,

Andrew Pentney, P.Geo.
Hydrogeologist.
apentney@rogers.com

Private Water Well Door To Door Survey - Results Summary

Lafarge Oro Pit

Street Address (emergency locate no.)	Survey Dates		Survey Response	Number of Wells	Type of Well	MOE Record Available	Well Depth (m)	Water Level (m)	Comment / Details Provided on Survey
First	Second								
Line 6 North									
1721 Line 6 North	19-Nov-12	21-Feb-13	8-Apr-13	1	drilled	5708728	84.1	57.0	water quality sample taken 12-Apr-13
Barton County Forest	19-Nov-12								address unknown (Line 6 N), no residence
1832 Line 6 North	19-Nov-12								includes Hardwood Hills, no residence
2024 Line 6 North	19-Nov-12	21-Feb-13	none	n/a	n/a	n/a	n/a	n/a	survey form provided
2097 Line 6 North	19-Nov-12	21-Feb-13	14-Mar-13	1	drilled	5719519	46.0	42.4	water quality sample taken 14-Mar-13
2104 Line 6 North	19-Nov-12		28-Jan-13	1	drilled	yes	55.8	39.3	water quality sample taken 21-Feb-13
2160 Line 6 North	19-Nov-12	21-Feb-13	none	n/a	n/a	n/a	n/a	n/a	survey form provided
2272 Line 6 North	19-Nov-12	21-Feb-13	12-Apr-13	1	drilled	5730576	91.7	54.9	water quality sample taken 12-Apr-13
Brown County Forest	19-Nov-12								address unknown (Line 6 N), no residence
Line 7 North									
Walker Aggregates Edgar Pit									address unknown (Line 7 N), no residence
Vacant Land north of Edgar Pit									address unknown (Line 7 N), no residence
1908 Line 7 North	19-Nov-12								vacant, no residence
Strachan Tract Count Forest	19-Nov-12								address unknown (Line 7 N), no residence
1944 Line 7 North	19-Nov-12	21-Feb-13	none	n/a	n/a	n/a	n/a	n/a	property owned by Lafarge
1994 Line 7 North	19-Nov-12		none	n/a	n/a	n/a	n/a	n/a	property owned by Lafarge
2065 Line 7 North - Sarjeant Pit									no residence
2137 Line 7 North - Sarjeant Pit									no residence
2216 Line 7 North	19-Nov-12								vacant, no residence
2217 Line 7 North - Lafarge Greek Pit									no residence
Hutcheson County Forest	19-Nov-12								address unknown (Line 7 N), no residence
2376 Line 7 North	12-Apr-13		none	n/a	n/a	n/a	n/a	n/a	
Note - Well Record correlated to address based on reported location in addition to survey details such as age, depth, well type, etc. - details provided as reported on well record if available, or, as reported by owner - survey response summary as of February 25, 2013									
						n/a = not available			



Groundwater Science Corp.

24 Erb Street East,
Waterloo, ON N2J 1L6
Phone: (519) 746-6916
Fax: (519) 884-5996

May 6, 2013

Dan and Marg Parke
1721 Line 6 North
RR1
Oro Station, Ontario
L0L 2E0

Dear Mr. and Mrs. Parke:

**RE: Water Well Survey and Water Quality Sample Results
Lafarge Canada Inc. Oro Pit Monitoring Program.**

This letter is to provide you with a copy of the water quality analysis results for the sample obtained on April 12, 2013 as part of the monitoring program for the Lafarge Canada Inc. Oro Pit. At that time a water well survey was completed and a water sample obtained by Groundwater Science Corp. personnel under your authorization. The water quality sample was intended to establish existing (baseline) conditions at your well.

The sample was analyzed by ALS Laboratories (Waterloo, Ontario). The analysis result for your well water as provided by the laboratory is attached to this letter. We note that the analysis results are all within the corresponding drinking water criteria established by the Ministry of the Environment (MOE) for health related purposes.

You note on your survey response that your water is hard and that your water is filtered and softened. Based on low Hardness concentration result we suspect that the sample was taken from a treated water tap. The water softening process typically removes Calcium and Magnesium, and, increases the Sodium concentration in the water. Therefore it is recommended that you do not drink the treated water if you are on a Sodium restricted diet. In general your water quality is considered typical for a well located in this area of southern Ontario.

If you have any questions regarding this information please do not hesitate to contact me.

Sincerely,

Andrew Pentney, P.Geol.
Hydrogeologist

Attached: copy of ALS Laboratories Certificate of Analysis for 1271 Line 6.



GROUNDWATER SCIENCE
ATTN: ANDREW PENTNEY
4-590 BEARINGER RD
WATERLOO ON N2L 6C4

Date Received: 12-APR-13
Report Date: 22-APR-13 08:23 (MT)
Version: FINAL

Client Phone: 519-746-6916

Certificate of Analysis

Lab Work Order #: L1289407
Project P.O. #: NOT SUBMITTED
Job Reference: ORO PIT
C of C Numbers: 134488
Legal Site Desc:

Lindsay D. Zuiker
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1289407-2 1721 LINE 6 Sampled By: CLIENT on 12-APR-13 @ 15:00 Matrix: WATER							
Physical Tests							
Color, Apparent	3.0		1.0	C.U.		15-APR-13	R2578349
Conductivity	362		3.0	umhos/cm		16-APR-13	R2579936
Hardness (as CaCO3)	<10		10	mg/L		18-APR-13	
pH	8.22		0.10	pH units		16-APR-13	R2579942
Total Dissolved Solids	230		20	mg/L	18-APR-13	19-APR-13	R2582272
Turbidity	0.29		0.10	NTU	15-APR-13	15-APR-13	R2578194
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	174		10	mg/L		18-APR-13	R2582014
Ammonia, Total (as N)	<0.050		0.050	mg/L		18-APR-13	R2580935
Chloride	<2.0		2.0	mg/L		17-APR-13	R2582088
Fluoride	<0.10		0.10	mg/L		17-APR-13	R2582088
Nitrate-N	<0.10		0.10	mg/L		17-APR-13	R2582088
Nitrite-N	<0.10		0.10	mg/L		17-APR-13	R2582088
Phosphate-P (ortho)	0.0046		0.0030	mg/L		19-APR-13	R2581796
Sulphate	23.9		2.0	mg/L		17-APR-13	R2582088
Total Metals							
Aluminum (Al)-Total	<0.010		0.010	mg/L	15-APR-13	16-APR-13	R2580800
Antimony (Sb)-Total	<0.0050		0.0050	mg/L	15-APR-13	16-APR-13	R2580800
Arsenic (As)-Total	<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1289407-2 1721 LINE 6								
Sampled By: CLIENT on 12-APR-13 @ 15:00								
Matrix: WATER								
Total Metals								
Barium (Ba)-Total		<0.010		0.010	mg/L	15-APR-13	16-APR-13	R2580800
Beryllium (Be)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Bismuth (Bi)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Boron (B)-Total		<0.050		0.050	mg/L	15-APR-13	16-APR-13	R2580800
Cadmium (Cd)-Total		<0.000090		0.000090	mg/L	15-APR-13	16-APR-13	R2580800
Calcium (Ca)-Total		<0.50		0.50	mg/L	15-APR-13	16-APR-13	R2580800
Chromium (Cr)-Total		0.00053		0.00050	mg/L	15-APR-13	16-APR-13	R2580800
Cobalt (Co)-Total		<0.00050		0.00050	mg/L	15-APR-13	16-APR-13	R2580800
Copper (Cu)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Iron (Fe)-Total		<0.050		0.050	mg/L	15-APR-13	16-APR-13	R2580800
Lead (Pb)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Magnesium (Mg)-Total		<0.50		0.50	mg/L	15-APR-13	16-APR-13	R2580800
Manganese (Mn)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Molybdenum (Mo)-Total		0.0015		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Nickel (Ni)-Total		<0.0020		0.0020	mg/L	15-APR-13	16-APR-13	R2580800
Phosphorus (P)-Total		<0.050		0.050	mg/L	15-APR-13	16-APR-13	R2580800
Potassium (K)-Total		<1.0		1.0	mg/L	15-APR-13	16-APR-13	R2580800
Selenium (Se)-Total		<0.00040		0.00040	mg/L	15-APR-13	16-APR-13	R2580800
Silicon (Si)-Total		7.6		1.0	mg/L	15-APR-13	16-APR-13	R2580800
Silver (Ag)-Total		<0.00010		0.00010	mg/L	15-APR-13	16-APR-13	R2580800
Sodium (Na)-Total		97.4	DLM	5.0	mg/L	15-APR-13	16-APR-13	R2580800
Strontium (Sr)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Thallium (Tl)-Total		<0.00030		0.00030	mg/L	15-APR-13	16-APR-13	R2580800
Tin (Sn)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Titanium (Ti)-Total		<0.0020		0.0020	mg/L	15-APR-13	16-APR-13	R2580800
Tungsten (W)-Total		<0.010		0.010	mg/L	15-APR-13	16-APR-13	R2580800
Uranium (U)-Total		<0.0050		0.0050	mg/L	15-APR-13	16-APR-13	R2580800
Vanadium (V)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Zinc (Zn)-Total		0.0419		0.0030	mg/L	15-APR-13	16-APR-13	R2580800
Zirconium (Zr)-Total		<0.0040		0.0040	mg/L	15-APR-13	16-APR-13	R2580800
Aggregate Organics								
Phenols (4AAP)		<0.0010		0.0010	mg/L	16-APR-13	16-APR-13	R2579992
Hydrocarbons								
F1 (C6-C10)		<100		100	ug/L		16-APR-13	R2579254
F2 (C10-C16)		<100		100	ug/L	17-APR-13	18-APR-13	R2580211
F3 (C16-C34)		<250		250	ug/L	17-APR-13	18-APR-13	R2580211
F4 (C34-C50)		<250		250	ug/L	17-APR-13	18-APR-13	R2580211
Total Hydrocarbons (C6-C50)		<250		250	ug/L		18-APR-13	
Chrom. to baseline at nC50		YES				17-APR-13	18-APR-13	R2580211
Surrogate: 2-Bromobenzotrifluoride		67.6		30-120	%	17-APR-13	18-APR-13	R2580211
Surrogate: Octacosane		70.4		50-120	%	17-APR-13	18-APR-13	R2580211

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Sodium (Na)-Total	DLM	L1289407-1, -2
Duplicate	Ammonia, Total (as N)	DLM	L1289407-1, -2
Matrix Spike	Silicon (Si)-Total	MS-B	L1289407-1, -2
Matrix Spike	Sodium (Na)-Total	MS-B	L1289407-1, -2
Matrix Spike	Alkalinity, Total (as CaCO3)	MS-B	L1289407-1, -2
Matrix Spike	Alkalinity, Total (as CaCO3)	MS-B	L1289407-1, -2

Sample Parameter Qualifier key listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2
ANIONS5-WT	Water	CL,F,NO2,NO3,SO4	EPA 300.0 (IC)
COLOUR-WT	Water	Colour	APHA 2120
Apparent colour is determined by analysis of the decanted sample using the platinum-cobalt colourimetric method.			
EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
ETL-HARDNESS-CALC-WT	Water	Hardness (as CaCO3)	APHA 2340 B
F1-F4-CALC-WT	Water	CCME Total Hydrocarbons	CCME CWS-PHC DEC-2000 - PUB# 1310-L
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.			

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

- Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
 3. Linearity of gasoline response within 15% throughout the calibration range.

- Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-WT	Water	F1 (O.Reg.153/04)	MOE DECPH-E3421/CCME TIER 1
The F1 fraction, nC6 to nC10 hydrocarbons, is determined by purging a known volume of the original sample. The sample is analyzed by purge and trap, gas chromatography (GC) with a 100% poly(dimethylsiloxane) (DB-1 or equivalent) column and a combination of a flame ionization detector (FID) and a mass selective detector (MSD). All area counts from the FID are integrated from the beginning of the nC6 peak to the apex of the nC10 peak to give F1. Standards containing nC6, nC10 and toluene are run at least once daily. Toluene is used as the calibration standard for the F1 fraction. The nC6 and nC10 response factors must be within 30% of the response factor for toluene.			
F2-F4-WT	Water	F2-F4 (O.Reg.153/04)	MOE DECPH-E3421/CCME TIER 1
The petroleum hydrocarbons are extracted from the aqueous samples using solvent partition. The extracts are treated with silica gel to remove polar contaminants. The final concentrated extract is analyzed by gas chromatography (GC) using flame ionization detection (FID) and a 100% polydimethylsiloxane column.			
The F2 fraction is determined by integrating the area in the chromatogram from the apex of nC10 to the apex nC16 and quantitating using external calibration using a standard mix containing nC10, nC16 and nC34. Similarly, the F3 fraction extends from the apex of nC16 to the apex nC34 and the F4 fraction covers the area from the apex nC34 to the apex nC50. If the chromatogram does not return to the baseline by the time nC50 elutes, a gravimetric determination of the F4 is performed.			

MET-T-MS-WT	Water	Total Metals in Water by ICPMS	EPA 200.8
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The concentration of metals is determined on an unfiltered aqueous sample. The sample is digested with nitric acid and then analyzed directly by ICP-MS.

NH3-WT	Water	Ammonia, Total as N	EPA 350.1
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Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.

P-ORTHO-LOW-WT	Water	Phosphorus-P (ortho)	APHA 4500-P B E
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PH-WT	Water	pH	APHA 4500 H-Electrode
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Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
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An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C
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A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5 C overnight and then 180–10 C for 1hr.

TURBIDITY-WT	Water	Turbidity	APHA 2130 B
--------------	-------	-----------	-------------

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

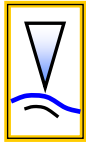
134488

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

- mg/kg - milligrams per kilogram based on dry weight of sample
- mg/kg wwt - milligrams per kilogram based on wet weight of sample
- mg/kg lwt - milligrams per kilogram based on lipid weight of sample
- mg/L - unit of concentration based on volume, parts per million.
- < - Less than.
- D.L. - The reporting limit.
- N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Groundwater Science Corp.

24 Erb Street East,
Waterloo, ON N2J 1L6
Phone: (519) 746-6916
Fax: (519) 884-5996

May 6, 2013

Joanne Kaplinski
2097 Line 6 North
RR1
Oro Station, Ontario
L0L 2E0

Dear Ms. Kaplinski:

**RE: Water Well Survey and Water Quality Sample Results
Lafarge Canada Inc. Oro Pit Monitoring Program.**

This letter is to provide you with a copy of the water quality analysis results for the sample obtained on March 14, 2013 as part of the monitoring program for the Lafarge Canada Inc. Oro Pit. At that time a water well survey was completed and a water sample obtained by Groundwater Science Corp. personnel under your authorization. The water quality sample was intended to establish existing (baseline) conditions at your well.

The sample was analyzed by ALS Laboratories (Waterloo, Ontario). The analysis result for your well water as provided by the laboratory is attached to this letter. We note that the analysis results are all within the corresponding drinking water criteria established by the Ministry of the Environment (MOE) for health related purposes. We note that your water is relatively hard, and, has slightly elevated iron concentration and colour. The colour detected may be a result of the presence of iron. Colour is considered an aesthetic parameter, unless a chlorine water treatment is used. In general your water quality is considered typical for a well located in this area of southern Ontario.

If you have any questions regarding this information please do not hesitate to contact me.

Sincerely,

Andrew Pentney, P.Geol.
Hydrogeologist

Attached: copy of ALS Laboratories Certificate of Analysis for 2097 6th Line.



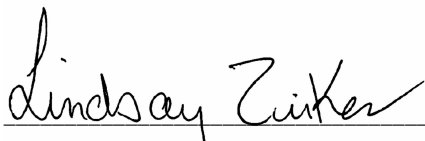
GROUNDWATER SCIENCE
ATTN: ANDREW PENTNEY
4-590 BEARINGER RD
WATERLOO ON N2L 6C4

Date Received: 14-MAR-13
Report Date: 21-MAR-13 14:33 (MT)
Version: FINAL

Client Phone: 519-746-6916

Certificate of Analysis

Lab Work Order #: L1278892
Project P.O. #: NOT SUBMITTED
Job Reference: ORO PIT
C of C Numbers: 134424
Legal Site Desc:


Lindsay D. Zuiker
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1278892-1 2097 6TH LINE Sampled By: D. NAHRGANG on 14-MAR-13 @ 11:15 Matrix: WATER								
Physical Tests								
Color, Apparent		15.9		1.0	C.U.		15-MAR-13	R2556741
Conductivity		277		3.0	umhos/cm		15-MAR-13	R2557409
Hardness (as CaCO3)		114		10	mg/L		18-MAR-13	
pH		8.29		0.10	pH units		15-MAR-13	R2557432
Total Dissolved Solids		156		20	mg/L	20-MAR-13	21-MAR-13	R2560778
Turbidity		1.73		0.10	NTU	15-MAR-13	15-MAR-13	R2556878
Anions and Nutrients								
Alkalinity, Total (as CaCO3)		145		10	mg/L		15-MAR-13	R2556902
Ammonia, Total (as N)		0.193		0.050	mg/L		15-MAR-13	R2556894
Chloride		<2.0		2.0	mg/L		15-MAR-13	R2557993
Fluoride		0.16		0.10	mg/L		15-MAR-13	R2557993
Nitrate-N		<0.10		0.10	mg/L		15-MAR-13	R2557993
Nitrite-N		<0.10		0.10	mg/L		15-MAR-13	R2557993
Phosphate-P (ortho)		0.0140		0.0030	mg/L		19-MAR-13	R2559524
Sulphate		4.7		2.0	mg/L		15-MAR-13	R2557993
Total Metals								
Aluminum (Al)-Total		<0.010		0.010	mg/L	15-MAR-13	15-MAR-13	R2558393
Antimony (Sb)-Total		<0.0050		0.0050	mg/L	15-MAR-13	15-MAR-13	R2558393
Arsenic (As)-Total		<0.0010		0.0010	mg/L	15-MAR-13	15-MAR-13	R2558393
Barium (Ba)-Total		0.038		0.010	mg/L	15-MAR-13	15-MAR-13	R2558393
Beryllium (Be)-Total		<0.0010		0.0010	mg/L	15-MAR-13	15-MAR-13	R2558393
Bismuth (Bi)-Total		<0.0010		0.0010	mg/L	15-MAR-13	15-MAR-13	R2558393
Boron (B)-Total		<0.050		0.050	mg/L	15-MAR-13	15-MAR-13	R2558393
Cadmium (Cd)-Total		<0.000090		0.000090	mg/L	15-MAR-13	15-MAR-13	R2558393
Calcium (Ca)-Total		24.7		0.50	mg/L	15-MAR-13	15-MAR-13	R2558393
Chromium (Cr)-Total		<0.00050		0.00050	mg/L	15-MAR-13	15-MAR-13	R2558393
Cobalt (Co)-Total		<0.00050		0.00050	mg/L	15-MAR-13	15-MAR-13	R2558393
Copper (Cu)-Total		0.0010		0.0010	mg/L	15-MAR-13	15-MAR-13	R2558393
Iron (Fe)-Total		0.346		0.050	mg/L	15-MAR-13	15-MAR-13	R2558393
Lead (Pb)-Total		<0.0010		0.0010	mg/L	15-MAR-13	15-MAR-13	R2558393
Magnesium (Mg)-Total		12.7		0.50	mg/L	15-MAR-13	15-MAR-13	R2558393
Manganese (Mn)-Total		0.0225		0.0010	mg/L	15-MAR-13	15-MAR-13	R2558393
Molybdenum (Mo)-Total		0.0018		0.0010	mg/L	15-MAR-13	15-MAR-13	R2558393
Nickel (Ni)-Total		<0.0020		0.0020	mg/L	15-MAR-13	15-MAR-13	R2558393
Phosphorus (P)-Total		<0.050		0.050	mg/L	15-MAR-13	15-MAR-13	R2558393
Potassium (K)-Total		<1.0		1.0	mg/L	15-MAR-13	15-MAR-13	R2558393
Selenium (Se)-Total		<0.00040		0.00040	mg/L	15-MAR-13	15-MAR-13	R2558393
Silicon (Si)-Total		7.4		1.0	mg/L	15-MAR-13	18-MAR-13	R2558393
Silver (Ag)-Total		<0.00010		0.00010	mg/L	15-MAR-13	15-MAR-13	R2558393
Sodium (Na)-Total		19.9		0.50	mg/L	15-MAR-13	15-MAR-13	R2558393
Strontium (Sr)-Total		0.224		0.0010	mg/L	15-MAR-13	15-MAR-13	R2558393

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1278892-1	2097 6TH LINE							
Sampled By:	D. NAHRGANG on 14-MAR-13 @ 11:15							
Matrix:	WATER							
Total Metals								
Thallium (Tl)-Total		<0.00030		0.00030	mg/L	15-MAR-13	15-MAR-13	R2558393
Tin (Sn)-Total		<0.0010		0.0010	mg/L	15-MAR-13	15-MAR-13	R2558393
Titanium (Ti)-Total		<0.0020		0.0020	mg/L	15-MAR-13	15-MAR-13	R2558393
Tungsten (W)-Total		<0.010		0.010	mg/L	15-MAR-13	15-MAR-13	R2558393
Uranium (U)-Total		<0.0050		0.0050	mg/L	15-MAR-13	15-MAR-13	R2558393
Vanadium (V)-Total		<0.0010		0.0010	mg/L	15-MAR-13	15-MAR-13	R2558393
Zinc (Zn)-Total		0.0084		0.0030	mg/L	15-MAR-13	15-MAR-13	R2558393
Zirconium (Zr)-Total		<0.0040		0.0040	mg/L	15-MAR-13	15-MAR-13	R2558393
Aggregate Organics								
Phenols (4AAP)		<0.0010		0.0010	mg/L	19-MAR-13	19-MAR-13	R2559500
Hydrocarbons								
F1 (C6-C10)		<25		25	ug/L		19-MAR-13	R2559329
F2 (C10-C16)		<100		100	ug/L	19-MAR-13	21-MAR-13	R2557808
F3 (C16-C34)		<250		250	ug/L	19-MAR-13	21-MAR-13	R2557808
F4 (C34-C50)		<250		250	ug/L	19-MAR-13	21-MAR-13	R2557808
Total Hydrocarbons (C6-C50)		<250		250	ug/L		21-MAR-13	
Chrom. to baseline at nC50		YES				19-MAR-13	21-MAR-13	R2557808
Surrogate: 2-Bromobenzotrifluoride		68.8		60-140	%	19-MAR-13	21-MAR-13	R2557808
Surrogate: 3,4-Dichlorotoluene		126.0		60-140	%		19-MAR-13	R2559329
Surrogate: Octacosane		85.1		60-140	%	19-MAR-13	21-MAR-13	R2557808

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Sodium (Na)-Total	DLM	L1278892-1
Duplicate	Phenols (4AAP)	DLM	L1278892-1
Matrix Spike	Aluminum (Al)-Total	MS-B	L1278892-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L1278892-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1278892-1
Matrix Spike	Silicon (Si)-Total	MS-B	L1278892-1
Matrix Spike	Sodium (Na)-Total	MS-B	L1278892-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L1278892-1
Matrix Spike	Phosphate-P (ortho)	MS-B	L1278892-1
Matrix Spike	Phosphate-P (ortho)	MS-B	L1278892-1

Sample Parameter Qualifier key listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2
ANIONS5-WT	Water	CL,F,NO2,NO3,SO4	EPA 300.0 (IC)
COLOUR-WT	Water	Colour	APHA 2120
Apparent colour is determined by analysis of the decanted sample using the platinum-cobalt colourimetric method.			
EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
ETL-HARDNESS-CALC-WT	Water	Hardness (as CaCO3)	APHA 2340 B

F1-F4-511-CALC-WT Water F1-F4 Hydrocarbon Calculated CCME CWS-PHC DEC-2000 - PUB# 1310-L

Analytical methods used for analysis of ~~Contaminants~~ Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT Water F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS

Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F2-F4-511-WT Water F2-F4-O.Reg 153/04 (July 2011) MOE DECPH-E3398/CCME TIER 1

Fractions F2, F3 and F4 are determined by liquid/liquid extraction with a solvent. The solvent recovered from the extracted sample is dried and treated to remove polar material. The extract is then analyzed by GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-T-MS-WT	Water	Total Metals in Water by ICPMS	EPA 200.8
The concentration of metals is determined on an unfiltered aqueous sample. The sample is digested with nitric acid and then analyzed directly by ICP-MS.			
NH3-WT	Water	Ammonia, Total as N	EPA 350.1
Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.			
P-ORTHO-LOW-WT	Water	Phosphorus-P (ortho)	APHA 4500-P B E
PH-WT	Water	pH	APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C
A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5°C overnight and then 180–10°C for 1hr.			
TURBIDITY-WT	Water	Turbidity	APHA 2130 B
Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

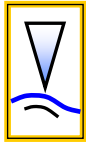
134424

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

- mg/kg - milligrams per kilogram based on dry weight of sample
- mg/kg wwwt - milligrams per kilogram based on wet weight of sample
- mg/kg lwt - milligrams per kilogram based on lipid weight of sample
- mg/L - unit of concentration based on volume, parts per million.
- < - Less than.
- D.L. - The reporting limit.
- N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Groundwater Science Corp.

24 Erb Street East,
Waterloo, ON N2J 1L6
Phone: (519) 746-6916
Fax: (519) 884-5996

May 6, 2013

Carl Darby
2104 Line 6 North
RR1
Oro Station, Ontario
L0L 2E0

Dear Mr. Darby:

**RE: Water Well Survey and Water Quality Sample Results
Lafarge Canada Inc. Oro Pit Monitoring Program.**

This letter is to provide you with a copy of the water quality analysis results for the sample obtained on February 21, 2013 as part of the monitoring program for the Lafarge Canada Inc. Oro Pit. At that time a water well survey was completed and a water sample obtained by Groundwater Science Corp. personnel under your authorization. The water quality sample was intended to establish existing (baseline) conditions at your well.

The sample was analyzed by ALS Laboratories (Waterloo, Ontario). The analysis result for your well water as provided by the laboratory is attached to this letter. We note that the analysis results are all within the corresponding drinking water criteria established by the Ministry of the Environment (MOE) for health related purposes.

You note on your survey response that your water is hard and that your water is filtered and softened. Based on low Hardness concentration result we suspect that the sample was taken from a treated water tap. The water softening process typically removes Calcium and Magnesium, and, increases the Sodium concentration in the water. Therefore it is recommended that you do not drink the treated water if you are on a Sodium restricted diet. In general your water quality is considered typical for a well located in this area of southern Ontario.

If you have any questions regarding this information please do not hesitate to contact me.

Sincerely,

Andrew Pentney, P.Geol.
Hydrogeologist

Attached: copy of ALS Laboratories Certificate of Analysis for 2104 6th Line.



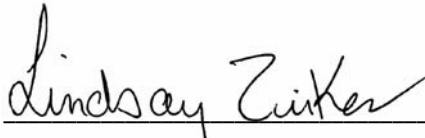
GROUNDWATER SCIENCE
ATTN: ANDREW PENTNEY
4-590 BEARINGER RD
WATERLOO ON N2L 6C4

Date Received: 22-FEB-13
Report Date: 28-FEB-13 15:00 (MT)
Version: FINAL

Client Phone: 519-746-6916

Certificate of Analysis

Lab Work Order #: L1271391
Project P.O. #: NOT SUBMITTED
Job Reference: ORO PIT
C of C Numbers: 134608
Legal Site Desc:


Lindsay D. Zuiker
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1271391-1 2104 6TH LINE								
Sampled By: DAVE N on 21-FEB-13 @ 11:20								
Matrix: WATER								
Physical Tests								
Color, Apparent		<1.0		1.0	C.U.		22-FEB-13	R2540634
Conductivity		480		3.0	umhos/cm		22-FEB-13	R2541352
Hardness (as CaCO3)		<10		10	mg/L		27-FEB-13	
pH		8.09		0.10	pH units		22-FEB-13	R2541353
Total Dissolved Solids		280		20	mg/L	27-FEB-13	28-FEB-13	R2545149
Turbidity		<0.10		0.10	NTU	22-FEB-13	22-FEB-13	R2540911
Anions and Nutrients								
Alkalinity, Total (as CaCO3)		206		10	mg/L		22-FEB-13	R2540649
Ammonia, Total (as N)		<0.050		0.050	mg/L		25-FEB-13	R2542237
Chloride		16.0		2.0	mg/L		23-FEB-13	R2543674
Fluoride		<0.10		0.10	mg/L		23-FEB-13	R2543674
Nitrate-N		3.38		0.10	mg/L		23-FEB-13	R2543674
Nitrite-N		<0.10		0.10	mg/L		23-FEB-13	R2543674
Phosphate-P (ortho)		0.0037		0.0030	mg/L		25-FEB-13	R2542629
Sulphate		11.6		2.0	mg/L		23-FEB-13	R2543674
Dissolved Metals								
Dissolved Metals Filtration Location		FIELD					25-FEB-13	R2541751
Aluminum (Al)-Dissolved		<0.010		0.010	mg/L	25-FEB-13	25-FEB-13	R2543130
Antimony (Sb)-Dissolved		<0.0050		0.0050	mg/L	25-FEB-13	25-FEB-13	R2543130
Arsenic (As)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Barium (Ba)-Dissolved		<0.010		0.010	mg/L	25-FEB-13	25-FEB-13	R2543130
Beryllium (Be)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Bismuth (Bi)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Boron (B)-Dissolved		<0.050		0.050	mg/L	25-FEB-13	25-FEB-13	R2543130
Cadmium (Cd)-Dissolved		<0.000090		0.000090	mg/L	25-FEB-13	25-FEB-13	R2543130
Calcium (Ca)-Dissolved		<0.50		0.50	mg/L	25-FEB-13	25-FEB-13	R2543130
Chromium (Cr)-Dissolved		0.00127		0.00050	mg/L	25-FEB-13	25-FEB-13	R2543130
Cobalt (Co)-Dissolved		<0.00050		0.00050	mg/L	25-FEB-13	25-FEB-13	R2543130
Copper (Cu)-Dissolved		0.0072		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Iron (Fe)-Dissolved		<0.050		0.050	mg/L	25-FEB-13	25-FEB-13	R2543130
Lead (Pb)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Magnesium (Mg)-Dissolved		<0.50		0.50	mg/L	25-FEB-13	25-FEB-13	R2543130
Manganese (Mn)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Molybdenum (Mo)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Nickel (Ni)-Dissolved		<0.0020		0.0020	mg/L	25-FEB-13	25-FEB-13	R2543130
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	25-FEB-13	25-FEB-13	R2543130
Potassium (K)-Dissolved		<1.0		1.0	mg/L	25-FEB-13	25-FEB-13	R2543130
Selenium (Se)-Dissolved		<0.00040		0.00040	mg/L	25-FEB-13	25-FEB-13	R2543130
Silicon (Si)-Dissolved		6.1		1.0	mg/L	25-FEB-13	25-FEB-13	R2543130
Silver (Ag)-Dissolved		<0.00010		0.00010	mg/L	25-FEB-13	25-FEB-13	R2543130
Sodium (Na)-Dissolved		119	DLM	5.0	mg/L	25-FEB-13	25-FEB-13	R2543130

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1271391-1	2104 6TH LINE							
Sampled By:	DAVE N on 21-FEB-13 @ 11:20							
Matrix:	WATER							
Dissolved Metals								
Strontium (Sr)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Thallium (Tl)-Dissolved		<0.00030		0.00030	mg/L	25-FEB-13	25-FEB-13	R2543130
Tin (Sn)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Titanium (Ti)-Dissolved		<0.0020		0.0020	mg/L	25-FEB-13	25-FEB-13	R2543130
Tungsten (W)-Dissolved		<0.010		0.010	mg/L	25-FEB-13	25-FEB-13	R2543130
Uranium (U)-Dissolved		<0.0050		0.0050	mg/L	25-FEB-13	25-FEB-13	R2543130
Vanadium (V)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Zinc (Zn)-Dissolved		<0.0030		0.0030	mg/L	25-FEB-13	25-FEB-13	R2543130
Zirconium (Zr)-Dissolved		<0.0040		0.0040	mg/L	25-FEB-13	25-FEB-13	R2543130
Aggregate Organics								
Phenols (4AAP)		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543711
Hydrocarbons								
F1 (C6-C10)		<25		25	ug/L		22-FEB-13	R2541675
F2 (C10-C16)		<100		100	ug/L	26-FEB-13	28-FEB-13	R2545530
F3 (C16-C34)		<250		250	ug/L	26-FEB-13	28-FEB-13	R2545530
F4 (C34-C50)		<250		250	ug/L	26-FEB-13	28-FEB-13	R2545530
Total Hydrocarbons (C6-C50)		<250		250	ug/L		28-FEB-13	
Chrom. to baseline at nC50		YES				26-FEB-13	28-FEB-13	R2545530
Surrogate: 2-Bromobenzotrifluoride		69.1		60-140	%	26-FEB-13	28-FEB-13	R2545530
Surrogate: 3,4-Dichlorotoluene		96.1		60-140	%		22-FEB-13	R2541675
Surrogate: Octacosane		83.7		60-140	%	26-FEB-13	28-FEB-13	R2545530

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Sodium (Na)-Dissolved	DLM	L1271391-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1271391-1, -2, -3

Sample Parameter Qualifier key listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2
ANIONS5-WT	Water	CL,F,NO2,NO3,SO4	EPA 300.0 (IC)
COLOUR-WT	Water	Colour	APHA 2120
Apparent colour is determined by analysis of the decanted sample using the platinum-cobalt colourimetric method.			
EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
ETL-HARDNESS-CALC-WT	Water	Hardness (as CaCO3)	APHA 2340 B

F1-F4-511-CALC-WT Water F1-F4 Hydrocarbon Calculated CCME CWS-PHC DEC-2000 - PUB# 1310-L
Analytical methods used for analysis of ~~Contaminants~~ Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT Water F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS
Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F2-F4-511-WT Water F2-F4-O.Reg 153/04 (July 2011) MOE DECPH-E3398/CCME TIER 1
Fractions F2, F3 and F4 are determined by liquid/liquid extraction with a solvent. The solvent recovered from the extracted sample is dried and treated to remove polar material. The extract is then analyzed by GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-D-MS-WT	Water	Dissolved Metals in Water by ICP/MS	EPA 200.8
The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
NH3-WT	Water	Ammonia, Total as N	EPA 350.1
Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.			
P-ORTHO-LOW-WT	Water	Phosphorus-P (ortho)	APHA 4500-P B E
PH-WT	Water	pH	APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C
A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5 C overnight and then 180–10 C for 1hr.			
TURBIDITY-WT	Water	Turbidity	APHA 2130 B
Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

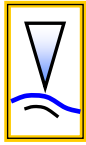
Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

134608

GLOSSARY OF REPORT TERMS
Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Groundwater Science Corp.

24 Erb Street East,
Waterloo, ON N2J 1L6
Phone: (519) 746-6916
Fax: (519) 884-5996

May 6, 2013

Kimberly Brown and Brian Metcalfe
2272 Line 6 North
RR1
Oro Station, Ontario
L0L 2E0

Dear Ms. Brown and Mr. Metcalfe:

**RE: Water Well Survey and Water Quality Sample Results
Lafarge Canada Inc. Oro Pit Monitoring Program.**

This letter is to provide you with a copy of the water quality analysis results for the sample obtained on April 12, 2013 as part of the monitoring program for the Lafarge Canada Inc. Oro Pit. At that time a water well survey was completed and a water sample obtained by Groundwater Science Corp. personnel under your authorization. The water quality sample was intended to establish existing (baseline) conditions at your well.

The sample was analyzed by ALS Laboratories (Waterloo, Ontario). The analysis result for your well water as provided by the laboratory is attached to this letter. We note that the analysis results are all within the corresponding drinking water criteria established by the Ministry of the Environment (MOE) for health related purposes. In general your water quality is considered typical for a well located in this area of southern Ontario.

If you have any questions regarding this information please do not hesitate to contact me.

Sincerely,

Andrew Pentney, P.Geo.
Hydrogeologist

Attached: copy of ALS Laboratories Certificate of Analysis for 2272 Line 6.



GROUNDWATER SCIENCE
ATTN: ANDREW PENTNEY
4-590 BEARINGER RD
WATERLOO ON N2L 6C4

Date Received: 12-APR-13
Report Date: 22-APR-13 08:23 (MT)
Version: FINAL

Client Phone: 519-746-6916

Certificate of Analysis

Lab Work Order #: L1289407
Project P.O. #: NOT SUBMITTED
Job Reference: ORO PIT
C of C Numbers: 134488
Legal Site Desc:

Lindsay D. Zuiker
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1289407-1	2272 LINE 6							
Sampled By: CLIENT on 12-APR-13 @ 11:25								
Matrix: WATER								
Physical Tests								
Color, Apparent		2.6		1.0	C.U.		15-APR-13	R2578349
Conductivity		322		3.0	umhos/cm		16-APR-13	R2579936
Hardness (as CaCO3)		192		10	mg/L		18-APR-13	
pH		8.15		0.10	pH units		16-APR-13	R2579942
Total Dissolved Solids		190		20	mg/L	18-APR-13	19-APR-13	R2582272
Turbidity		0.26		0.10	NTU	15-APR-13	15-APR-13	R2578194
Anions and Nutrients								
Alkalinity, Total (as CaCO3)		164		10	mg/L		18-APR-13	R2582014
Ammonia, Total (as N)		0.067		0.050	mg/L		18-APR-13	R2580935
Chloride		<2.0		2.0	mg/L		17-APR-13	R2582088
Fluoride		<0.10		0.10	mg/L		17-APR-13	R2582088
Nitrate-N		0.65		0.10	mg/L		17-APR-13	R2582088
Nitrite-N		<0.10		0.10	mg/L		17-APR-13	R2582088
Phosphate-P (ortho)		0.0047		0.0030	mg/L		19-APR-13	R2581796
Sulphate		16.8		2.0	mg/L		17-APR-13	R2582088
Total Metals								
Aluminum (Al)-Total		<0.010		0.010	mg/L	15-APR-13	16-APR-13	R2580800
Antimony (Sb)-Total		<0.0050		0.0050	mg/L	15-APR-13	16-APR-13	R2580800
Arsenic (As)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Barium (Ba)-Total		0.033		0.010	mg/L	15-APR-13	16-APR-13	R2580800
Beryllium (Be)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Bismuth (Bi)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Boron (B)-Total		<0.050		0.050	mg/L	15-APR-13	16-APR-13	R2580800
Cadmium (Cd)-Total		<0.000090		0.000090	mg/L	15-APR-13	16-APR-13	R2580800
Calcium (Ca)-Total		48.0		0.50	mg/L	15-APR-13	16-APR-13	R2580800
Chromium (Cr)-Total		0.00099		0.00050	mg/L	15-APR-13	16-APR-13	R2580800
Cobalt (Co)-Total		<0.00050		0.00050	mg/L	15-APR-13	16-APR-13	R2580800
Copper (Cu)-Total		0.0058		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Iron (Fe)-Total		<0.050		0.050	mg/L	15-APR-13	16-APR-13	R2580800
Lead (Pb)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Magnesium (Mg)-Total		17.5		0.50	mg/L	15-APR-13	16-APR-13	R2580800
Manganese (Mn)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Molybdenum (Mo)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Nickel (Ni)-Total		<0.0020		0.0020	mg/L	15-APR-13	16-APR-13	R2580800
Phosphorus (P)-Total		<0.050		0.050	mg/L	15-APR-13	16-APR-13	R2580800
Potassium (K)-Total		1.4		1.0	mg/L	15-APR-13	16-APR-13	R2580800
Selenium (Se)-Total		<0.00040		0.00040	mg/L	15-APR-13	16-APR-13	R2580800
Silicon (Si)-Total		5.6		1.0	mg/L	15-APR-13	16-APR-13	R2580800
Silver (Ag)-Total		<0.00010		0.00010	mg/L	15-APR-13	16-APR-13	R2580800
Sodium (Na)-Total		5.91		0.50	mg/L	15-APR-13	16-APR-13	R2580800
Strontium (Sr)-Total		0.158		0.0010	mg/L	15-APR-13	16-APR-13	R2580800

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1289407-1	2272 LINE 6							
Sampled By:	CLIENT on 12-APR-13 @ 11:25							
Matrix:	WATER							
Total Metals								
Thallium (Tl)-Total		<0.00030		0.00030	mg/L	15-APR-13	16-APR-13	R2580800
Tin (Sn)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Titanium (Ti)-Total		<0.0020		0.0020	mg/L	15-APR-13	16-APR-13	R2580800
Tungsten (W)-Total		<0.010		0.010	mg/L	15-APR-13	16-APR-13	R2580800
Uranium (U)-Total		<0.0050		0.0050	mg/L	15-APR-13	16-APR-13	R2580800
Vanadium (V)-Total		<0.0010		0.0010	mg/L	15-APR-13	16-APR-13	R2580800
Zinc (Zn)-Total		0.284		0.0030	mg/L	15-APR-13	16-APR-13	R2580800
Zirconium (Zr)-Total		<0.0040		0.0040	mg/L	15-APR-13	16-APR-13	R2580800
Aggregate Organics								
Phenols (4AAP)		<0.0010		0.0010	mg/L	16-APR-13	16-APR-13	R2579992
Hydrocarbons								
F1 (C6-C10)		<100		100	ug/L		16-APR-13	R2579254
F2 (C10-C16)		<100		100	ug/L	17-APR-13	18-APR-13	R2580211
F3 (C16-C34)		<250		250	ug/L	17-APR-13	18-APR-13	R2580211
F4 (C34-C50)		<250		250	ug/L	17-APR-13	18-APR-13	R2580211
Total Hydrocarbons (C6-C50)		<250		250	ug/L		18-APR-13	
Chrom. to baseline at nC50		YES				17-APR-13	18-APR-13	R2580211
Surrogate: 2-Bromobenzotrifluoride		71.1		30-120	%	17-APR-13	18-APR-13	R2580211
Surrogate: Octacosane		75.7		50-120	%	17-APR-13	18-APR-13	R2580211

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Sodium (Na)-Total	DLM	L1289407-1, -2
Duplicate	Ammonia, Total (as N)	DLM	L1289407-1, -2
Matrix Spike	Silicon (Si)-Total	MS-B	L1289407-1, -2
Matrix Spike	Sodium (Na)-Total	MS-B	L1289407-1, -2
Matrix Spike	Alkalinity, Total (as CaCO3)	MS-B	L1289407-1, -2
Matrix Spike	Alkalinity, Total (as CaCO3)	MS-B	L1289407-1, -2

Sample Parameter Qualifier key listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2
ANIONS5-WT	Water	CL,F,NO2,NO3,SO4	EPA 300.0 (IC)
COLOUR-WT	Water	Colour	APHA 2120
Apparent colour is determined by analysis of the decanted sample using the platinum-cobalt colourimetric method.			
EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
ETL-HARDNESS-CALC-WT	Water	Hardness (as CaCO3)	APHA 2340 B
F1-F4-CALC-WT	Water	CCME Total Hydrocarbons	CCME CWS-PHC DEC-2000 - PUB# 1310-L
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.			

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

- Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
 3. Linearity of gasoline response within 15% throughout the calibration range.

- Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-WT	Water	F1 (O.Reg.153/04)	MOE DECPH-E3421/CCME TIER 1
The F1 fraction, nC6 to nC10 hydrocarbons, is determined by purging a known volume of the original sample. The sample is analyzed by purge and trap, gas chromatography (GC) with a 100% poly(dimethylsiloxane) (DB-1 or equivalent) column and a combination of a flame ionization detector (FID) and a mass selective detector (MSD). All area counts from the FID are integrated from the beginning of the nC6 peak to the apex of the nC10 peak to give F1. Standards containing nC6, nC10 and toluene are run at least once daily. Toluene is used as the calibration standard for the F1 fraction. The nC6 and nC10 response factors must be within 30% of the response factor for toluene.			
F2-F4-WT	Water	F2-F4 (O.Reg.153/04)	MOE DECPH-E3421/CCME TIER 1
The petroleum hydrocarbons are extracted from the aqueous samples using solvent partition. The extracts are treated with silica gel to remove polar contaminants. The final concentrated extract is analyzed by gas chromatography (GC) using flame ionization detection (FID) and a 100% polydimethylsiloxane column.			
The F2 fraction is determined by integrating the area in the chromatogram from the apex of nC10 to the apex nC16 and quantitating using external calibration using a standard mix containing nC10, nC16 and nC34. Similarly, the F3 fraction extends from the apex of nC16 to the apex nC34 and the F4 fraction covers the area from the apex nC34 to the apex nC50. If the chromatogram does not return to the baseline by the time nC50 elutes, a gravimetric determination of the F4 is performed.			

MET-T-MS-WT	Water	Total Metals in Water by ICPMS	EPA 200.8
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The concentration of metals is determined on an unfiltered aqueous sample. The sample is digested with nitric acid and then analyzed directly by ICP-MS.

NH3-WT	Water	Ammonia, Total as N	EPA 350.1
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Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.

P-ORTHO-LOW-WT	Water	Phosphorus-P (ortho)	APHA 4500-P B E
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PH-WT	Water	pH	APHA 4500 H-Electrode
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Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
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An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C
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A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5 C overnight and then 180–10 C for 1hr.

TURBIDITY-WT	Water	Turbidity	APHA 2130 B
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Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

134488

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

- mg/kg - milligrams per kilogram based on dry weight of sample
- mg/kg ww - milligrams per kilogram based on wet weight of sample
- mg/kg lwt - milligrams per kilogram based on lipid weight of sample
- mg/L - unit of concentration based on volume, parts per million.
- < - Less than.
- D.L. - The reporting limit.
- N/A - Result not available. Refer to qualifier code and definition for explanation.

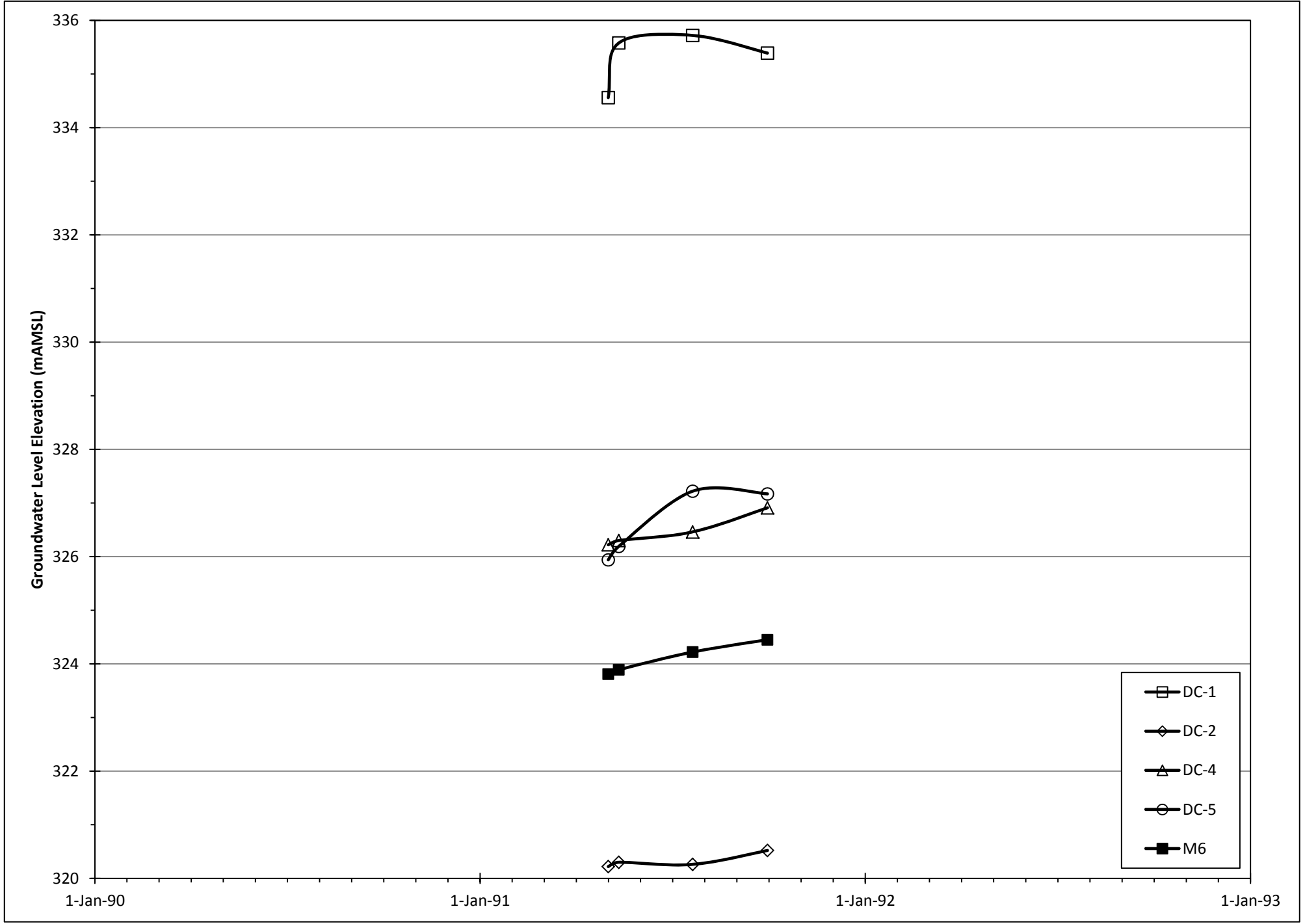
Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

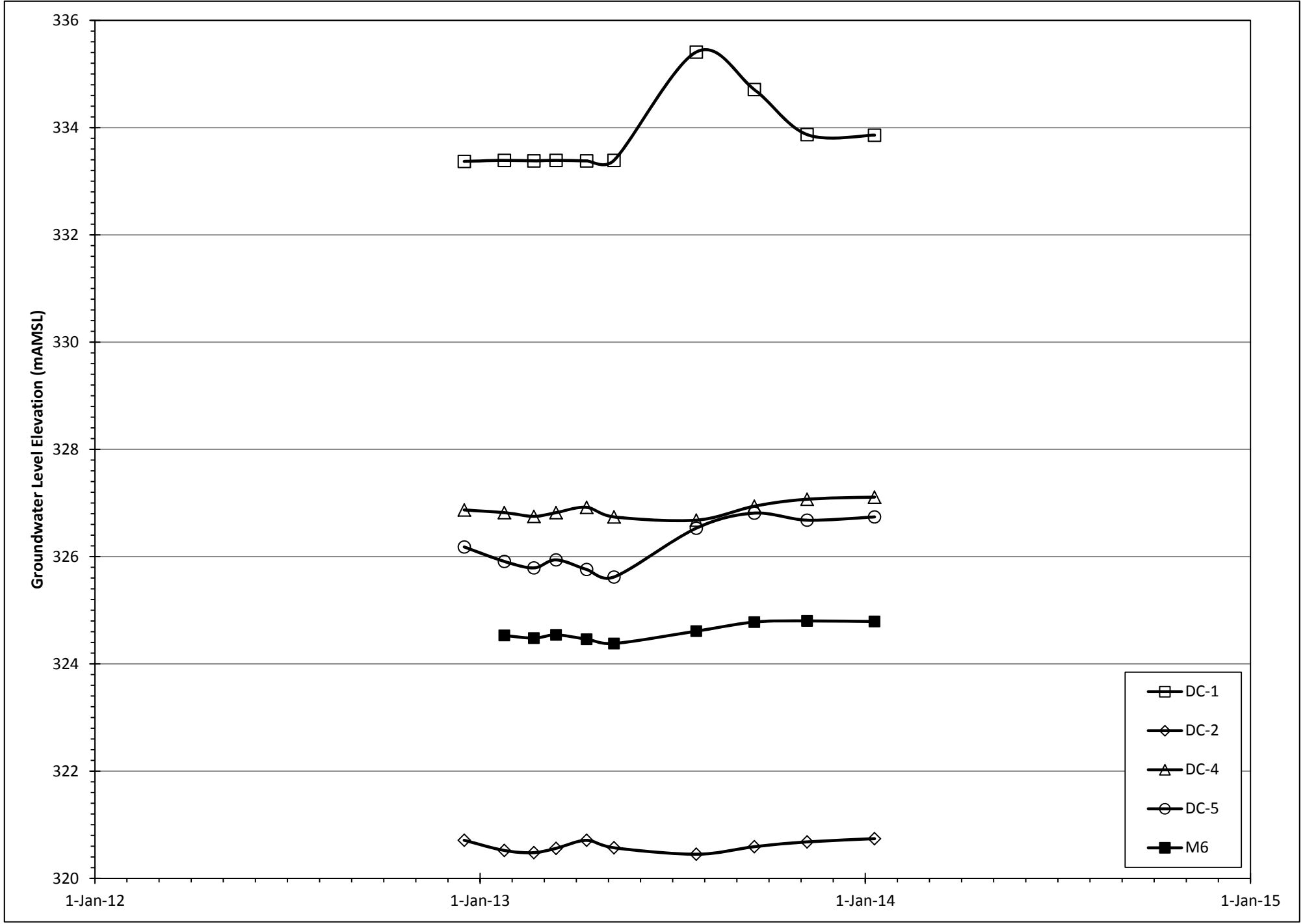
Appendix B

Reported Installation Elevations (mAMSL)					
Monitor:	DC-1	DC-2	DC-4	DC-5	M6
GS:	366.7	354.07	354.62	352.05	352.305
TOC:	367.45	354.57	355.66	352.64	352.95
TD:	34.12	36.64	30.48	30.15	31.8
SU:	0.75	0.5	1.04	0.59	0.645

Water Level Measurement - mBTOW					
Date	DC-1	DC-2	DC-4	DC-5	M6
3-May-91	32.89	34.35	29.44	26.70	29.14
13-May-91	31.87	34.27	29.36	26.45	29.07
22-Jul-91	31.73	34.31	29.20	25.42	28.74
1-Oct-91	32.06	34.05	28.75	25.47	28.51
17-Dec-12	34.08 *	33.86	28.79	26.46	#N/A
24-Jan-13	34.06 *	34.05	28.84	26.73	28.42
21-Feb-13	34.07 *	34.09	28.91	26.85	28.47
14-Mar-13	34.06 *	34.01	28.84	26.70	28.41
12-Apr-13	34.07 *	33.86	28.74	26.88	28.49
8-May-13	34.06 *	34.00	28.92	27.02	28.57
25-Jul-13	32.04	34.12	28.98	26.11	28.34
18-Sep-13	32.74	33.98	28.72	25.83	28.17
7-Nov-13	33.58	33.89	28.59	25.96	28.15
10-Jan-14	33.59	33.83	28.55	25.90	28.16
mBTOW = metres below top of well					
* = likely dry (<10 cm of water column)					

Water Level Elevation - mAMSL					
Date	DC-1	DC-2	DC-4	DC-5	M6
3-May-91	334.56	320.22	326.22	325.94	323.81
13-May-91	335.58	320.3	326.3	326.19	323.89
22-Jul-91	335.72	320.26	326.46	327.22	324.22
1-Oct-91	335.39	320.52	326.91	327.17	324.45
17-Dec-12	333.37 *	320.71	326.87	326.18	#N/A
24-Jan-13	333.39 *	320.52	326.82	325.91	324.53
21-Feb-13	333.38 *	320.48	326.75	325.79	324.48
14-Mar-13	333.39 *	320.56	326.82	325.94	324.54
12-Apr-13	333.38 *	320.71	326.92	325.76	324.46
8-May-13	333.39 *	320.57	326.74	325.62	324.38
25-Jul-13	335.41	320.45	326.68	326.53	324.61
18-Sep-13	334.71	320.59	326.94	326.81	324.78
7-Nov-13	333.87	320.68	327.07	326.68	324.8
10-Jan-14	333.86	320.74	327.11	326.74	324.79
mAMSL = metres above mean sea level					
* = likely dry (<10 cm of water column)					







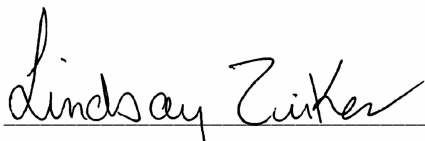
GROUNDWATER SCIENCE
ATTN: ANDREW PENTNEY
4-590 BEARINGER RD
WATERLOO ON N2L 6C4

Date Received: 22-FEB-13
Report Date: 28-FEB-13 15:00 (MT)
Version: FINAL

Client Phone: 519-746-6916

Certificate of Analysis

Lab Work Order #: L1271391
Project P.O. #: NOT SUBMITTED
Job Reference: ORO PIT
C of C Numbers: 134608
Legal Site Desc:


Lindsay D. Zuiker
Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1271391-2 DC-4							
Sampled By: DAVE N on 21-FEB-13 @ 12:45							
Matrix: WATER							
Physical Tests							
Color, Apparent	59.3		1.0	C.U.		22-FEB-13	R2540634
Conductivity	342		3.0	umhos/cm		22-FEB-13	R2541352
Hardness (as CaCO3)	189		10	mg/L		27-FEB-13	
pH	8.13		0.10	pH units		22-FEB-13	R2541353
Total Dissolved Solids	184		20	mg/L	27-FEB-13	28-FEB-13	R2545149
Turbidity	59.0		0.10	NTU	22-FEB-13	22-FEB-13	R2540911
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	174		10	mg/L		22-FEB-13	R2540649
Ammonia, Total (as N)	0.074		0.050	mg/L		25-FEB-13	R2542237
Chloride	<2.0		2.0	mg/L		23-FEB-13	R2543674
Fluoride	<0.10		0.10	mg/L		23-FEB-13	R2543674
Nitrate-N	0.19		0.10	mg/L		23-FEB-13	R2543674
Nitrite-N	<0.10		0.10	mg/L		23-FEB-13	R2543674
Phosphate-P (ortho)	0.0057		0.0030	mg/L		25-FEB-13	R2542629
Sulphate	11.0		2.0	mg/L		23-FEB-13	R2543674
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-13	R2541751

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1271391-2 DC-4								
Sampled By: DAVE N on 21-FEB-13 @ 12:45								
Matrix: WATER								
Dissolved Metals								
Aluminum (Al)-Dissolved		<0.010		0.010	mg/L	25-FEB-13	26-FEB-13	R2543130
Antimony (Sb)-Dissolved		<0.0050		0.0050	mg/L	25-FEB-13	26-FEB-13	R2543130
Arsenic (As)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	26-FEB-13	R2543130
Barium (Ba)-Dissolved		0.042		0.010	mg/L	25-FEB-13	26-FEB-13	R2543130
Beryllium (Be)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	26-FEB-13	R2543130
Bismuth (Bi)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	26-FEB-13	R2543130
Boron (B)-Dissolved		<0.050		0.050	mg/L	25-FEB-13	26-FEB-13	R2543130
Cadmium (Cd)-Dissolved		<0.000090		0.000090	mg/L	25-FEB-13	26-FEB-13	R2543130
Calcium (Ca)-Dissolved		46.1		0.50	mg/L	25-FEB-13	26-FEB-13	R2543130
Chromium (Cr)-Dissolved		0.00094		0.00050	mg/L	25-FEB-13	26-FEB-13	R2543130
Cobalt (Co)-Dissolved		<0.00050		0.00050	mg/L	25-FEB-13	26-FEB-13	R2543130
Copper (Cu)-Dissolved		0.0011		0.0010	mg/L	25-FEB-13	26-FEB-13	R2543130
Iron (Fe)-Dissolved		<0.050		0.050	mg/L	25-FEB-13	26-FEB-13	R2543130
Lead (Pb)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	26-FEB-13	R2543130
Magnesium (Mg)-Dissolved		18.0		0.50	mg/L	25-FEB-13	26-FEB-13	R2543130
Manganese (Mn)-Dissolved		0.0024		0.0010	mg/L	25-FEB-13	26-FEB-13	R2543130
Molybdenum (Mo)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	26-FEB-13	R2543130
Nickel (Ni)-Dissolved		<0.0020		0.0020	mg/L	25-FEB-13	26-FEB-13	R2543130
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	25-FEB-13	26-FEB-13	R2543130
Potassium (K)-Dissolved		1.3		1.0	mg/L	25-FEB-13	25-FEB-13	R2543130
Selenium (Se)-Dissolved		<0.00040		0.00040	mg/L	25-FEB-13	26-FEB-13	R2543130
Silicon (Si)-Dissolved		5.5		1.0	mg/L	25-FEB-13	26-FEB-13	R2543130
Silver (Ag)-Dissolved		<0.00010		0.00010	mg/L	25-FEB-13	26-FEB-13	R2543130
Sodium (Na)-Dissolved		2.55		0.50	mg/L	25-FEB-13	26-FEB-13	R2543130
Strontium (Sr)-Dissolved		0.0979		0.0010	mg/L	25-FEB-13	26-FEB-13	R2543130
Thallium (Tl)-Dissolved		<0.00030		0.00030	mg/L	25-FEB-13	26-FEB-13	R2543130
Tin (Sn)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	26-FEB-13	R2543130
Titanium (Ti)-Dissolved		<0.0020		0.0020	mg/L	25-FEB-13	26-FEB-13	R2543130
Tungsten (W)-Dissolved		<0.010		0.010	mg/L	25-FEB-13	26-FEB-13	R2543130
Uranium (U)-Dissolved		<0.0050		0.0050	mg/L	25-FEB-13	26-FEB-13	R2543130
Vanadium (V)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	26-FEB-13	R2543130
Zinc (Zn)-Dissolved		0.0044		0.0030	mg/L	25-FEB-13	26-FEB-13	R2543130
Zirconium (Zr)-Dissolved		<0.0040		0.0040	mg/L	25-FEB-13	26-FEB-13	R2543130
Aggregate Organics								
Phenols (4AAP)		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543711
Hydrocarbons								
F1 (C6-C10)		<25		25	ug/L		22-FEB-13	R2541675
F2 (C10-C16)		<100		100	ug/L	26-FEB-13	28-FEB-13	R2545530
F3 (C16-C34)		<250		250	ug/L	26-FEB-13	28-FEB-13	R2545530
F4 (C34-C50)		<250		250	ug/L	26-FEB-13	28-FEB-13	R2545530
Total Hydrocarbons (C6-C50)		<250		250	ug/L		28-FEB-13	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1271391-2 DC-4 Sampled By: DAVE N on 21-FEB-13 @ 12:45 Matrix: WATER	Hydrocarbons							
	Chrom. to baseline at nC50	YES				26-FEB-13	28-FEB-13	R2545530
	Surrogate: 2-Bromobenzotrifluoride	65.4		60-140	%	26-FEB-13	28-FEB-13	R2545530
	Surrogate: 3,4-Dichlorotoluene	91.7		60-140	%		22-FEB-13	R2541675
	Surrogate: Octacosane	82.5		60-140	%	26-FEB-13	28-FEB-13	R2545530
L1271391-3 M6 Sampled By: DAVE N on 21-FEB-13 @ 14:00 Matrix: WATER	Physical Tests							
	Color, Apparent	43.8		1.0	C.U.		22-FEB-13	R2540634
	Conductivity	337		3.0	umhos/cm		22-FEB-13	R2541352
	Hardness (as CaCO3)	182		10	mg/L		26-FEB-13	
	pH	8.17		0.10	pH units		22-FEB-13	R2541353
	Total Dissolved Solids	188		20	mg/L	27-FEB-13	28-FEB-13	R2545149
	Turbidity	53.0		0.10	NTU	22-FEB-13	22-FEB-13	R2540911
	Anions and Nutrients							
	Alkalinity, Total (as CaCO3)	179		10	mg/L		22-FEB-13	R2540649
	Ammonia, Total (as N)	<0.050		0.050	mg/L		25-FEB-13	R2542237
	Chloride	<2.0		2.0	mg/L		23-FEB-13	R2543674
	Fluoride	<0.10		0.10	mg/L		23-FEB-13	R2543674
	Nitrate-N	0.80		0.10	mg/L		23-FEB-13	R2543674
	Nitrite-N	<0.10		0.10	mg/L		23-FEB-13	R2543674
	Phosphate-P (ortho)	0.0031		0.0030	mg/L		25-FEB-13	R2542629
	Sulphate	7.9		2.0	mg/L		23-FEB-13	R2543674
	Dissolved Metals							
	Dissolved Metals Filtration Location	FIELD					25-FEB-13	R2541751
	Aluminum (Al)-Dissolved	<0.010		0.010	mg/L	25-FEB-13	25-FEB-13	R2543130
	Antimony (Sb)-Dissolved	<0.0050		0.0050	mg/L	25-FEB-13	25-FEB-13	R2543130
	Arsenic (As)-Dissolved	<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
	Barium (Ba)-Dissolved	0.061		0.010	mg/L	25-FEB-13	25-FEB-13	R2543130
	Beryllium (Be)-Dissolved	<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
	Bismuth (Bi)-Dissolved	<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
	Boron (B)-Dissolved	<0.050		0.050	mg/L	25-FEB-13	25-FEB-13	R2543130
	Cadmium (Cd)-Dissolved	<0.000090		0.000090	mg/L	25-FEB-13	25-FEB-13	R2543130
	Calcium (Ca)-Dissolved	48.3		0.50	mg/L	25-FEB-13	25-FEB-13	R2543130
	Chromium (Cr)-Dissolved	0.00118		0.00050	mg/L	25-FEB-13	25-FEB-13	R2543130
	Cobalt (Co)-Dissolved	<0.00050		0.00050	mg/L	25-FEB-13	25-FEB-13	R2543130
	Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
	Iron (Fe)-Dissolved	<0.050		0.050	mg/L	25-FEB-13	25-FEB-13	R2543130
	Lead (Pb)-Dissolved	<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
	Magnesium (Mg)-Dissolved	15.0		0.50	mg/L	25-FEB-13	25-FEB-13	R2543130
	Manganese (Mn)-Dissolved	<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
	Molybdenum (Mo)-Dissolved	<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1271391-3	M6							
Sampled By: DAVE N on 21-FEB-13 @ 14:00								
Matrix: WATER								
Dissolved Metals								
Nickel (Ni)-Dissolved		<0.0020		0.0020	mg/L	25-FEB-13	25-FEB-13	R2543130
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	25-FEB-13	25-FEB-13	R2543130
Potassium (K)-Dissolved		1.0		1.0	mg/L	25-FEB-13	25-FEB-13	R2543130
Selenium (Se)-Dissolved		<0.00040		0.00040	mg/L	25-FEB-13	25-FEB-13	R2543130
Silicon (Si)-Dissolved		5.7		1.0	mg/L	25-FEB-13	25-FEB-13	R2543130
Silver (Ag)-Dissolved		<0.00010		0.00010	mg/L	25-FEB-13	25-FEB-13	R2543130
Sodium (Na)-Dissolved		2.14		0.50	mg/L	25-FEB-13	25-FEB-13	R2543130
Strontium (Sr)-Dissolved		0.118		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Thallium (Tl)-Dissolved		<0.00030		0.00030	mg/L	25-FEB-13	25-FEB-13	R2543130
Tin (Sn)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Titanium (Ti)-Dissolved		<0.0020		0.0020	mg/L	25-FEB-13	25-FEB-13	R2543130
Tungsten (W)-Dissolved		<0.010		0.010	mg/L	25-FEB-13	25-FEB-13	R2543130
Uranium (U)-Dissolved		<0.0050		0.0050	mg/L	25-FEB-13	25-FEB-13	R2543130
Vanadium (V)-Dissolved		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543130
Zinc (Zn)-Dissolved		<0.0030		0.0030	mg/L	25-FEB-13	25-FEB-13	R2543130
Zirconium (Zr)-Dissolved		<0.0040		0.0040	mg/L	25-FEB-13	25-FEB-13	R2543130
Aggregate Organics								
Phenols (4AAP)		<0.0010		0.0010	mg/L	25-FEB-13	25-FEB-13	R2543711
Hydrocarbons								
F1 (C6-C10)		<25		25	ug/L		22-FEB-13	R2541675
F2 (C10-C16)		<100		100	ug/L	26-FEB-13	28-FEB-13	R2545530
F3 (C16-C34)		<250		250	ug/L	26-FEB-13	28-FEB-13	R2545530
F4 (C34-C50)		<250		250	ug/L	26-FEB-13	28-FEB-13	R2545530
Total Hydrocarbons (C6-C50)		<250		250	ug/L		28-FEB-13	
Chrom. to baseline at nC50		YES				26-FEB-13	28-FEB-13	R2545530
Surrogate: 2-Bromobenzotrifluoride		73.1		60-140	%	26-FEB-13	28-FEB-13	R2545530
Surrogate: 3,4-Dichlorotoluene		90.9		60-140	%		22-FEB-13	R2541675
Surrogate: Octacosane		87.6		60-140	%	26-FEB-13	28-FEB-13	R2545530

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Sodium (Na)-Dissolved	DLM	L1271391-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1271391-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1271391-1, -2, -3

Sample Parameter Qualifier key listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2
ANIONS5-WT	Water	CL,F,NO2,NO3,SO4	EPA 300.0 (IC)
COLOUR-WT	Water	Colour	APHA 2120
Apparent colour is determined by analysis of the decanted sample using the platinum-cobalt colourimetric method.			
EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
ETL-HARDNESS-CALC-WT	Water	Hardness (as CaCO3)	APHA 2340 B

F1-F4-511-CALC-WT Water F1-F4 Hydrocarbon Calculated CCME CWS-PHC DEC-2000 - PUB# 1310-L
Analytical methods used for analysis of ~~Contaminants~~ Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

- Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
 3. Linearity of gasoline response within 15% throughout the calibration range.

- Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT Water F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS
Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F2-F4-511-WT Water F2-F4-O.Reg 153/04 (July 2011) MOE DECPH-E3398/CCME TIER 1
Fractions F2, F3 and F4 are determined by liquid/liquid extraction with a solvent. The solvent recovered from the extracted sample is dried and treated to remove polar material. The extract is then analyzed by GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-D-MS-WT	Water	Dissolved Metals in Water by ICP/MS	EPA 200.8
The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
NH3-WT	Water	Ammonia, Total as N	EPA 350.1
Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.			
P-ORTHO-LOW-WT	Water	Phosphorus-P (ortho)	APHA 4500-P B E
PH-WT	Water	pH	APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C
A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5°C overnight and then 180–10°C for 1hr.			
TURBIDITY-WT	Water	Turbidity	APHA 2130 B
Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

134608

GLOSSARY OF REPORT TERMS
Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.