February 2017

MCCARTHY QUARRY

McCarthy Quarry 2016 Annual Permit To Take Water Compliance Report

Submitted to:
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Barrie District Office
1203-54 Cedar Pointe Drive
Barrie, ON L4N 5R7

REPORT

Report Number: 1407634

Distribution:

1 Copy - Ontario Ministry of Environment Barrie District Office
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Golder Associates

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1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by QBJR/Coco Aggregates Inc. (Coco) to prepare the annual Permit To Take Water (PTTW) report for the McCarthy Quarry (the Site) located in the Township of Ramara, County of Simcoe (Figure 1). The annual report is a requirement of the PTTW No. 7818-9QJNL4 which expires December 31, 2019 (Appendix A). The PTTW for McCarthy Quarry authorizes pumping of up to 6,544,800 L/day with a maximum taking of 196,500,000 L/year over a maximum of 150 days per year. The disposal of water from the Site is governed by Environmental Compliance Approval (ECA) No. 4731-987KM8 under Section 20.2 of the Environmental Protection Act.

The property is located approximately six kilometres south-east of the Community of Brechin at Lot 1, Concession 1, Township of Ramara former Mara, Simcoe County (Figures 1 and 2). The area around the Site is primarily rural consisting of woodlots, pasture and scattered single-family homes. To the south and east along the Talbot River and Canal Lake are numerous seasonal and year round residences.

PTTW No. 7818-9QJNL4 directs Coco to regularly collect monitoring data of the Site water taking, groundwater levels in the on-Site monitoring wells and off-Site residential wells, groundwater quality in selected on-Site monitoring wells and off-Site residential wells and meteorological data from an on-Site meteorological station (Conditions 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 and 4.10). Coco is also required to maintain a publically accessible site on the internet containing the required monitoring data and every report that has been required by the PTTW (Condition 4.13). Coco is also required to establish a Public Liaison Committee (PLC) that is to meet once every four months (Condition 4.14).

2.0 BACKGROUND INFORMATION

The following provides an overview of the area, including information on the surface water, geological and hydrogeological regime of the Site.

2.1 Geology

The quarry is located on a broad, arching, low relief upland area within a low relief clay and limestone plain typical of the physiography to the east of Lake Simcoe (Chapman & Putman, 1975). The elevation of the land in the area, 255 metres above sea level (masl), places the higher elevations on the property at the shoreline of the glacial Lake Algonquin. The original aggregate operation on this Site extracted gravel deposited on the shoreline of Lake Algonquin. To the south of the Site, the overburden thickens and older silt and clay materials are present over the bedrock. At elevations above 254 masl the land area was in an active erosional environment for approximately 700 years by Lake Algonquin which drained across this area and out the Kirkfield Outlet toward Lake Ontario. In this “washed zone” the surficial geological deposits consist of a patchwork of thin clayey-silt, sandy-silt to silty-sand glacial till, with occasional gravelly beach ridges. Below the level of Lake Algonquin, the pre-existing fine-grained glaciolacustrine and fine-grained till deposits, the land escaped shoreline erosion and in the Talbot River Valley the overburden thickness can reach tens of metres in thickness. On the Site, the overburden thickness ranges from 0.3 m to the north at OW9 to approximately 8 m at OW4 to the south.

Underlying the overburden are Middle Ordovician aged limestone of the Verulam, Bobcaygeon and Gull River Formations, which are part of the Simcoe Group. The Verulam Formation consists of thinly bedded limestone and shale or shaley limestone. The Verulam Formation is relatively thin at the Site (0 to 4 m in thickness).

The underlying Bobcaygeon Formation consists of thin to medium bedded limestones ranging in thickness from approximately 31 m (OW6) to 40 m (OW9) within the area of investigation (Figures 3 and 4). Quarrying at the Site will be primarily in the Bobcaygeon Formation.

The Gull River Formation (approximately 16 m in thickness) will not be quarried at the Site. It consists of fine-grained limestone with minor interbeds of shale or shaley limestone. Beneath the Gull River Formation is the Shadow Lake Formation (estimated to be approximately 7 m thick), which consists of conglomerate sandstone and mudstone, and overlies the Precambrian Bedrock. The Shadow Lake Formation as well as Precambrian Bedrock were encountered at OW8 and OW7.

2.2 Hydrogeological Setting

The overburden deposits in the area are thin and generally fine-grained. These deposits host numerous dug or bored wells in the area. Bored wells are often preferred by homeowners because of the fresh water that can be obtained. The wells are often vulnerable to the impact of surface activities and frequently filtration and ultraviolet disinfection is added to domestic water supplies. In the Talbot River Valley there are buried granular deposits that provide sufficient groundwater for domestic use, through both dug and drilled wells.

Wells constructed in the bedrock aquifer most often obtain water supplies from the Gull River Formation. This bedrock, however, is known to contain sulfate minerals and the water often has a sulphurous odour. The deep bedrock wells may also contain salty water where wells intersect a sluggish groundwater flow system. Bedrock wells often produce sufficient water supplies for domestic use; however when wells are drilled deeper than 5 m to 10 m into the bedrock, the well yield is not often improved and the groundwater is prone to containing elevated levels of chloride and sulphur (MOE, 1990).

The Ministry of Environment and Climate Change (MOECC) water well database was reviewed to identify nearby water wells in the vicinity (<1,000 m) of the McCarthy Quarry. Nine wells were located within 1,000 m of McCarthy Quarry, seven of which are on Concession Road 1 and two of which are on the Mara-Eldon Boundary Road.

2.3 Quarry Dewatering

The handling of water will increase as the quarry area increases and the majority of the water removed from the Site will be precipitation and snow melt. Currently, the water taking on-Site is well below the permitted volume of 6,544,800 L/day at a maximum rate of 76 L/sec. Water is removed from the quarry sump at a rate of 35 L/sec and the water pumping ranges from 0 to 3,024,000 L/day (2,100 L/min) (Table 6).

Groundwater and precipitation entering the quarry is collected in a sump on the quarry floor. The sump is equipped with a 4-inch Grindex pump rated at 35 L/sec and is attached to a 4-inch (101 mm) diameter discharge line. The water is pumped from the quarry floor up the quarry face to a 4-inch (101 mm) diameter discharge pipeline that directs the water to a ditch that runs southward through the McCarthy property to the 14,000 m^3 settling pond. The water in the settling pond is discharged to the roadside ditches along Concession Road 1 with a Hickenbottom control structure. The water in the roadside ditch travels eastward along the north side of Concession Road 1 to a municipal drain and eventually to the Talbot River, which discharges to Lake Simcoe.

3.0 MONITORING RESULTS

Monitoring Condition 4.1: Water Level Monitoring of Sump

The quarry floor is approximately 15 metres below ground level (mbgl) or 240 masl and is permitted to be extracted to an elevation of 232 masl to an approximate depth of 23 mbgl.

The current quarry footprint is approximately 400 m by 100 m and the future extent of the quarry is shown in Figure 4. The extraction rate is dictated by market demand and the future size of the quarry is difficult to predict. However, the current extraction is approximately 150,000 m^3/year and at this rate of extraction, the footprint of the quarry would be 18 to 20 ha in ten years if a second lift is not started. If a second lift into the Bobcaygeon Formation is started, then the quarry footprint will be smaller.

Monitoring Condition 4.2: Local Climatic Conditions

The on-Site climate conditions are monitored with an RM Young tipping bucket precipitation gauge with a heater that is connected to the Solinst Rainlogger as well as an on-Site Barologger that measures temperature. Precipitation data was not collected from the weather station in 2016 and the 2016 on-Site weather data was supplemented with weather data from the nearby Environment Canada Barrie-Oro weather station. Figure 5 illustrates the precipitation and temperature data collected at the meteorological station for the 2016 monitoring period.

The on-Site meteorological data is used to evaluate fluctuations in the groundwater elevations throughout the monitoring period as well as to estimate how the water pumped from the quarry sump is actually surface water runoff.

Monitoring Condition 4.3, 4.4 and 4.5: Groundwater Elevations

Water level monitoring has been ongoing at the McCarthy Quarry since the early stages of quarry development commencing in 2002 and ongoing until 2010. Both on-Site observation wells and off-Site residential wells have been incorporated into the monitoring program in order to meet the requirements of Conditions 4.3, 4.4, 4.5 and 4.6. Pressure transducers are installed in select wells for daily monitoring of the groundwater elevation and monthly monitoring is completed with a manual water level meter. The monitoring wells and residential wells that are monitored are listed in Table 1.

Table 1: Groundwater Monitoring Locations

	Daily Monitoring	**Monthly Monitoring**
Monitoring Wells	OW4-1, OW4-2, OW5-1, OW6-1, OW6-2, OW9-1, OW9-2, Bored,CKL-1 and CKL-2	AM1b, AMx, TW1-1, OW4-1, OW4-2, OW5-1, OW5-2, OW5-3, OW6-1, OW6-2, OW6-3, OW7-1, OW7-2, OW7-3, OW8-1, OW8-2, OW8-3, OW9-1, OW9-2, Bored, CKL-1 and CKL-2
Residential Wells	DW3	DW3, DW1, DW2, DW4, DW5*, DW6*, DW7* and DW8*

*Monitored at least once every two months

The water level monitoring data for the 2016 monitoring period is presented in graphic form on Figures 6 to 10 and is listed in Table 2. The ongoing hydrographs can be found in Appendix B. The groundwater monitoring

locations are provided on Figures 1 and 2. With the exception of OW9-1 and OW8-3 (Figures 8 and 9, respectively) no declining trends were observed in the monitoring wells in previous years. These three monitoring wells are in close proximity to the active quarry and it was noted during the PTTW renewal that these monitoring locations are being impacted by the ongoing dewatering activities at the Site. These monitoring locations allow for a zone of influence to be mapped out surrounding the quarry. Additionally, when looking at the historical ranges (Appendix B) the deeper Gull River and Precambrian monitors appear to be changing with time; however, these monitoring wells are much deeper than the quarry excavation and the variation is due to external forces. In 2016, declines were noted at most monitoring wells, notably TW1-1 and OW8-3, and are likely a result of low precipitation throughout 2016. The annual precipitation in 2016 was approximately 718 mm (Environment Canada, 2016), which was well below the average annual precipitation of 978 mm for the period 1978 to 2015 (Golder, 2016). It is noted that water levels started to increase at most locations in December of 2016.

Monitoring wells installed in the overburden materials are: Bored, OW5-1, AM1b, and CKL-1. The following private off-Site residential wells are part of the monitoring program: DW1, DW2, DW4, DW5, DW6, DW7 and DW8. The location of these wells is shown in Figure 6. The fluctuations in the groundwater elevations at the overburden observation wells have been minimal since the beginning of the monitoring program in 2006 (Appendix B). During the 2016 monitoring program, the groundwater levels at the on-Site overburden monitoring wells have fluctuated as little as 0.79 m at CKL-1 and as much as 2.60 m at AM1b. The fluctuations (decreases observed throughout the summer) in 2016 were greater than in previous years; this is likely due to the decreased precipitation observed in 2016.

The water levels in the upper bedrock, Verulam Formation, are monitored at wells DW3, OW4-1, OW6-1, OW7-1, OW8-1, AMx, and CKL-2 (Figure 7). Changes in the groundwater elevations in the on-Site Verulam Formation ranged from 2.17 m at OW7-1 to 3.44 m at OW8-1. AMx was monitored until April 2015; it was within the quarry extraction area and was removed as the quarry face advanced towards the south. A replacement monitoring well for AMx is planned to be installed along the western property boundary between the quarry face and OW4 in 2017.

Water levels in the Bobcaygeon Formation are monitored at OW4-2, OW5-2, OW5-3, OW6-2, OW7-2, OW8-2, OW9-1, OW9-2, and TW1-1 (Figure 8). Changes in the groundwater elevation in the Bobcaygeon Formation ranged from 0.71 m at OW9-1 to 4.27 m at TW1-1; however, the groundwater elevation changes were significantly greater at TW1-1 (lower by 2.61 m from December 2015 to December 2016). Water levels at OW9-1 remained relatively stable in 2016 after large decreases were observed in 2014 and 2015. The water level changes at OW9-1 appear to be related to quarrying. OW9 is approximately 10 m from the active quarry face now and was originally installed 230 m away from the quarry face. The water levels started to react to gravity drainage when the quarry face was at a distance of approximately 150 m from the well. This is consistent with observations of drawdown at other quarries in this rock type.

Water levels in the Gull River Formation are monitored at OW6-3, OW7-3, and OW8-3 (Figure 9). Changes in the groundwater elevation in the Gull River Formation ranged from 1.47 m at OW6-3 to 6.93 m at OW8-3. The Gull River Formation water levels are reacting to regional groundwater level trends.

The Precambrian bedrock monitoring well is TW1-2. Changes in the groundwater elevation in the Precambrian bedrock monitoring was 1.40 m at TW1-2.

The regional groundwater flow in the Upper Bobcaygeon Formation is generally towards Lake Simcoe in the southwest direction (Figure 2). The regional groundwater flow in the overburden material is most influenced by the topography in the area and the Talbot River and is generally in the south-southeast direction (Figure 1).

Impact Assessment

The impact of development of the McCarthy Quarry as a result of dewatering is minimal. Drawdowns attributable to the quarrying operations have been observed at OW9 and AMx. OW9 was installed after extraction had begun at the quarry; therefore there are no pre-extraction water level data; however water levels were stable until the quarry face was about 150 m from OW9.

OW9 is currently approximately 50 m from the working face of the quarry and the water levels in the upper screen have declined approximately 15 m in response to the lowering of the groundwater table in the quarry footprint (Figure 8). Based on these observations, drawdown occurs in the shallow bedrock when the quarry face is closer than 150 m. The monitoring well AMx also showed signs of impact as the quarry face approached (Figure B-2).

It can be concluded from the water level monitoring that the impact area of quarry dewatering is restricted to less than 150 m from the quarry face. Off-Site impacts are not expected for several years as quarrying will be in the northern part of the Site. At the current extraction rate of approximately 2 ha per year, the quarry will expand to approximately 12 ha over the next five years or 20 ha over the next ten years, unless a deeper lift is developed, then the quarry footprint would be smaller.

The closest neighbour, McIntosh residence, is approximately 280 m from the closest the excavation to their water supply well. It is not expected that this well will be impacted during the life of the current PTTW renewal application. The on-Site observation wells (OW4 and OW6) will serve as sentinel wells for impacts at the McIntosh well.

Monitoring Condition 4.6 and 4.7: Groundwater Quality

Groundwater quality is analyzed on a semi-annual basis at both on-Site monitoring wells and off-Site residential wells. A summary of the parameters and locations are provided in Table 3.

The results from the water quality monitoring program from May 2016 and October 2016 can be found in Appendix C as well as in Tables 4 and 5. The water quality results have been compared to Ontario Drinking Water Standards (ODWS) and any exceedances have been highlighted.

The off-Site private residential wells have been tested since April 2013 and were tested in May and October of 2016 (Table 4). The water quality at DW1, DW2, and DW3 met the ODWS during the 2016 sampling events for the parameters tested with the exception of Total Dissolved Solids (TDS) at DW1 and DW2 (maximum of 700 mg/L at DW1 in May 2016) and Hardness ($CaCO_3$) at DW1, DW2, and DW3 (maximum of 600 mg/L at DW1 in May 2016).

At the on-Site monitoring wells, the water quality continues to represent the pre-quarry conditions (Table 5). Hard water and high TDS are common for this area and are representative of the overburden and bedrock conditions found in the Carden Plain.

Table 3: Groundwater Quality Requirements

	Monitoring Locations	Water Quality Parameters
Monitoring Wells	AM1b, AMx, TW1-1, Bored, OW4-1, OW4-2, OW5-1, OW5-2, OW5-3, OW6-2, OW7-1, OW7-2, OW8-1, OW8-2, OW9-1 and OW9-2	pH, Alkalinity, Bicarbonate, Fluoride, Chloride, Magnesium, Calcium, Sodium, Potassium, Ammonia, Sulphate, Nitrate, Nitrite, Phosphate, Phosphorous, Conductivity, DOC, Colour, TDS, Hardness
Residential Wells	DW3, DW1 and DW2	pH, Alkalinity (CaCO3), Bicarbonate, Conductivity, Fluoride, Chloride, Nitrate, Nitrite, Chromium, Tannins, Sulphate, Magnesium, Calcium, Sodium, Potassium, Ammonia (N), Phosphate, Phosphorous, Anion Sum, Cation Sum, DOC, Colour, Turbidity, Aluminium, Arsenic, Barium, Boron, Cadmium, Ion Ratio, % Difference, Copper, Iron, Lead, Manganese, Selenium, Zinc, Hardness (CaCO3), TDS (iron sum calc.), Langelier Index

Monitoring Conditions 4.10 and 4.12 Water Taking Measurements and Reporting

The rate and volume of discharge from the quarry is measured on-Site by an inline flow meter in the discharge line from the quarry sump. The pump records are provided by McCarthy Quarry staff. The pump records for January 2016 to December 2016 are found in Table 6. The discharge rate between January 2016 and December 2016 was below the permitted rate of 4,545 L/min (76 L/sec).

As previously mentioned the dewatering equipment consists of a Grindex pump with a 4-inch discharge capable of pumping 35 L/sec. Estimating the precipitation proportion of the water taking can be done by assuming the moisture surplus is 500 mm/year and that the capture area for the excavation is 15 ha (the stripped area including the excavation). This volume of water is equal to 75,000,000 L and the total volume removed from January 1 to December 31, 2016 is 139,133,500 L, which results in a proportion of groundwater of 46%. The total volume of water removed was less than the maximum taking of 196,500,000 L/year and the pumping was completed for a total of 115 days in 2016, which was less than the maximum of 150 days per year.

Condition 4.13 Publically-accessible Site

The water quality and quantity monitoring data that is required by the PTTW is available at:

www.cocoaggregates.com

To access the reports for the McCarthy Quarry click “Documents” on the homepage.

4.0 RECOMMENDATIONS

Golder recommends that the groundwater monitoring continue as outlined in the PTTW No. 7818-9QJNL4.

5.0 LIMITATIONS AND USE OF REPORT

The services performed as described in this report were conducted in a manner consistent with the level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party makes this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

6.0 CLOSURE

We trust that this report meets your needs at the present time. If you have any questions or require clarification, please do not hesitate to contact the undersigned.

Report Signature Page

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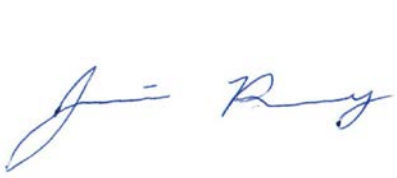
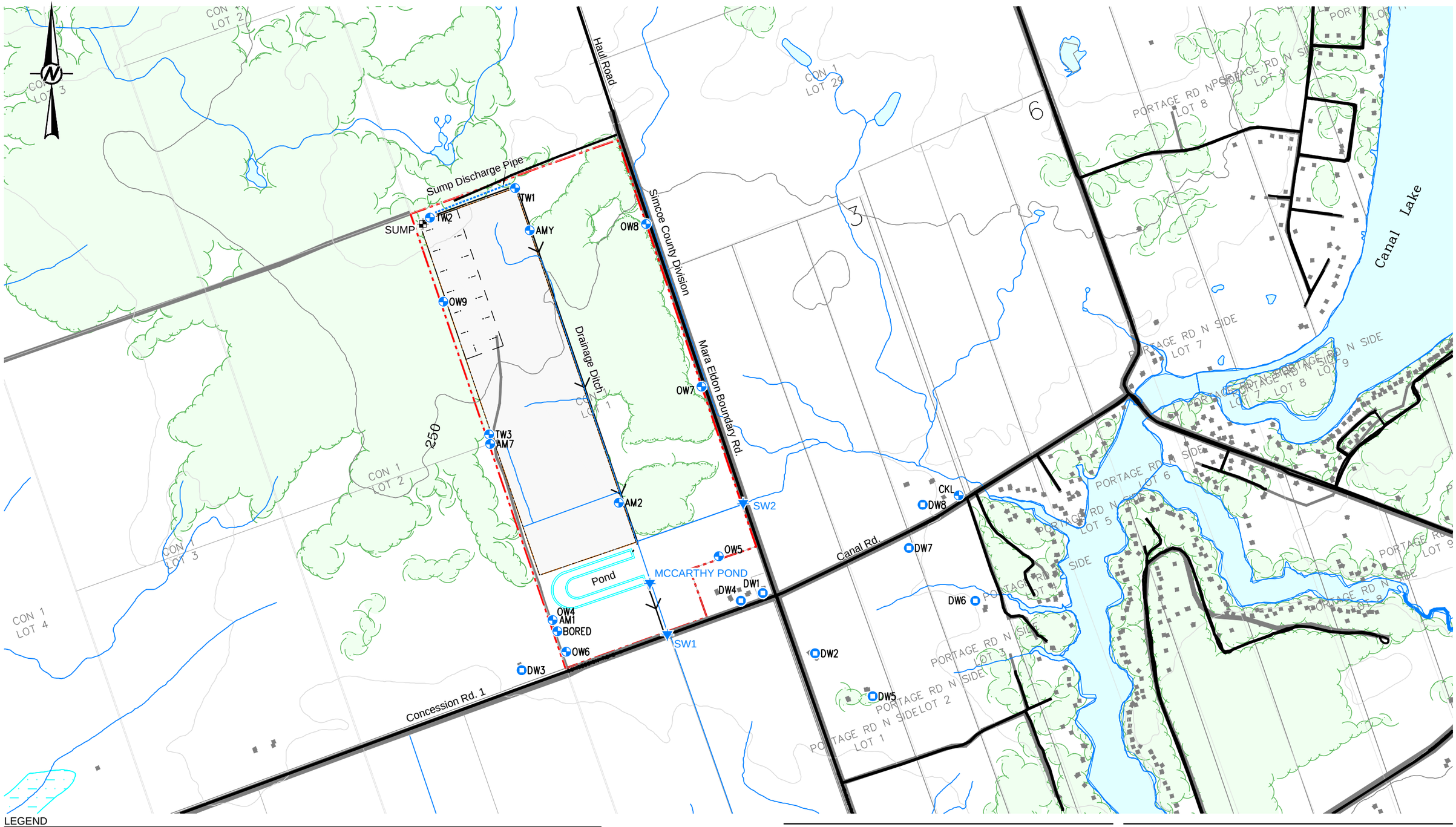


Jamie Bonany, M.A.Sc.
Junior Hydrogeologist

John Easton, M.Sc., P.Geo.
Associate Senior Hydrogeologist

JEB/JAE/plc

FIGURES



LEGEND

- Approximate Property Boundary
- Approximate Licenced Boundary
- Approximate Extent of Quarry
- Private Well Monitoring Location
- Observation Well Monitoring Location
- Surface Water Sampling Location

REFERENCES AND NOTES

1. Projection UTM NAD83 Zone 17
2. Mapping based on ESRI Geography Network OBM Features and 2012 Road Network
3. All Mapped features are Approximate and Not to Scale

0 200 400 600 m

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COCO / QBJR AGGREGATES INC.

CONSULTANT
Golder Associates

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PREPARED	STB
DESIGN	
REVIEW	
APPROVED	

PROJECT
STAN McCARTHY QUARRY
2016 ANNUAL MONITORING REPORT

TITLE
LOCATION MAP

PROJECT No.	Phase	Rev.	Figure
140-7634		WS	1

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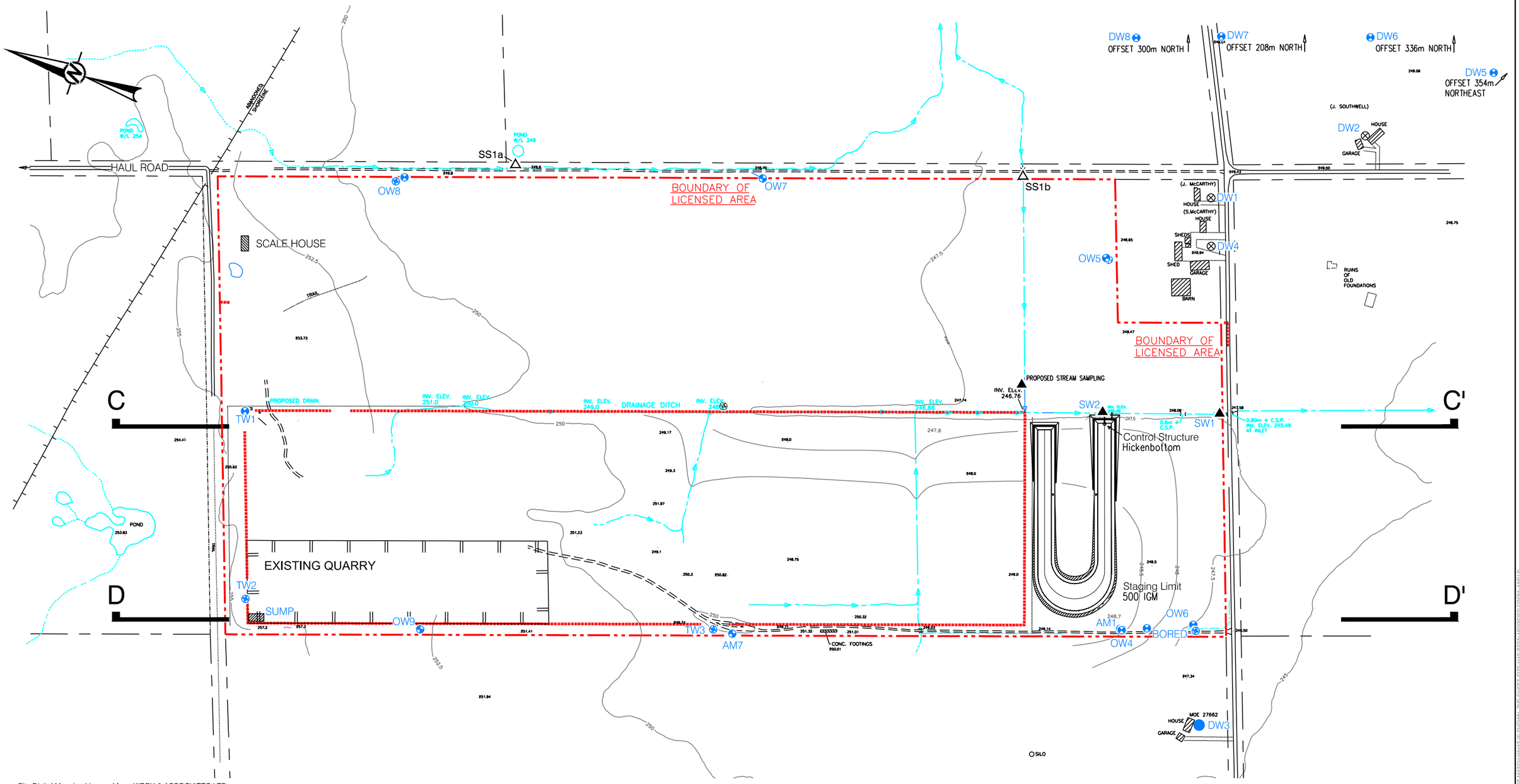

Site Digital Mapping Licenced from KIRBY & ASSOCIATES LTD

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LEGEND

- Quarry Boundary
- Limit of Extraction
- Swales and Drainage Plan
- ▲ Surface Water Sampling Location
- ⊗ Private Dug Well
- ● Private Drilled Well
- ■ Standpipe
- ◔ Observation Well

NOTES

1. Test Well AM7 inaccessible
2. DW1 Formally Degroot
3. DW2 Formally Southwell
4. DW3 Formally Lamarre
5. DW4 Formally McCarthy

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REVIEW	
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PROJECT
STAN McCARTHY QUARRY
2016 ANNUAL MONITORING REPORT

TITLE
SITE LOCATION MAP

PROJECT No.	Phase	Rev.	Figure
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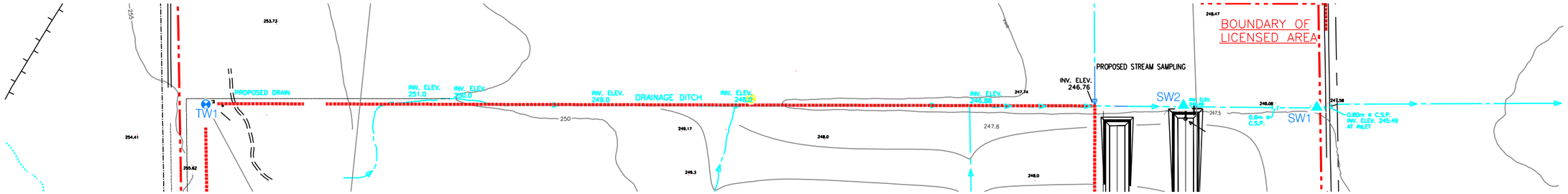

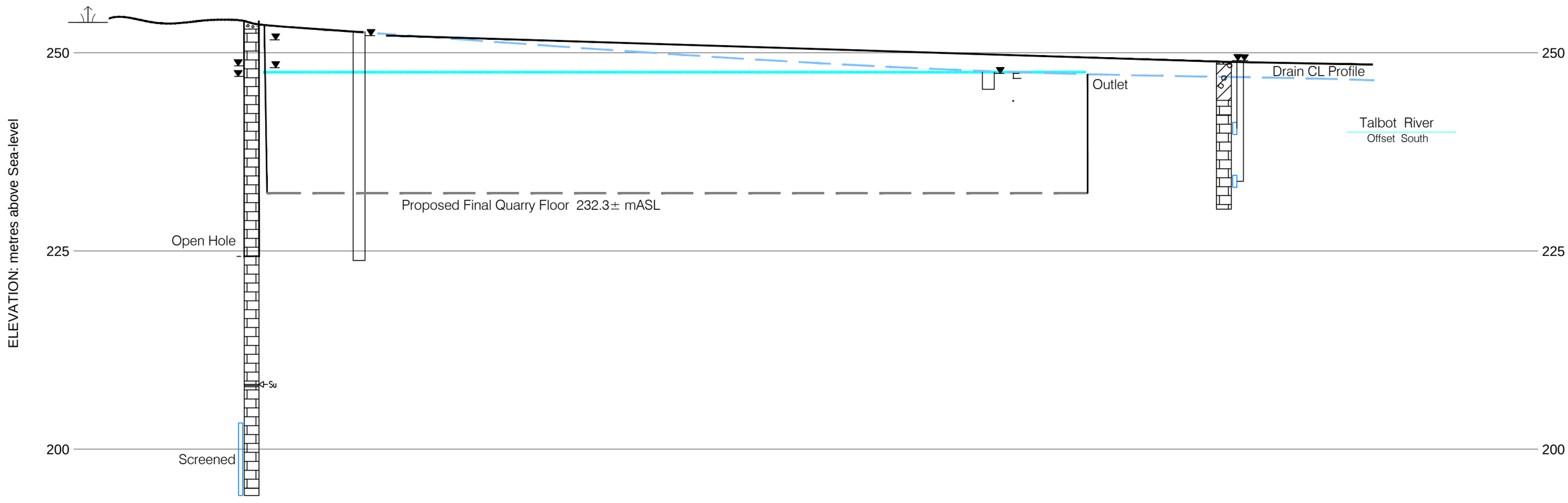

On all sections, boundaries between soil strata have been determined only at well and test well locations. Between Between the wells and test wells, boundaries are not proven but are assumed from geological evidence.

CLIENT
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PROJECT
STAN McCARTHY QUARRY
2016 ANNUAL MONITORING REPORT

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TITLE
SITE SECTION C-C'

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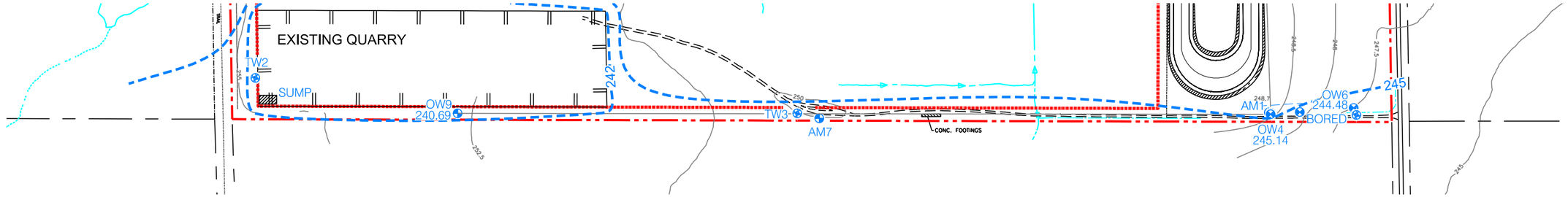

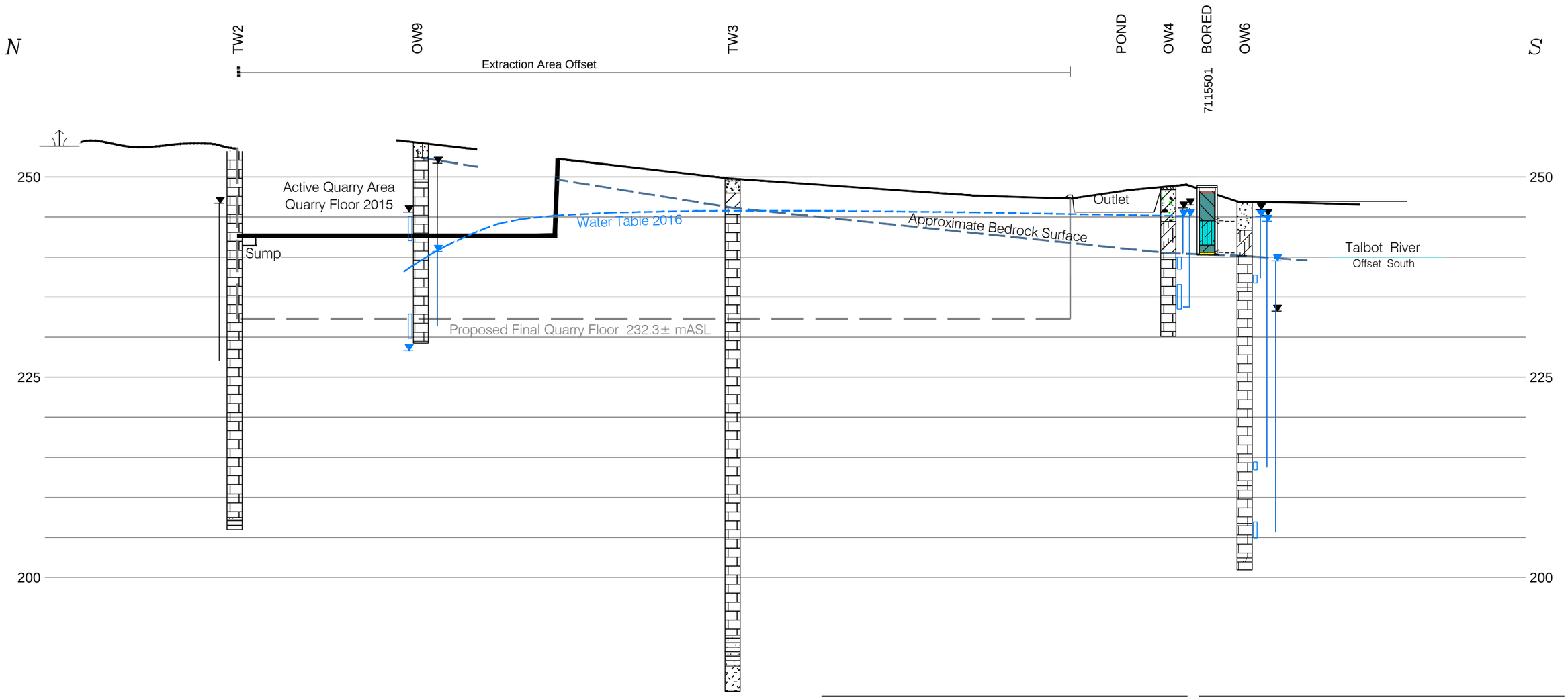

On all sections, boundaries between soil strata have been determined only at well and test well locations. Between Between the wells and test wells, boundaries are not proven but are assumed from geological evidence.

Depth of Quarry measured in offset Blast Hole drilling 2014 and reflecting maximum depth

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PROJECT
STAN McCARTHY QUARRY
2016 ANNUAL MONITORING REPORT

TITLE
SITE SECTION D - D'

PROJECT No.	Phase	Rev.	Figure
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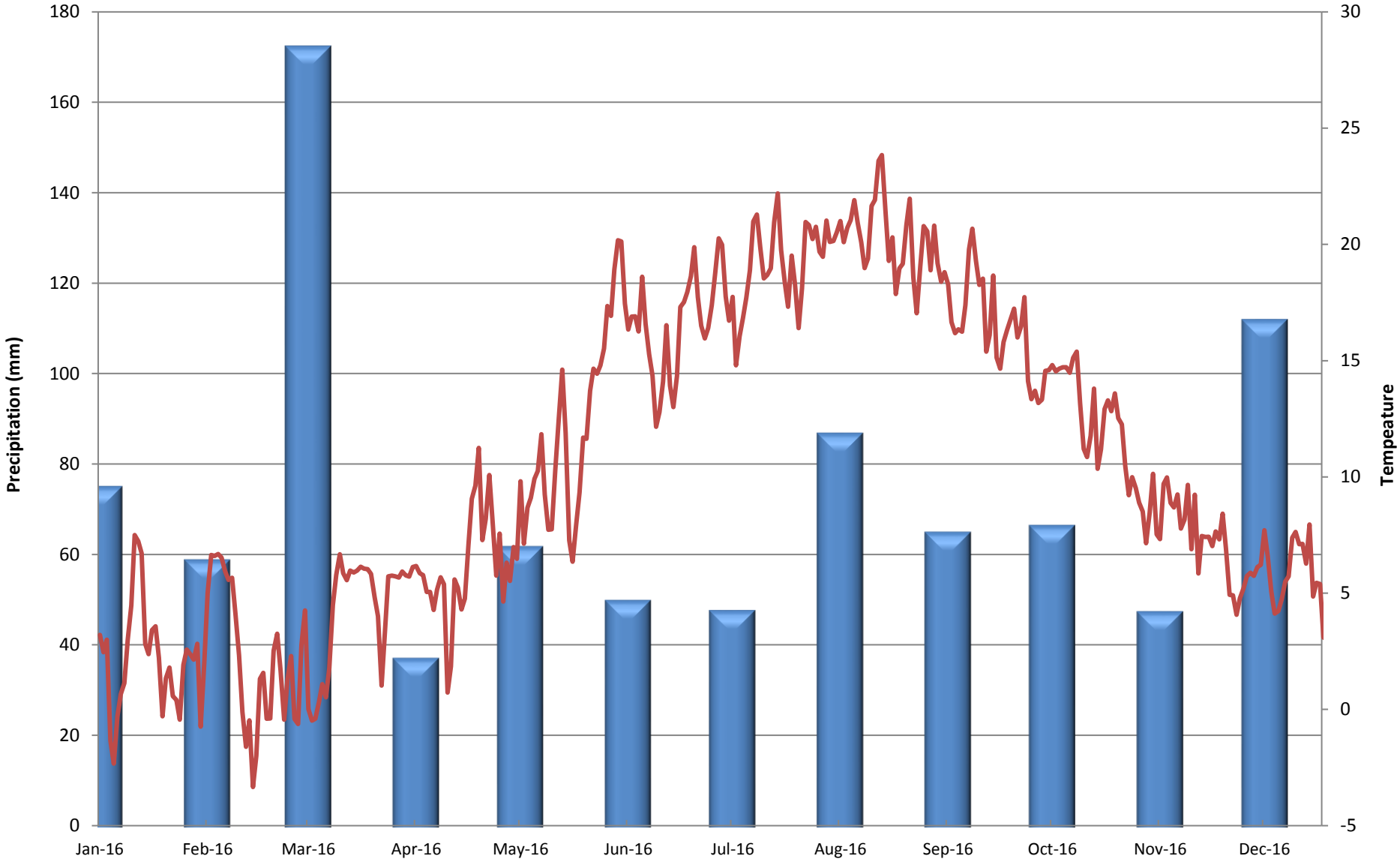

Precipitation

Temperature

Golder Associates

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TEST:	
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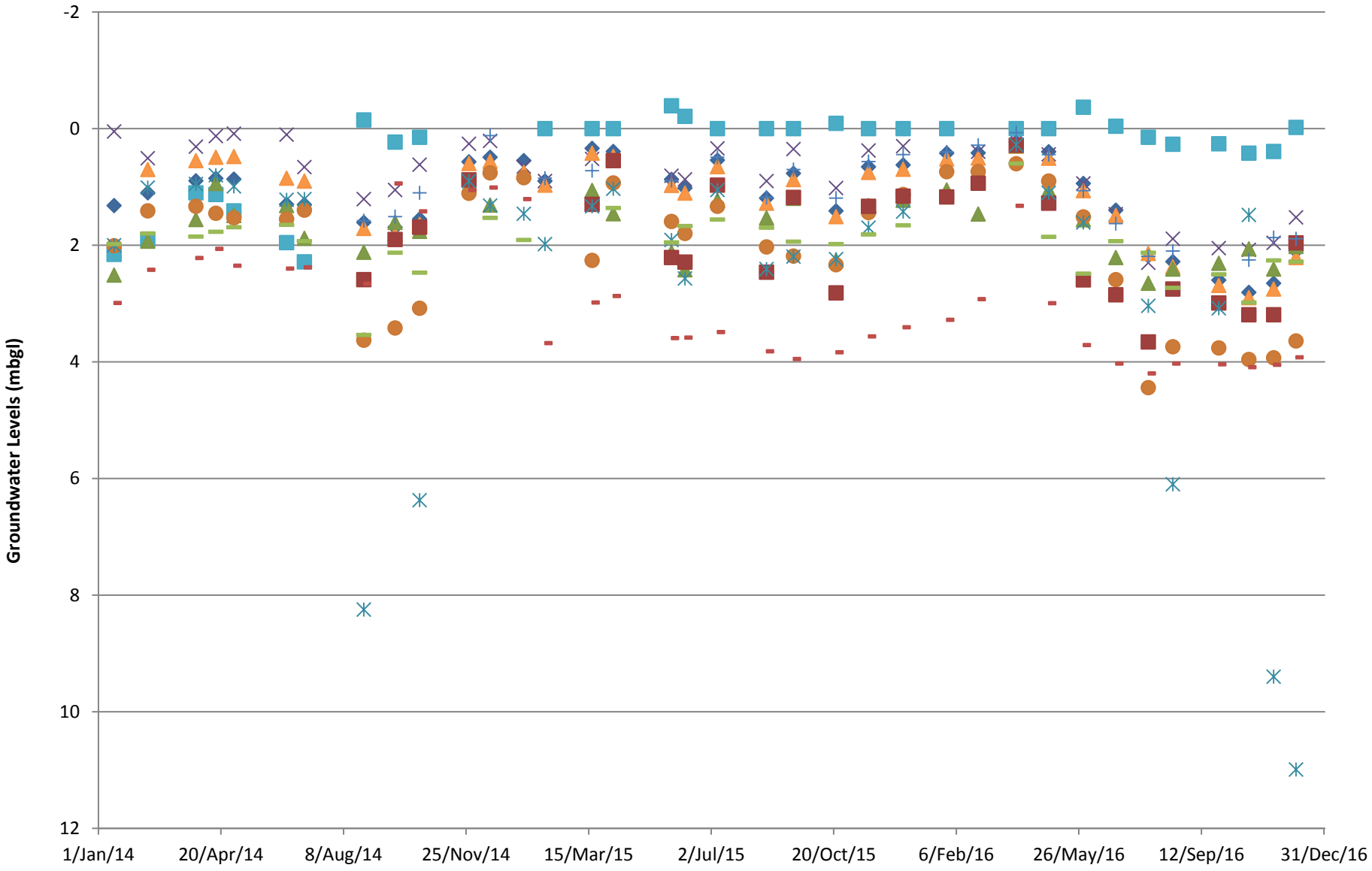
REVIEW:	JAE

McCarthy Quarry
On Site 2016 Weather

QBJR/Coco Aggregates Inc.
PTTW Annual Report

FIGURE No
5



◆ Bored	× OW5-1	▲ AM1b	
■ CKL-1	▲ DW1	● DW2	
■ DW4	✳ DW5	▬ DW6	
+ DW7	▬ DW8		

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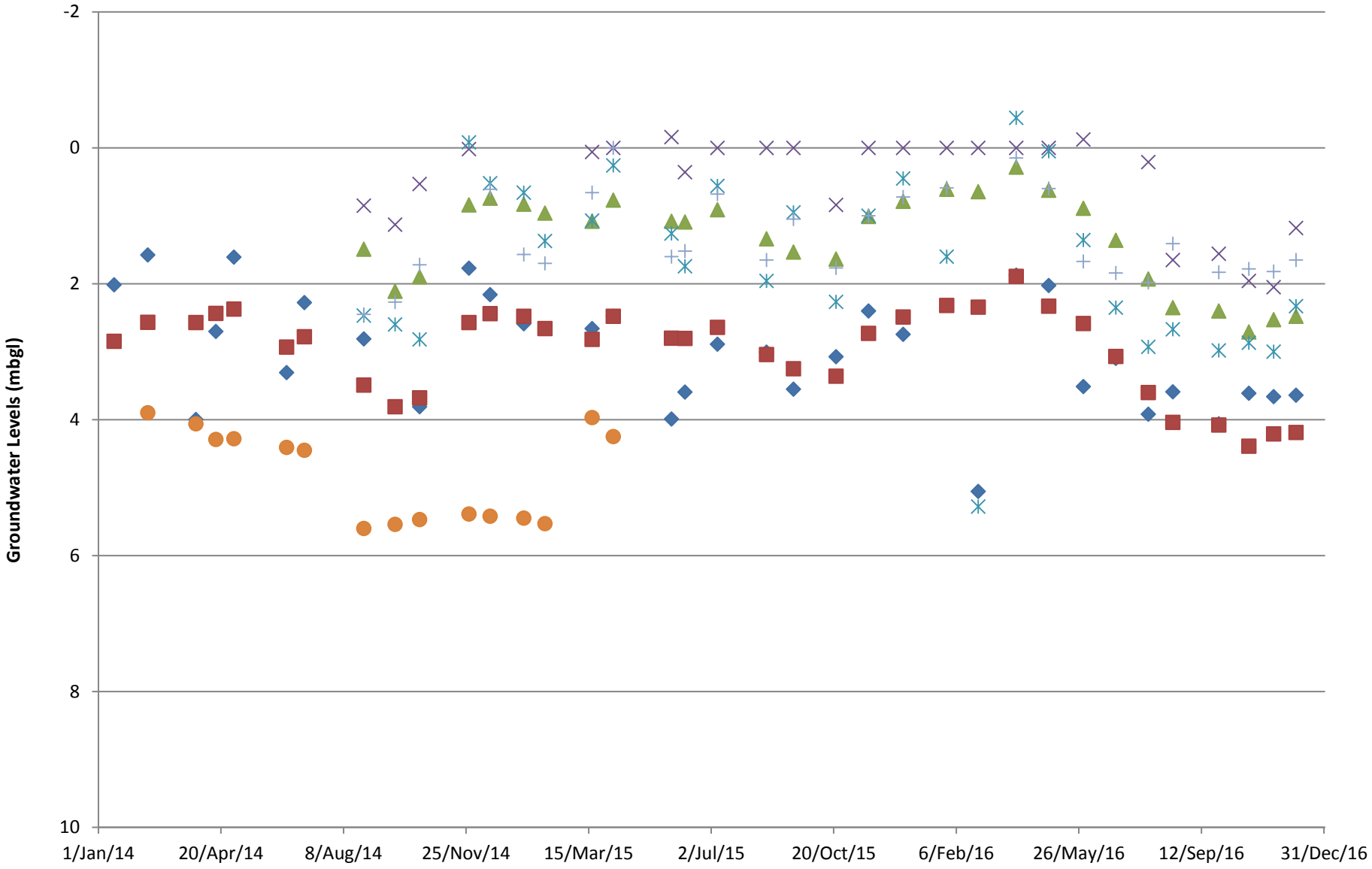
McCarthy Quarry
Overburden Monitoring Wells
Groundwater Levels

QBJR/Coco Aggregates Inc.
PTTW Annual Report

FIGURE No
6



DW3 OW4-1 OW6-1 OW7-1 OW8-1 AMx CKL-2

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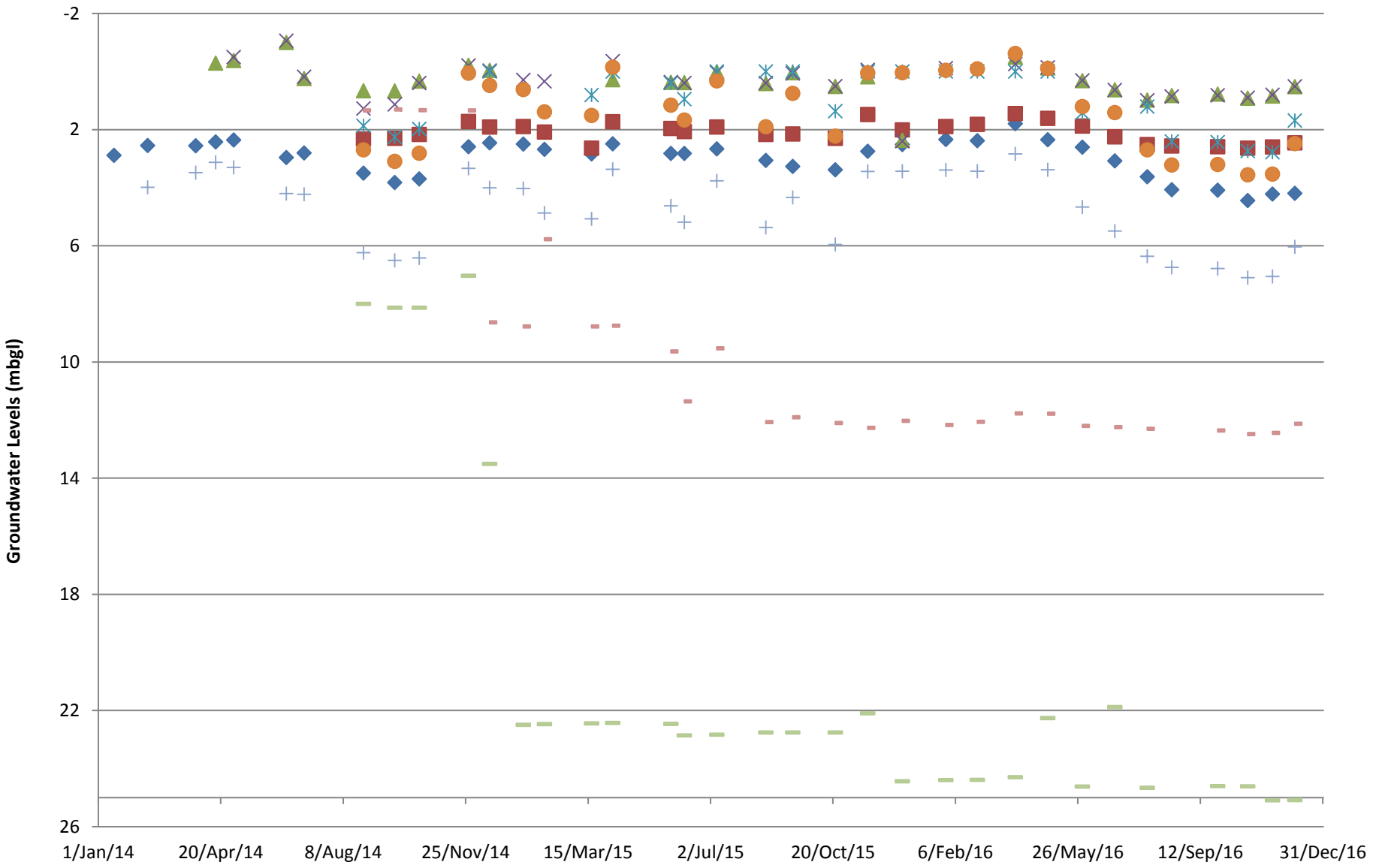
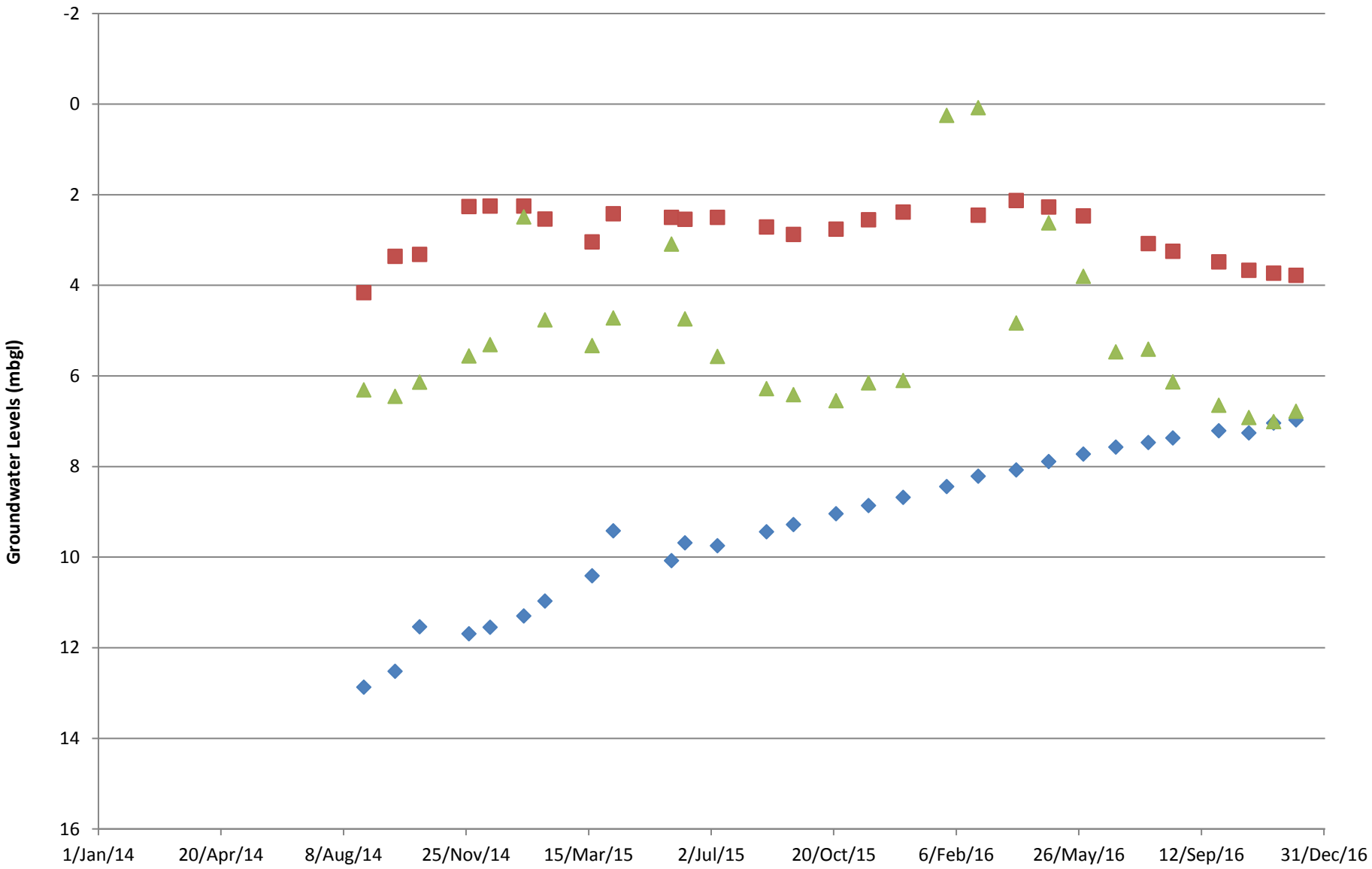
McCarthy Quarry
Verulam Monitoring Wells
Groundwater Levels

QBJR/Coco Aggregates Inc.
PTTW Annual Report

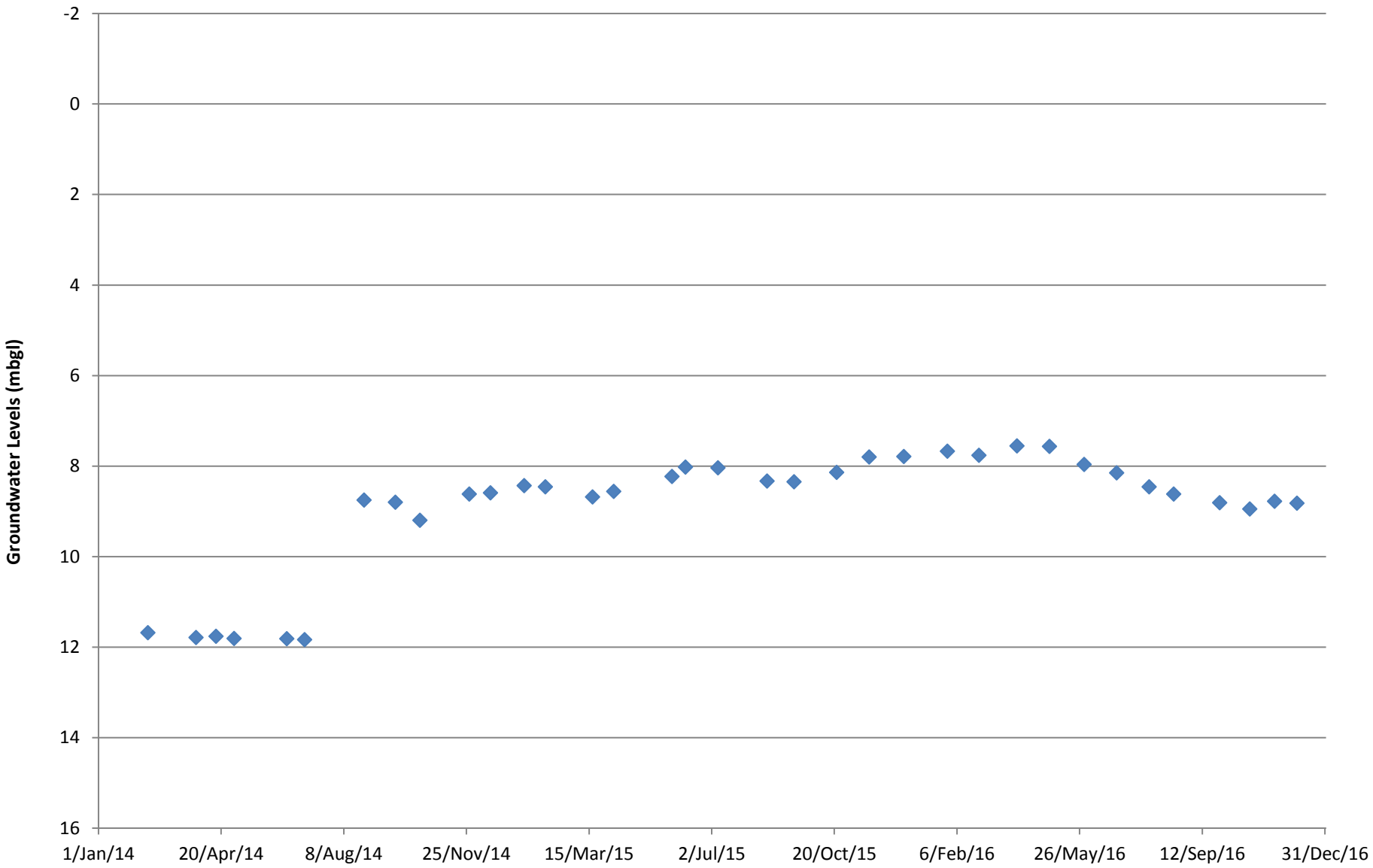
FIGURE No
7



◆ OW4-2 ■ OW6-2 ▲ OW5-2 × OW5-3 ✳ OW7-2 ● OW8-2 + TW1-1 - OW9-1 — OW9-2	Golder Associates	SCALE: NTS DATE: 26/Jan/17 CAD: JEB	**McCarthy Quarry** **Bobcaygeon Monitoring Wells** **Groundwater Level**
	FILE No. PROJECT No. 1407634	TEST: REVIEW: JAE	QBJR/Coco Aggregates Inc. PTTW Annual Report	FIGURE No **8**



Golder Associates	SCALE: NTS	McCarthy Quarry Gull River Monitoring Wells Groundwater Level	
	DATE: 26/Jan/17		
	CAD: JEB		
FILE No.	TEST:	QBJR/Coco Aggregates Inc. PTTW Annual Report	FIGURE No 9
PROJECT No. 1407634	REVIEW: JAE		



	SCALE: NTS	McCarthy Quarry Precambrian Monitoring Wells Groundwater Level	
Golder Associates	DATE: 26/Jan/17		
	CAD: JEB		
FILE No.	TEST:	QBJR/Coco Aggregates Inc. PTTW Annual Report	FIGURE No 10
PROJECT No. 1407634	REVIEW: JAE		

TABLES

Well	Unit	Elevation (masl)	Stick up (m)	29-Jan-16	26-Feb-16	31-Mar-16	29-Apr-16	30-May-16	28-Jun-16	27-Jul-16	18-Aug-16	28-Sep-16	25-Oct-16	16-Nov-16	6-Dec-16
				Water Levels (mbgl)											
DW3	Verulam	246.52	0.46	NA	5.06	1.88	2.03	3.51	3.10	3.92	3.59	4.06	3.61	3.66	3.64
OW4-1	Verulam	249.57	0.88	2.32	2.35	1.89	2.33	2.58	3.07	3.60	4.04	4.08	4.39	4.21	4.19
OW4-2	Bobcaygeon	249.62	0.86	2.34	2.39	1.80	2.35	2.61	3.08	3.62	4.07	4.09	4.44	4.22	4.19
Bored	Overburden	248.86	0.66	0.42	0.42	0.23	0.40	0.94	1.40	NA	2.28	2.60	2.81	2.65	2.10
OW6-1	Verulam	247.60	0.61	0.61	0.65	0.28	0.62	0.89	1.36	1.93	2.35	2.40	2.71	2.53	2.48
OW6-2	Bobcaygeon	247.52	0.53	1.89	1.82	1.45	1.62	1.88	2.25	2.51	2.56	2.59	2.64	2.60	2.46
OW6-3	Gull River	247.46	0.47	8.44	8.22	8.08	7.89	7.73	7.57	7.47	7.37	7.21	7.26	7.04	6.97
DW4	Overburden	250.19	0.24	1.17	0.94	0.28	1.28	2.60	2.85	3.66	2.75	2.99	3.19	3.19	1.96
DW1	Overburden	249.83	0.3	1.05	1.47	0.29	1.06	1.56	2.21	2.65	2.41	2.31	2.06	2.41	2.02
OW5-1	Overburden	249.84	0.8	frozen	0.40	0.06	0.44	0.94	1.47	2.30	1.89	2.05	2.08	1.96	1.52
OW5-2	Bobcaygeon	249.76	1.0	frozen	frozen	-0.50	-0.13	0.32	0.63	0.98	0.83	0.78	0.92	0.84	0.52
OW5-3	Bobcaygeon	249.70	1.0	-0.12	frozen	-0.26	-0.14	0.31	0.64	0.99	0.86	0.82	0.90	0.80	0.51
DW5	Overburden		0.3	NA	NA	0.28	1.10	1.61	NA	3.04	6.10	3.08	1.48	9.40	10.99
DW2	Overburden	247.50	0.8	0.74	0.74	0.60	0.90	1.51	2.59	4.44	3.74	3.76	3.96	3.93	3.64
DW7	Overburden		0.32	0.40	0.29	0.07	0.44	1.06	1.63	2.19	2.10	NA	2.25	1.87	1.89
DW8	Overburden			3.28	2.93	1.33	3.00	3.71	4.03	4.20	4.03	4.04	4.09	4.05	3.92
DW6	Overburden		0.5	NA	-0.50	0.60	1.86	2.49	1.93	2.13	2.73	2.50	2.98	2.26	2.28
OW7-1	Verulam	249.80	0.62	flowing	flowing	flowing	flowing	-0.12	NA	0.21	1.65	1.56	1.96	2.05	1.18
OW7-2	Bobcaygeon	249.78		flowing	flowing	flowing	flowing	1.42	NA	1.21	2.41	2.43	2.74	2.78	1.69
OW7-3	Gull River	249.74	0.61	frozen	2.45	2.13	2.27	2.47	NA	3.08	3.25	3.48	3.67	3.73	3.78
OW8-1	Verulam	251.47	0.76	1.60	5.28	-0.44	0.05	1.36	2.35	2.93	2.67	2.98	2.87	3.00	2.33
OW8-2	Bobcaygeon	251.44	0.83	-0.04	-0.09	-0.63	-0.11	1.20	1.41	2.70	3.22	3.20	3.56	3.53	2.48
OW8-3	Gull River	251.40	0.8	0.25	0.08	4.83	2.62	3.80	5.47	5.41	6.13	6.65	6.92	7.01	6.78
TW1-1	Bobcaygeon	254.10	0.6	3.39	3.43	2.83	3.38	4.66	5.49	6.36	6.74	6.78	7.10	7.06	6.04
TW1-2	Precambrian	254.10	0.52	7.67	7.76	7.55	7.57	7.96	8.15	8.46	8.62	8.81	8.95	8.78	8.82
OW9-1	Bobcaygeon	253.40	0.41	12.17	12.06	11.77	11.78	12.20	12.24	12.30	NA	12.36	12.48	12.44	12.13
OW9-2	Bobcaygeon	253.31	0.35	24.40	24.39	24.30	22.26	24.62	21.88	24.66	NA	24.60	24.61	25.09	25.08
CKL-1	Overburden		0.6	flowing	frozen	flowing	flowing	-0.37	-0.04	0.15	0.27	0.26	0.42	0.39	-0.02
CKL-2	Verulam		0.6	0.59	frozen	0.15	0.60	1.67	1.84	1.98	1.41	1.83	1.78	1.82	1.65
AM1b	Overburden	249.45	0.65	0.52	0.51	0.30	0.51	1.06	1.49	2.14	2.37	2.69	2.90	2.75	2.21

Notes:

1. Highlighted cells represent groundwater measurements in terms of meters above sea level (masl)

2. Not Accessible (NA)

		Sample	DW1								DW2					
		Date	24-Apr-13	25-Oct-13	02-May-14	16-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16	02-May-14	16-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
		ODWS														
Anion Sum	Sum			7.93	4.43	12.80	13	11.9	12.6	12.3	5.47	11.80	7.53	7.44	8.62	11.2
Bicarb. Alkalinity (calc. as CaCO3)	mg/L		230	396	228	340	320	320	330	340	302	290	310	290	340	330
Calculated TDS	mg/L	500 (AO)		450	<30	**680**	**964**	**670**	**700**	**640**	240	**680**	430	410	470	**570**
Cation Sum	Sum			4.83	6.67	12.60	13.5	13.3	13.8	11.5	9.10	11.60	8.46	8.1	9.22	10.3
Hardness (CaCO3)	mg/L	80-100 (OG)	2	<1	**318**	**540**	**590**	**580**	**600**	**500**	426	4	380	**350**	**400**	**450**
Ion Balance (% Difference)	%			-24.33	20.18	0.89	2.07	5.68	4.69	3.23	24.91	0.80	5.81	4.24	3.37	4.12
Langelier Index (@ 20C)	NA				0	1.110	0.783	0.872	0.917	1.10	0.820	-0.796	0.78	0.984	1.01	0.923
Langelier Index (@ 4C)	NA					0.863	0.537	0.625	0.670	0.848		-1.040	0.532	0.736	0.757	0.675
Saturation pH (@ 20C)	NA					6.760	6.79	6.75	6.71	6.77		8.980	6.88	6.97	6.81	7.01
Saturation pH (@ 4C)	NA					7.010	7.04	7	6.96	7.02		9.230	7.13	7.22	7.06	7.26
Total Ammonia-N	mg/L		0.086	<0.01	0.037	<0.050	<0.050	<0.050	<0.050	<0.050	0.047	<0.050	<0.050	<0.050	<0.050	<0.050
Colour	TCU	5 (AO)	**7.7**	**6.2**	3.9	<2	<2	<2	<2	<2	**5.7**	<2	<2	<2	<2	<2
Conductivity	uS/cm		526	723	543	1300	1300	1200	1300	1200	682	1300	710	730	810	1100
Fluoride (F-)	mg/L	1.5	<0.1	<0.3	<0.1	<0.10	<0.10	<0.10	0.10	<0.10	<0.1	0.150	<0.10	0.11	0.10	0.17
Dissolved Organic Carbon	mg/L	5 (AO)	4.23	**5.76**		1.20	1.3	1.1	1.1	1.5		1.10	2.9	1.7	3.6	1.9
Orthophosphate (P)	mg/L					<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	6.5-8.5 (OG)	7.84	7.24	7.72	7.87	7.57	7.62	7.62	7.86	7.69	8.19	7.66	7.96	7.81	7.94
Dissolved Sulphate (SO4)	mg/L	500 (AO)	9.6	12.7	8.1	35.0	36	33	35	32	10.6	37.0	19	24	32	47
Tannins & Lignins	mg/L			0.210	0.480	<0.2	<0.2	<0.2	<0.2	<0.2	0.920	<0.2	<0.2	<0.2	<0.2	<0.2
Turbidity	NTU	5	2.02	0.46	0.28	<0.2	<0.2	1.8	0.2	1.7	0.50	<0.2	<0.2	<0.2	0.6	<0.1
Alkalinity (Total as CaCO3)	mg/L	30-500 (OG)	232	397	229	340	320	320	330	350	303	300	310	290	340	330
Dissolved Chloride (Cl)	mg/L	250 (OG)	27	46	21	190	210	170	190	170	14	180	35	41	38	130
Nitrite (N)	mg/L	1	<0.03	<0.09	<0.03	<0.010	<0.010	<0.010	<0.010	<0.010	<0.03	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	10	2.57	1.50	0.11	0.20	0.59	0.35	0.29	0.16	0.28	0.85	<0.10	<0.10	<0.10	1.39
Nitrate + Nitrite	mg/L	10				0.200	0.59	0.35	0.29	0.16		0.850	<0.10	<0.10	<0.10	1.39
Dissolved Aluminum (Al)	mg/L	0.1 (OG)	0.018	0.009	0.003	<0.005	<0.005	<0.005	<0.005	<0.005	0.001	<0.005	<0.005	<0.005	<0.005	<0.005
Dissolved Antimony (Sb)	ug/L	6						<0.50	<0.50	<0.50				<0.50	<0.50	<0.50
Dissolved Arsenic (As)	ug/L	25	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	1000	51.3	65.2	60.9	160.0	180	140	170	110	64.1	2.0	74	76	85	170
Dissolved Beryllium (Be)	ug/L							<0.50	<0.50	<0.50				<0.50	<0.50	<0.50
Dissolved Boron (B)	ug/L	5000	9.1	26.6	19.7	38.0	21	25	25	30	129.0	25.0	88	11	30	33
Dissolved Cadmium (Cd)	ug/L	5	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		103.0	150.0	107.0	160.0	180.0	170.0	190.0	150.0	151.0	1.1	120.0	100.0	130.0	89.0
Dissolved Chromium (Cr)	ug/L	50	<0.8	2.2	<1	<5.0	<5.0	<5.0	<5.0	<5.0	7.9	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Cobalt (Co)	ug/L							<0.50	<0.50	<0.50				<0.50	<0.50	<0.50
Dissolved Copper (Cu)	ug/L	1000 (AO)	3.1	1.6	21.4	26.0	96	1.5	110	1.6	1.7	24.0	2.7	<1.0	1.3	1.9
Dissolved Iron (Fe)	mg/L	0.3 (AO)	0.039	0.199	0.040	<0.1	<0.1	<0.1	<0.1	<0.1	0.062	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Lead (Pb)	ug/L	10					3.5	<0.50	2.5	<0.50			<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	mg/L		10.3	12.2	13.2	33.0	36.0	35.0	30.0	29.0	11.9	0.3	17.0	23.0	19.0	55.0
Dissolved Manganese (Mn)	ug/L	50 (AO)	4.4	6.9	1.9	**75.0**	6.8	44	3.1	34	2.6	<2.0	17	6.5	32	6.6
Dissolved Molybdenum (Mo)	ug/L		<1	<1	<1	0.5		<0.50	<0.50	<0.50	4.6	1.2		<0.50	<0.50	1.4
Dissolved Nickel (Ni)	ug/L		1.9	<1	2.8	1.4		<1.0	<1.0	<1.0	5.5	<1.0		<1.0	1.3	<1.0
Dissolved Phosphorus (P)	mg/L		0.013	0.011	0.008	<0.1		<0.1	<0.1	<0.1	0.018	<0.1		<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		0.97	1.35	0.71	1.90	1.60	2.1	1.6	2.0	5.82	0.45	7.00	3.50	8.60	3.30
Dissolved Selenium (Se)	ug/L	10	<1	<1	<1	<2.0	<2.0	<2.0	<2.0	<2.0	<1	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Silicon (Si)	mg/L		5.20	<0.6		8.20		8.70	7.20	8.00	<0.6	8.20		6.7	5.0	9.1
Dissolved Silver (Ag)	ug/L		1.64	<0.1	<0.1	<0.10		<0.10	<0.10	<0.10	<0.1	<0.10		<0.10	<0.10	<0.10
Dissolved Sodium (Na)	mg/L	200 (OG)	9.3	14.9	10.6	40.0	37.0	41.0	41.0	33.0	17.0	**270.0**	18.0	22.0	22.0	30.0
Dissolved Strontium (Sr)	mg/L			0.305	0.182	0.550		0.570	0.580	0.520	0.264	0.003		0.0003	0.350	0.630
Dissolved Thallium (Tl)	mg/L			<0.001	0.0005	<0.00005		<0.00005	<0.00005	<0.00005	0.0002	<0.00005		<0.00005	<0.00005	<0.00005
Dissolved Titanium (Ti)	ug/L		<1	<1	<1	<5.0		<5.0	<5.0	<5.0	<1	<5.0		<5.0	<5.0	<5.0
Dissolved Uranium (U)	mg/L	0.02		<0.001	<0.001	0.002		0.0011	0.0015	0.00088	<0.001	0.003		0.00052	0.00072	0.0029
Dissolved Vanadium (V)	ug/L		<1	<1	<1	<0.50		<0.50	<0.50	<0.50	2.3	<0.50		<0.50	<0.50	0.77
Dissolved Zinc (Zn)	ug/L	5000 (AO)	<1	<1	12.8	71.0	41	6.8	36	<5.0	<1	32.0	5.5	5.4	19	<5.0

Notes:
AO: aesthetic objective
OG: operational guideline

		Sample	MOE 5727662 (DW3)								
		Date	01-Aug-12	24-Apr-13	25-Oct-13	13-May-14	15-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
		ODWS									
Anion Sum	Sum		8.4	8.6	8.98	6.65	8.62	8.57	10.2	8.90	9.10
Bicarb. Alkalinity (calc. as CaCO3)	mg/L				292	220	230	230	250	240	230
Calculated TDS	mg/L	500 (AO)	463	463	472	400	460	464	**570**	490	490
Cation Sum	Sum		9.11	8.94	7.70	6.81	8.13	9.11	11	9.05	8.86
Hardness (CaCO3)	mg/L	80-100 (OG)	**168**	**173**	<1	**167**	**180**	**190**	**190**	**200**	**180**
Ion Balance (% Difference)	%		3.96	2.1	-7.69	1.19	2.94	3.06	3.82	0.820	1.34
Langelier Index (@ 20C)	NA		-0.15	-0.05			0.601	0.471	0.635	0.439	0.548
Langelier Index (@ 4C)	NA						0.353	0.223	0.387	0.191	0.300
Saturation pH (@ 20C)	NA						7.560	7.55	7.55	7.53	7.59
Saturation pH (@ 4C)	NA						7.810	7.8	7.8	7.78	7.83
Total Ammonia-N	mg/L		0.02	0.53	0.429	0.379	0.470	0.42	<0.050	<0.050	0.46
Colour	TCU	5 (AO)			<2	<2	<2	<2	<2	<2	<2
Conductivity	uS/cm		989	903	880	393	860	890	1100	900	960
Fluoride (F-)	mg/L	1.5	0.9	1	0.480	0.560	0.730	0.72	0.8	0.75	0.79
Dissolved Organic Carbon	mg/L	5 (AO)	2	**6**	1.30	0.97	0.77	0.72	0.78	0.23	1.1
Orthophosphate (P)	mg/L						<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	6.5-8.5 (OG)	7.6	7.7	7.36	8.05	8.16	8.02	8.19	7.97	8.13
Dissolved Sulphate (SO4)	mg/L	500 (AO)			3.9	4.1	2.0	5	<10	6.9	1.5
Tannins & Lignins	mg/L		<0.1	0.1	<0.06	0.210	<0.2	<0.2	<0.2	<0.2	<0.2
Turbidity	NTU	5			1.43	0.29	0.20	<0.2	<0.2	0.1	0.3
Alkalinity (Total as CaCO3)	mg/L	30-500 (OG)	222	227	293	222	240	230	250	240	230
Dissolved Chloride (Cl)	mg/L	250 (OG)	134	136	149	106	130	130	180	140	160
Nitrite (N)	mg/L	1	<0.1	<0.1	<0.09	<0.03	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	10	<0.1	<0.1	<0.09	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	10					<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Aluminum (Al)	mg/L	0.1 (OG)			0.034	0.002	<0.005	0.011	<0.005	<0.005	<0.005
Dissolved Antimony (Sb)	ug/L	6							<0.50	<0.50	<0.50
Dissolved Arsenic (As)	ug/L	25			<1	1.600	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	1000			202.0	186.0	200.0	190	220	190	210
Dissolved Beryllium (Be)	ug/L								<0.50	<0.50	<0.50
Dissolved Boron (B)	ug/L	5000			829.0	696.0	810.0	790	770	730	760
Dissolved Cadmium (Cd)	ug/L	5			<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		27.5	29.7	21.9	28.0	34.0	35.0	34.0	36.0	33.0
Dissolved Chromium (Cr)	ug/L	50			3.2	1.5	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Cobalt (Co)	ug/L								<0.50	<0.50	<0.50
Dissolved Copper (Cu)	ug/L	1000 (AO)			1.7	6.3	4.9	2.7	97	9.5	<1.0
Dissolved Iron (Fe)	mg/L	0.3 (AO)	<0.01	0.03	0.105	0.167	<0.1	<0.1	<0.1	<0.1	0.1
Dissolved Lead (Pb)	ug/L	10						<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	mg/L		24.1	24	25.8	23.0	22.0	26.0	26.0	26.0	24
Dissolved Manganese (Mn)	ug/L	50 (AO)	0.01	<0.005	5.6	5.8	4.8	4.6	<2.0	<2.0	4.3
Dissolved Molybdenum (Mo)	ug/L				<1	<1	<0.50		0.65	<0.50	<0.50
Dissolved Nickel (Ni)	ug/L				<1	1.6	<1.0		<1.0	<1.0	<1.0
Dissolved Phosphorus (P)	mg/L				0.010	<0.001	<0.1		<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		7.4	7.1	7.79	6.40	7.50	7.40	7.20	6.90	7.60
Dissolved Selenium (Se)	ug/L	10			<1	1.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Silicon (Si)	mg/L				5.22	3.18	4.60		5.40	5.60	5.00
Dissolved Silver (Ag)	ug/L				<0.1	<0.1	<0.10		0.64	<0.10	<0.10
Dissolved Sodium (Na)	mg/L	200 (OG)	128	121	108.0	87.4	100.0	120.0	160.0	110.0	120.0
Dissolved Strontium (Sr)	mg/L				2.780	2.350	2.400		2.50	2.50	2.50
Dissolved Thallium (Tl)	mg/L				<0.0001	0.0004	<0.00005		<0.00005	<0.00005	<0.0005
Dissolved Titanium (Ti)	ug/L				2.6	<1	<5.0		<5.0	<5.0	<5.0
Dissolved Uranium (U)	mg/L	0.02			<0.001	<0.001	<0.0001		<0.0001	<0.0001	<0.0001
Dissolved Vanadium (V)	ug/L				<1	<1	<0.50		<0.50	<0.50	<0.50
Dissolved Zinc (Zn)	ug/L	5000 (AO)			4.7	13.4	12.0	<5.0	480	210	<5.0

Notes:
AO: aesthetic objective
OG: operational guideline

		Sample	AM1B									BORED WELL								
		Date	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	15-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	15-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
Parameter	Units	ODWS																		
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		223	190	349	382	230	210	200	220	240	187	185	229	212	200	210	210	230	210
Total Ammonia-N	mg/L		<0.02	0.03	0.03	0.09	0.16	0.075	0.12	0.14	0.11	0.14	0.02	<0.01	0.02	0.07	<0.050	<0.050	<0.050	<0.050
Colour	TCU	**5 (AO)**	**5.7**	2.2	< 2	**7.4**	<2	<2	<2	<2	<2	**10.8**	2.2	< 2	< 2	<2	<2	<2	<2	<2
Conductivity	uS/cm		489	407	532	488	470	480	470	480	500	551	454	489	477	480	490	490	490	470
Total Dissolved Solids	mg/L	**500 (AO)**				317	244	280	280	290	290				264	274	290	290	300	280
Fluoride (F-)	mg/L	**1.5**	0.20	<0.1	<0.3	<0.3	0.24	0.23	0.26	0.24	0.23	0.20	<0.1	<0.3	<0.3	0.15	0.15	0.15	0.15	0.15
Dissolved Organic Carbon	mg/L	**5 (AO)**	1.20	1.20	1.90	1.10	0.86	0.7	0.63	0.81	0.61	1.30	1.60	2.10	1.40	1.20	0.92	0.88	0.91	1.0
Hardness	mg/L	**80-100 (OG)**						240	240	240	240						180	190	210	190
Phosphate	mg/L		< 1	< 1	< 0.3	< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010	< 1	< 1	< 0.3	< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	7.48	7.81	7.10	7.56	7.97	7.92	7.92	7.98	8.03	8.73	8.06	8.77	7.57	8.33	8.18	8.2	8.13	8.23
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	41	34	34	31	36	38	41	41	33	50	48	45	33	36	34	33	34	31
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	224	191	349	383	230	210	210	220	240	197	187	242	213	210	210	210	230	210
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	5.20	4.41	6.84	5.52	5.00	4	3.9	3.0	3.4	13.20	3.04	4.50	4.14	6.00	7	6.1	4.2	4.5
Nitrite (N)	mg/L	**1**	<0.03	<0.03	<0.09	<0.09	<0.010	0.019	<0.010	0.012	<0.010	<0.03	<0.03	<0.09	<0.09	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	**10**	0.20	<0.1	<0.09	<0.09	<0.10	<0.10	<0.10	<0.10	<0.10	0.40	0.29	0.49	0.39	0.45	0.29	0.33	0.36	0.44
Nitrate + Nitrite	mg/L	**10**					<0.10	<0.10		<0.10	<0.10					0.4500	0.29		0.36	0.44
Dissolved Calcium (Ca)	mg/L		28.80	48.50	41.70	42.20	49.00	46	46	47	48	6.00	11.40	14.70	29.20	28.00	39	40	48	40
Dissolved Magnesium (Mg)	mg/L		29.3	33.3	29.6	21.7	29.0	30	30	31	30	20.7	21.9	18.9	19.6	21.0	21	21	23	21
Dissolved Phosphorus (P)	mg/L		0.51	0.16	0.19	1.48	<0.1	<0.1	<0.1	<0.1	<0.1	0.02	0.01	0.01	0.02	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		2.20	2.07	2.27	1.69	2.20	2.3	2.0	2.3	2.3	55.00	47.60	42.80	21.80	24.00	16	18	13	14
Dissolved Sodium (Na)	mg/L	**200 (AO)**	6.50	6.42	5.79	4.56	6.70	6.8	6.9	6.5	6.5	30.20	32.40	31.60	26.10	29.00	25	26	21	19

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded) are shown in bold.

		Sample	OW4-I															
		Date	28-Apr-06	17-Aug-06	15-Nov-06	19-Apr-07	16-Aug-07	07-Nov-07	16-Apr-08	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	15-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
Parameter	Units	ODWS																
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		199	201	260	212	226	230	231	311	269	324	222	280	260	270	280	260
Total Ammonia-N	mg/L		0.25	0.53	0.69	0.74	0.52	0.15	1.42	0.56	0.22	0.36	0.28	0.99	0.72	0.89	0.74	0.84
Colour	TCU	**5 (AO)**								4	**47.4**	**6.3**	**6.9**	<2	<2	3	<2	<2
Conductivity	uS/cm		686	595	1060	1210	1350	1600	1420	1020	897	976	830	890	760	850	950	910
Total Dissolved Solids	mg/L	**500 (AO)**	280	304	**612**	**632**	**666**	**890**	**734**				470	**608**	430	460	**530**	490
Fluoride (F-)	mg/L	**1.5**	0.48	0.47	0.55	0.55	0.68	0.72	0.72	1.00	1.20	0.96	1.00	1.40	1.5	1.5	1.4	1.4
Dissolved Organic Carbon	mg/L	**5 (AO)**	2.80	2.00	3.40	4.50	2.20	3.40	1.00	2.00	1.90	**6.32**	1.60	1.30	1.6	1.3	1.8	3.2
Hardness	mg/L	**80-100 (OG)**													72	76	94	82
Phosphate	mg/L									< 1	< 1	< 0.3	< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**								8.35	8.10	7.84	8.26	8.38	8.33	8.27	8.28	8.45
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	69	43	22	26	33	10	39	56	40	31	22	2	4	6.3	4.1	11
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	222	201	270	218	226	230	249	318	272	326	226	290	260	280	290	270
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	45.50	40.50	**251.00**	244.00	**338.00**	**428.00**	**253.00**	151.00	117.00	108.00	95.80	120.00	84	95	130	120
Nitrite (N)	mg/L	**1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.09	<0.09	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	**10**	0.63	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	0.20	0.36	<0.09	0.16	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**												<0.10	<0.10		<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		17.80	24.80	38.80	37.60	35.30	49.40	32.10	19.20	16.70	14.50	11.60	18.00	14	15	18	16
Dissolved Magnesium (Mg)	mg/L		12.0	17.1	25.7	25.4	22.9	32.1	19.1	14.0	11.2	9.8	6.7	11.0	9	9.3	12	10
Dissolved Phosphorus (P)	mg/L		0.40			0.72		0.59	0.77	1.28	1.32	1.06	3.58	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		5.34	3.86	7.18	7.66	8.26	9.58	11.40	6.70	5.34	4.94	3.66	5.20	4.9	6.0	6.2	5.2
Dissolved Sodium (Na)	mg/L	**200 (AO)**	114.00	69.60	151.00	170	**201**	**245**	**235**	**258**	**206**	174	127	160	140	150	170	150

Notes:
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Exceedances of the OWDS (operational guidelines excluded) are s

		Sample	OW4-II																
		Date	31-Jan-02	28-Apr-06	17-Aug-06	15-Nov-06	19-Apr-07	16-Aug-07	07-Nov-07	16-Apr-08	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	15-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
Parameter	Units	ODWS																	
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L			270	219	314	220	220	217	240	304	269	337	294	280	280	270	280	240
Total Ammonia-N	mg/L			1.15	0.86	1.17	1.11	1.12	0.08	1.16	0.57	0.45	0.63	0.59	0.82	0.77	0.81	0.80	1.1
Colour	TCU	**5 (AO)**									**5.7**	**10.5**	2.6	< 2	<2	<2	<2	<2	<2
Conductivity	uS/cm			1760	1740	1590	1830	1840	1720	1640	831	852	800	766	1000	900	1000	1100	1800
Total Dissolved Solids	mg/L	**500 (AO)**		**846**	**874**	**890**	**942**	**980**	**1310**	**890**				436	**650**	**530**	**550**	**570**	**930**
Fluoride (F-)	mg/L	**1.5**		0.61	0.64	0.78	0.79	0.77	0.79	0.76	1.20	1.28	1.10	1.30	1.30	1.5	1.4	1.3	0.95
Dissolved Organic Carbon	mg/L	**5 (AO)**		2.90	1.80	1.90	1.10	1.80	1.80	1.60	1.50	1.60	2.50	1.50	1.30	1.1	1.1	1.2	1.1
Hardness	mg/L	**80-100 (OG)**														120	120	130	250
Phosphate	mg/L										< 1	< 1	< 0.3	< 0.3	<0.010	<0.010	<0.010	0.014	<0.010
pH	units	**6.5-8.5 (OG)**									7.99	8.03	7.36	7.75	8.10	8.18	8.13	8.09	8.05
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**		6	6	5	3	2	1	0	5	34	1	1	<1	<1	<1.0	<1.0	<1.0
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**		270	219	320	220	220	217	240	307	272	338	296	280	280	280	280	240
Dissolved Chloride (Cl)	mg/L	**250 (AO)**		**436.0**	**415.0**	**423.0**	**459.0**	**434.0**	**439.0**	**390.0**	118.0	111.0	93.1	84.8	150.0	110	140	160	**430**
Nitrite (N)	mg/L	**1**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.09	<0.09	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	**10**		<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.09	<0.09	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**													<0.10	<0.10		<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		47.90	47.90	48.00	47.00	50.10	49.00	51.00	44.30	18.80	17.10	14.40	13.50	20.00	22	22	24	45
Dissolved Magnesium (Mg)	mg/L		34.4	33.8	33.5	32.2	34.5	32.1	35.2	28.0	15.5	11.3	10.8	8.2	13.0	15	15	16	32
Dissolved Phosphorus (P)	mg/L			0.54						0.07	0.05	4.63	0.02	0.05	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		9.70	9.89	9.44	9.46	10.60	11.40	10.40	14.00	7.30	5.56	6.00	4.72	6.10	6.8	7.0	7.3	9.9
Dissolved Sodium (Na)	mg/L	**200 (AO)**	**311**	**250**	**243**	**233**	**254**	**258**	**261**	**242**	**205**	**212**	142	118	170	190	190	180	**260**

Notes:
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Exceedances of the OWDS (operational guidelines excluded) are s

		Sample	OW5-I															
		Date	31-Jan-02	28-Apr-06	17-Aug-06	15-Nov-06	19-Apr-07	16-Aug-07	07-Nov-07	16-Apr-08	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	16-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
Parameter	Units	ODWS																	
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L			248.0000	227.0000	262.0000	225.0000	222.0000	219.0000	231.0000	237.0	232.0	448.0	179.0	240.0	220	230	230	240
Total Ammonia-N	mg/L			0.99	0.82	0.86	1.69	0.69	<2	<2	0.64	0.79	0.76	0.75	0.83	0.84	0.91	0.65	0.78
Colour	TCU	**5 (AO)**									**7.4**	**4.4**	**3.8**	**38.8**	<2	<2	<2	<2	4
Conductivity	uS/cm			632	615	564	624	615	612	617	663	553	602	585	590	610	610	620	620
Total Dissolved Solids	mg/L	**500 (AO)**		**1210**	305	310	356	324	376	476				355	324	330	340	350	340
Fluoride (F-)	mg/L	**1.5**		0.66	0.93	0.94	0.85	0.92	0.94	0.82	0.80	0.91	0.66	0.60	0.91	0.85	0.90	0.85	0.89
Dissolved Organic Carbon	mg/L	**5 (AO)**		**25.40**	2.10	2.40	**23.00**	2.30	**15.40**	**15.60**	1.40	1.90	2.40	1.90	1.50	1.2	1.1	1.2	1.3
Hardness	mg/L	**80-100 (OG)**														160	160	170	160
Phosphate	mg/L										< 1	< 1	< 0.3	< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**									7.80	7.85	7.06	7.54	8.20	8.04	8.05	8.02	8.11
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**		20	16	17	17	19	20	21	24	23	25	24	28	28	29	32	27
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**		248	227	273	225	222	222	231	238	234	448	180	240	230	230	240	240
Dissolved Chloride (Cl)	mg/L	**250 (AO)**		56.50	51.20	45.70	52.80	49.50	45.30	47.80	47.70	44.30	37.10	32.30	34.00	36	37	39	35
Nitrite (N)	mg/L	**1**		<0.05	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.03	<0.03	<0.09	<0.09	0.03	0.072	0.121	0.107	0.066
Nitrate (N)	mg/L	**10**		<0.05	<0.05	<0.05	<0.05	0.71	1.02	0.82	0.60	0.28	0.53	0.65	0.59	0.24	0.25	0.41	0.26
Nitrate + Nitrite	mg/L	**10**													0.6200	0.31		0.52	0.32
Dissolved Calcium (Ca)	mg/L		1200.00	30.40	27.50	47.30	29.90	27.70	32.20	33.70	20.70	24.90	24.50	22.90	29.00	28	31	31	29
Dissolved Magnesium (Mg)	mg/L		806.0	18.2	18.5	18.3	19.6	17.9	20.0	19.4	25.6	17.0	20.6	15.5	20.0	21	21	22	21
Dissolved Phosphorus (P)	mg/L			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	3.53		0.35	0.01	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		66.40	8.64	7.49	8.15	7.76	7.64	8.16	9.44	8.20	5.65	7.72	5.47	7.00	6.6	8.0	7.2	7.5
Dissolved Sodium (Na)	mg/L	**200 (AO)**	**3980**	72.50	70.10	67.70	71.70	71.60	72.40	71.00	83.40	55.80	63.90	53.00	66.00	65	64	63	64

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded) are s

		Sample	OW5-II															
		Date	31-Jan-02	28-Apr-06	17-Aug-06	15-Nov-06	19-Apr-07	16-Aug-07	07-Nov-07	16-Apr-08	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	16-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
Parameter	Units	ODWS																	
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L			113.0	109.0	151.0	109.0	107.0	109.0	113.0	108.0	102.0	165.0	82.7	110.0	110	110	110	110
Total Ammonia-N	mg/L			9.45	3.31	11.80	11.70	9.73	0.93	11.90	9.84	9.86	9.41	10.20	9.60	9.4	9.9	9.2	9.5
Colour	TCU	**5 (AO)**									**15.9**	< 2	< 2	**25.9**	**30.0**	**73**	**26**	**51**	**100**
Conductivity	uS/cm			26200	26100	26500	26100	25500	24000	25200	36600	23700	24700	25900	28000	28000	26000	29000	27000
Total Dissolved Solids	mg/L	**500 (AO)**		**18800**	**20600**	**19500**	**21100**	**18800**	**17900**	**18700**				**18100**	**16100**	**17000**	**16000**	**16000**	**16000**
Fluoride (F-)	mg/L	**1.5**		<0.05	<0.05	0.75	<0.05	<0.05	<0.05	<2	<10	<10	<5	<0.5	0.48	0.44	0.46	0.45	0.45
Dissolved Organic Carbon	mg/L	**5 (AO)**		1.70	1.20	1.20	0.70	1.10	1.00	0.90	<0.5	0.79	<0.4	<0.4	0.61	0.49	0.34	0.53	0.48
Hardness	mg/L	**80-100 (OG)**														6100	5900	6300	6300
Phosphate	mg/L										< 100	< 100	< 5	< 0.5	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**									7.16	7.03	6.92	6.86	7.42	7.23	7.31	7.28	7.34
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**		<0.1	6	16	<1	15	<0.1	5	100	<100	<5	4	<1	<1	<1.0	<1.0	<1.0
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**		113	109	151	109	107	109	113	108	102	165	83	110	110	110	110	110
Dissolved Chloride (Cl)	mg/L	**250 (AO)**		**11500**	**10700**	**11400**	**11400**	**11300**	**11000**	**9800**	**14800**	**10200**	**9940**	**7550**	**9900**	**11000**	**9900**	**10000**	**9800**
Nitrite (N)	mg/L	**1**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<3	<3	<1	<0.7	<0.050	<0.010	<0.010	0.013	<0.010
Nitrate (N)	mg/L	**10**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<10	<10	<1	1.50	<0.50	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**													<0.50	<0.10		<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		831.00	1200.00	1150.00	1210.00	1170.00	1190.00	1310.00	1280.00	1350.00	1060.00	2020.00	1260.00	1200.00	1300	1200	1300	1300
Dissolved Magnesium (Mg)	mg/L		548.0	686.0	702.0	700.0	699.0	685.0	807.0	746.0	1450.0	815.0	1080.0	590.0	740.0	730	710	750	760
Dissolved Phosphorus (P)	mg/L			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.15	1.21	0.01	0.18	<0.01	<1	<1	<1	<1
Dissolved Potassium (K)	mg/L		50.80	69.40	68.30	75.70	74.10	81.30	78.90	124.00	104.00	77.90	73.20	76.60	66.00	68	70	69	77
Dissolved Sodium (Na)	mg/L	**200 (AO)**	**2660**	**3730**	**3640**	**3700**	**3540**	**3770**	**3960**	**3900**	**7070**	**4000**	**5370**	**3200**	**3600**	**3700**	**3700**	**3800**	**3900**

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded) are s

		Sample	OW5-III															
		Date	28-Apr-06	17-Aug-06	15-Nov-06	19-Apr-07	16-Aug-07	07-Nov-07	16-Apr-08	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	16-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
Parameter	Units	ODWS																
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		110	102	108	119	104	106	124	102	77	127	95.1	110	110	100	110	120
Total Ammonia-N	mg/L		9.53	3.26	10.70	12.20	9.81	0.35	14.60	9.01	10.70	9.41	10.30	9.60	9.5	11	8.9	10
Colour	TCU	**5 (AO)**								4	< 2	< 2	**37.3**	**6.0**	**38**	**18**	**35**	**59**
Conductivity	uS/cm		29000	26600	25800	28100	26100	24600	26000	35700	30700	31200	26500	22000	29000	37000	27000	32000
Total Dissolved Solids	mg/L	**500 (AO)**	**26700**	**21900**	**20100**	**21800**	**28300**	**20100**	**19200**				**19600**	**15500**	**17000**	**22000**	**16000**	**18000**
Fluoride (F-)	mg/L	**1.5**	<0.05	<0.05	0.72	<0.05	<0.05	0.68	<0.05	<10	<10	<5	<0.5	0.39	0.42	0.44	0.44	0.43
Dissolved Organic Carbon	mg/L	**5 (AO)**	**8.30**	1.40	1.30	2.10	1.30	1.50	2.40	<0.5	<0.4	<0.4	<0.4	0.82	0.97	1.4	1.1	1.3
Hardness	mg/L	**80-100 (OG)**													6200	8300	6600	6900
Phosphate	mg/L									< 100	< 100	< 5	< 0.5	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**								7.33	6.92	6.74	6.99	7.50	7.35	7.21	7.28	7.45
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	106	44	15	64	38	16	525	200	190	113	53	27	20	150	33	77
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	110	102	108	119	104	106	124	102	77	127	95	110	110	100	110	120
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	**13300**	**10800**	**10800**	**12400**	**11700**	**11400**	**9920**	**14600**	**13500**	**12900**	**8060**	**8000**	**11000**	**14000**	**9900**	**11000**
Nitrite (N)	mg/L	**1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<3	<3	<1	<0.7	0.17	<0.010	0.015	0.013	<0.010
Nitrate (N)	mg/L	**10**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<10	<10	<1	<0.1	0.12	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**												0.3000	<0.10		0.10	<0.10
Dissolved Calcium (Ca)	mg/L		1370.00	1160.00	1160.00	1240.00	1180.00	1330.00	1310.00	1410.00	1360.00	2050.00	1250.00	1200.00	1300	1700	1400	1400
Dissolved Magnesium (Mg)	mg/L		737.0	716.0	679.0	726.0	697.0	815.0	735.0	1270.0	1020.0	1040.0	590.0	710.0	740	960	770	800
Dissolved Phosphorus (P)	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.58	0.16	0.02	0.09	0.51	<0.01	<1	<1	<1	<1
Dissolved Potassium (K)	mg/L		70.40	64.90	72.50	70.20	79.90	75.70	119.00	86.10	77.90	80.80	80.10	65.00	71	79	67	71
Dissolved Sodium (Na)	mg/L	**200 (AO)**	**4220**	**3740**	**3600**	**3890**	**3770**	**4000**	**4000**	**7280**	**5410**	**5410**	**3200**	**3600**	**3800**	**5200**	**4200**	**4300**

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded) are s

		Sample	OW6-II											OW7-I							
		Date	16-Apr-08	14-Aug-08	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	15-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16	24-Apr-13	25-Oct-13	02-May-14	16-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
Parameter	Units	ODWS																			
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		234	192	186	160	215	134	170	150	160	160	160	291	368	187	220	270	230	270	220
Total Ammonia-N	mg/L		0.72	0.43	0.60	0.02	<0.01	0.03	0.83	0.82	1.4	1.0	1.3	1.44	3.32	0.74	2.00	3.7	3.1	3.0	2.5
Colour	TCU	**5 (AO)**			9.1	2.6	3.3	2.8	3.0	<2	2	<2	<2	**16**	**58.6**	**289**	**16**	3	3	**76**	**21**
Conductivity	uS/cm		1090	1020	2030	1440	1780	2110	4200	5400	6000	6200	6300	4810	5800	5070	870	5600	700	5800	690
Total Dissolved Solids	mg/L	**500 (AO)**	**710**	**558**				**1260**	**3270**	**3100**	**3800**	**3800**	**4000**			**2810**	496	**3200**	**520**	**3100**	360
Fluoride (F-)	mg/L	**1.5**	0.51	0.28	<1	<0.1	<0.3	<0.3	0.38	0.46	0.49	0.49	0.51	**3.80**	**2.50**	**3.00**	0.49	**2.7**	0.51	**2.7**	0.46
Dissolved Organic Carbon	mg/L	**5 (AO)**	**16.90**	**10.00**	1.60	2.10	2.50	1.30	1.60	1.2	0.86	1.0	0.63	0.82	<0.4	0.56	2.10	1	1.8	0.92	1.8
Hardness	mg/L	**80-100 (OG)**								1100	1400	1600	1600					890	450	860	250
Phosphate	mg/L				< 10	< 1	< 0.3	< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010	< 10	< 0.3	< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	8.54	8.23	8.00	7.79	7.80	7.78	7.89	7.82	7.67	7.69	7.77	7.72	7.24	7.49	7.95	7.76	7.98	7.93	7.90
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	138	83	170	132	148	199	450	570	1000	1000	1100	<10	28	30	86	23	49	9.1	49
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	254	192	188	161	216	135	170	150	160	160	160	292	369	188	230	270	230	280	220
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	75.10	150.00	**402.00**	**355.00**	**364.00**	112.00	**1000.00**	**1400**	**1400**	**1400**	**1500**	**1780.00**	**1760.00**	**1300.00**	89.00	**1700**	55	**1700**	46
Nitrite (N)	mg/L	**1**	<0.05	<0.05	<0.3	<0.03	<0.09	<0.09	0.02	0.256	0.026	0.127	0.020	<0.3	<1	<0.09	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	**10**	<0.05	<0.05	<1	0.71	0.80	0.75	0.11	0.66	<0.10	<0.10	<0.10	4.10	<1	<0.09	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**							0.1300	0.91		0.21	<0.10				<0.10	<0.10		<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		13.00	50.60	71.10	66.40	91.50	110.00	250.00	230	280	330	320	136.00	179.00	139.00	65.00	180	91	170	52
Dissolved Magnesium (Mg)	mg/L		6.0	15.7	45.7	32.9	31.0	30.5	130.0	120	170	180	190	96.8	99.9	61.7	39.0	110	54	110	30
Dissolved Phosphorus (P)	mg/L		3.35	<0.05	0.03	0.05	0.02	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	0.07	0.15	0.02	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		4.14	4.43	7.20	5.38	7.43	5.38	13.00	13	14	15	16	11.40	13.80	9.82	12.00	15	13	15	12
Dissolved Sodium (Na)	mg/L	**200 (AO)**	**225.00**	142.00	**326.00**	**230.00**	**206.00**	**224.00**	**580.00**	**650**	**790**	**760**	**770**	**892.00**	**919.00**	**659.00**	57.00	**910**	110	**890**	28

Notes:
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Exceedances of the OWDS (operational guidelines excluded) are s

		Sample	OW7-II										OW8-I								
		Date	16-Apr-08	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	16-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	16-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
Parameter	Units	ODWS																			
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		154	304	307	360	137	290	270	280	270	290	455	311	419	229	300	340	240	330	370
Total Ammonia-N	mg/L		11.00	1.46	1.61	1.12	1.42	2.40	2.3	2.4	2.6	1.6	0.70	0.29	0.35	0.29	0.84	0.58	2.4	0.72	1.3
Colour	TCU	**5 (AO)**		**7.4**	< 2	< 2	< 2	3.0000	3	<2	**20**	<2	**9.1**	**15.2**	**14.7**	2.2	<2	<2	3	<2	<2
Conductivity	uS/cm		29900	676	4810	5760	4570	2100	8000	7300	9800	860	1380	977	1070	1100	1500	1300	7300	2000	3200
Total Dissolved Solids	mg/L	**500 (AO)**	**22800**				**2660**	**2490**	**4700**	**3800**	**5400**	470				**591**	**768**	**680**	**3900**	**1100**	**1700**
Fluoride (F-)	mg/L	**1.5**	<0.05	0.40	**3.00**	**2.20**	**2.90**	0.87	**2.4**	1.2	**2.1**	0.49	**2.60**	0.66	0.66	0.78	0.68	**2.4**	0.82	**2.2**	1.3
Dissolved Organic Carbon	mg/L	**5 (AO)**	**7.70**	1.90	0.73	<0.4	0.62	2.60	0.86	1.9	2.0	3.2	1.50	2.20	2.90	1.60	1.90	1.3	1.1	1.4	1.3
Hardness	mg/L	**80-100 (OG)**							1500	1500	1800	330						250	1500	550	450
Phosphate	mg/L			< 1	< 10	< 0.3	< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010	< 1	< 1	< 0.3	< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	7.72	8.03	7.70	7.20	7.54	8.04	7.78	7.83	7.73	8.14	8.30	7.63	7.30	7.41	7.83	8.02	7.62	7.92	7.85
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	31	67	29	40	34	63	31	55	23	50	<1	67	55	48	37	33	19	30	20
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	154	307	310	361	137	290	280	280	270	300	464	312	420	230	300	350	240	330	370
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	**11400.00**	24.60	**1570.00**	**1980.00**	**1200.00**	**440.00**	**2700**	**2200**	**3200**	71	**256.00**	129.00	115.00	127.00	**260.00**	160	**2300**	**420**	**820**
Nitrite (N)	mg/L	**1**	<0.05	<0.03	<0.3	<0.09	<0.09	0.02	<0.010	<0.010	<0.010	<0.010	<0.03	<0.03	<0.09	<0.09	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	**10**	<0.05	<0.1	<1	<0.09	<0.09	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.09	<0.09	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**						<0.10	<0.10		<0.10	<0.10					<0.10	<0.10		<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		1510.00	45.80	148.00	186.00	126.00	150.00	320	300	380	66	26.90	114.00	103.00	96.90	120.00	66	370	140	110
Dissolved Magnesium (Mg)	mg/L		863.0	64.5	98.8	118.0	53.8	89.0	180	180	210	39	31.3	32.8	22.0	19.2	40.0	21	150	45	43
Dissolved Phosphorus (P)	mg/L		5.66	0.13	0.01	0.00	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	0.02	0.17	0.42	0.04	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		81.30	17.80	11.80	14.10	9.20	13.00	20	19	21	13	10.00	4.37	4.34	3.95	6.70	5.4	20	6.9	11
Dissolved Sodium (Na)	mg/L	**200 (AO)**	**4960.00**	70.60	**905.00**	**1080.00**	**610.00**	**370.00**	**1300**	**880**	**1400**	44	**338.00**	83.80	72.00	91.40	120.00	170	920	**270**	**480**

Notes:
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Exceedances of the OWDS (operational guidelines excluded) are s

		Sample	OW8-II										OW9-I					
		Date	16-Apr-08	01-Aug-12	24-Apr-13	25-Oct-13	02-May-14	16-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16	02-May-14	15-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
Parameter	Units	ODWS																
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		289	293	320	392	151	290	300	250	290	340	164	220	220	470	230	150
Total Ammonia-N	mg/L		0.93	1.12	1.88	0.26	0.27	0.64	0.93	2.4	1.1	1.7	2.04	3.70	5.2	2.5	12	18
Colour	TCU	**5 (AO)**	**14.5**	2.3	< 2	3	3.3	<2	<2	**9**	**40**	<2	26.2	**8**	**7**	**6**	**21**	**87**
Conductivity	uS/cm		1750	7380	8000	833	841	1700	1200	8400	4700	5100	5880	12000	15000	5200	50000	80000
Total Dissolved Solids	mg/L	**500 (AO)**	**1130**				498	**982**	**1000**	**4500**	**2500**	**2700**	**3640**	**7840**	**8500**	**3200**	**31000**	**55000**
Fluoride (F-)	mg/L	**1.5**	0.41	<1	<1	<0.3	0.36	0.66	0.8	0.71	0.47	1.2	<0.3	0.21	0.18	0.23	<0.10	<0.1
Dissolved Organic Carbon	mg/L	**5 (AO)**	**7.10**	1.40	1.70	3.10	2.20	1.80	1.7	1.2	1.7	1.2	3.80	**9.10**	**8.8**	**11**	**10**	**9.1**
Hardness	mg/L	**80-100 (OG)**							890	1900	1300	780			2900	1200	16000	26000
Phosphate	mg/L			< 10	< 10	< 0.3	< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.3		<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	7.98	7.70	7.43	6.74	7.29	7.76	7.88	7.62	7.65	7.85	7.35	7.62	7.6	7.63	7.02	6.90
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	77	20	<10	64	66	39	37	20	54	8.4	194	200	150	77	150	210
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	289	294	321	392	151	290	300	260	290	340	164	220	220	470	230	150
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	**387.00**	**3100.00**	**2990.00**	65.00	51.90	**340.00**	180	**2700**	**1300**	**1500**	**1420.00**	**3800.00**	**5200**	**1400**	**19000**	**35000**
Nitrite (N)	mg/L	**1**	<0.05	<0.3	<0.3	<0.09	<0.09	<0.010	<0.010	<0.010	<0.010	<0.010	<0.09	0.02	<0.010	<0.010	<0.050	<0.050
Nitrate (N)	mg/L	**10**	<0.05	<1	<1	<0.09	<0.09	<0.10	<0.10	<0.10	<0.10	<0.10	0.33	<0.10	<0.10	<0.10	<0.50	<0.50
Nitrate + Nitrite	mg/L	**10**						<0.10	<0.10		<0.10	<0.10		<0.10	<0.10		<0.50	<0.50
Dissolved Calcium (Ca)	mg/L		174.00	263.00	279.00	118.00	131.00	140.00	220	450	340	180	289.00	370.00	660	260	3500	5500
Dissolved Magnesium (Mg)	mg/L		38.0	173.0	145.0	21.2	17.6	41.0	85	180	120	79	85.0	170.0	300	120	1800	3100
Dissolved Phosphorus (P)	mg/L		0.75	0.03	0.23	0.03	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	0.97	<0.5	<0.1	<0.1	<1	<1
Dissolved Potassium (K)	mg/L		6.44	15.30	8.47	3.76	3.18	5.90	7.3	20	9.5	14	19.60	27.00	40	24	100	150
Dissolved Sodium (Na)	mg/L	**200 (AO)**	134.00	**585.00**	**534.00**	42.00	33.60	140.00	**310**	**1000**	**430**	**710**	**888.00**	**1300.00**	**2000**	**1000**	**6500**	**11000**

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded) are s

		Sample	OW9-II						TW1-1							
		Date	02-May-14	15-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16	01-Aug-12	25-Oct-13	02-May-14	15-Oct-14	28-May-15	22-Oct-15	30-May-16	25-Oct-16
Parameter	Units	ODWS														
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		238	290	280	260	250	230	228	332	145	270	250	270	260	280
Total Ammonia-N	mg/L		1.12	1.90	1.9	2.9	0.23	0.22	0.86	0.97	0.68	0.49	0.89	0.93	1.0	1.0
Colour	TCU	**5 (AO)**	2.3	**9**	**7**	**8**	**7**	4	4	< 2	< 2	<2	<2	<2	<2	2
Conductivity	uS/cm		1290	7200	7000	13000	15000	16000	2340	2000	548	860	2400	3000	2800	3500
Total Dissolved Solids	mg/L	**500 (AO)**	**900**	**4690**	**4600**	**7400**	**8300**	**9000**			394	482	**1200**	**1400**	**1400**	**1800**
Fluoride (F-)	mg/L	**1.5**	1.30	0.35	0.36	0.12	0.11	0.11	<1	<1	0.30	0.52	0.55	0.51	0.54	0.50
Dissolved Organic Carbon	mg/L	**5 (AO)**	2.70	**9.00**	**8.8**	**9.6**	**8.8**	**8.7**	1.80	1.90	1.10	1.70	1.5	1.5	1.6	1.7
Hardness	mg/L	**80-100 (OG)**			1900	2700	3300	3900					550	640	650	810
Phosphate	mg/L		< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010	< 10	< 1	< 0.3	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	7.84	7.74	7.61	7.4	7.37	7.40	8.17	7.40	8.07	8.00	7.82	7.76	7.85	7.84
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	32	280	270	380	380	320	30	19	9	23	14	12	17	11
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	240	290	290	260	250	240	231	333	147	270	250	270	260	280
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	180.00	**2200.00**	**2100**	**4200**	**4700**	**5000**	**570.00**	**443.00**	44.20	100.00	**580**	**770**	**690**	**980**
Nitrite (N)	mg/L	**1**	<0.09	<0.050	<0.010	<0.010	0.065	0.026	<0.3	<0.3	<0.09	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	**10**	0.15	<0.50	<0.10	<0.10	3.38	2.84	<1	<0.3	0.14	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**		<0.50	<0.10		3.44	2.86				<0.10	<0.10		<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		23.90	340.00	480	670	800	930	48.00	98.70	48.60	79.00	120	140	140	180
Dissolved Magnesium (Mg)	mg/L		13.3	120.0	180	260	310	370	52.8	46.9	22.7	31.0	61	69	75	89
Dissolved Phosphorus (P)	mg/L		0.02	<0.5	<0.1	<0.1	<0.5	<0.5	0.13	0.01	0.09	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		8.11	18.00	25	33	34	42	13.10	10.80	5.93	5.30	9.6	10	12	10
Dissolved Sodium (Na)	mg/L	**200 (AO)**	196.00	**970.00**	**1300**	**1700**	**1900**	**2200**	**300.00**	**209.00**	69.90	52.00	**230**	**250**	**300**	**320**

Notes:
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Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
1-Jan-16	NO PUMP		0	0	-	-	-
2-Jan-16	NO PUMP		0	0	-	-	-
3-Jan-16	NO PUMP		0	0	-	-	-
4-Jan-16	7AM	3PM	28800	480	1,008,000	35	2,100
5-Jan-16	7AM	3PM	28800	480	1,008,000	35	2,100
6-Jan-16	7AM	3PM	28800	480	1,008,000	35	2,100
7-Jan-16	7AM	3PM	28800	480	1,008,000	35	2,100
8-Jan-16	7AM	3PM	28800	480	1,008,000	35	2,100
9-Jan-16	NO PUMP		0	0	-	-	-
10-Jan-16	NO PUMP		0	0	-	-	-
11-Jan-16	7AM	12PM	18000	300	630,000	35	2,100
12-Jan-16	7AM	12PM	18000	300	630,000	35	2,100
13-Jan-16	7AM	12PM	18000	300	630,000	35	2,100
14-Jan-16	7AM	12PM	18000	300	630,000	35	2,100
15-Jan-16	NO PUMP		0	0	-	-	-
16-Jan-16	NO PUMP		0	0	-	-	-
17-Jan-16	NO PUMP		0	0	-	-	-
18-Jan-16	NO PUMP		0	0	-	-	-
19-Jan-16	7AM	12PM	18000	300	630,000	35	2,100
20-Jan-16	7AM	2PM	25200	420	882,000	35	2,100
21-Jan-16	7AM	12PM	18000	300	630,000	35	2,100
22-Jan-16	NO PUMP		0	0	-	-	-
23-Jan-16	NO PUMP		0	0	-	-	-
24-Jan-16	NO PUMP		0	0	-	-	-
25-Jan-16	NO PUMP		0	0	-	-	-
26-Jan-16	7AM	12PM	18000	300	630,000	35	2,100
27-Jan-16	7AM	12PM	18000	300	630,000	35	2,100
28-Jan-16	7AM	12PM	18000	300	630,000	35	2,100
29-Jan-16	7AM	12PM	18000	300	630,000	35	2,100
30-Jan-16	NO PUMP		0	0	-	-	-
31-Jan-16	NO PUMP		0	0	-	-	-
1-Feb-16	NO PUMP		0	0	-	-	-
2-Feb-16	NO PUMP		0	0	-	-	-
3-Feb-16	NO PUMP		0	0	-	-	-
4-Feb-16	NO PUMP		0	0	-	-	-
5-Feb-16	NO PUMP		0	0	-	-	-
6-Feb-16	NO PUMP		0	0	-	-	-
7-Feb-16	NO PUMP		0	0	-	-	-
8-Feb-16	6:30AM	5PM	37800	630	1,323,000	35	2,100
9-Feb-16	NO PUMP		0	0	-	-	-
10-Feb-16	6:30AM	5PM	37800	630	1,323,000	35	2,100
11-Feb-16	NO PUMP		0	0	-	-	-
12-Feb-16	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
13-Feb-16	NO PUMP		0	0	-	-	-
14-Feb-16	NO PUMP		0	0	-	-	-
15-Feb-16	6AM	3PM	32400	540	1,134,000	35	2,100
16-Feb-16	NO PUMP		0	0	-	-	-
17-Feb-16	6AM	4PM	36000	600	1,260,000	35	2,100
18-Feb-16	NO PUMP		0	0	-	-	-
19-Feb-16	NO PUMP		0	0	-	-	-
20-Feb-16	NO PUMP		0	0	-	-	-
21-Feb-16	NO PUMP		0	0	-	-	-
22-Feb-16	6AM	5PM	39600	660	1,386,000	35	2,100
23-Feb-16	NO PUMP		0	0	-	-	-
24-Feb-16	6AM	5PM	39600	660	1,386,000	35	2,100
25-Feb-16	NO PUMP		0	0	-	-	-
26-Feb-16	6:30AM	5PM	37800	630	1,323,000	35	2,100
27-Feb-16	NO PUMP		0	0	-	-	-
28-Feb-16	NO PUMP		0	0	-	-	-
29-Feb-16	6AM	6PM	43200	720	1,512,000	35	2,100
1-Mar-16	6AM	6:30PM	45000	750	1,575,000	35	2,100
2-Mar-16	NO PUMP		0	0	-	-	-
3-Mar-16	6:30AM	5:30PM	39600	660	1,386,000	35	2,100
4-Mar-16	NO PUMP		0	0	-	-	-
5-Mar-16	NO PUMP		0	0	-	-	-
6-Mar-16	NO PUMP		0	0	-	-	-
7-Mar-16	6:30AM	5:30PM	39600	660	1,386,000	35	2,100
8-Mar-16	6:30AM	5:30PM	39600	660	1,386,000	35	2,100
9-Mar-16	6:30AM	5:30PM	39600	660	1,386,000	35	2,100
10-Mar-16	6:30AM	5:30PM	39600	660	1,386,000	35	2,100
11-Mar-16	6:30AM	5:30PM	39600	660	1,386,000	35	2,100
12-Mar-16	NO PUMP		0	0	-	-	-
13-Mar-16	NO PUMP		0	0	-	-	-
14-Mar-16	6:30AM	5:30PM	39600	660	1,386,000	35	2,100
15-Mar-16	NO PUMP		0	0	-	-	-
16-Mar-16	6:30AM	5PM	37800	630	1,323,000	35	2,100
17-Mar-16	NO PUMP		0	0	-	-	-
18-Mar-16	NO PUMP		0	0	-	-	-
19-Mar-16	NO PUMP		0	0	-	-	-
20-Mar-16	NO PUMP		0	0	-	-	-
21-Mar-16	8AM	5PM	32400	540	1,134,000	35	2,100
22-Mar-16	8AM	4PM	28800	480	1,008,000	35	2,100
23-Mar-16	8AM	4:30PM	30600	510	1,071,000	35	2,100
24-Mar-16	8AM	4PM	28800	480	1,008,000	35	2,100
25-Mar-16	NO PUMP		0	0	-	-	-
26-Mar-16	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
27-Mar-16	NO PUMP		0	0	-	-	-
28-Mar-16	8AM	6AM	79200	1320	2,772,000	35	2,100
29-Mar-16	7AM	7AM	86400	1440	3,024,000	35	2,100
30-Mar-16	7AM	7AM	86400	1440	3,024,000	35	2,100
31-Mar-16	7AM	7AM	86400	1440	3,024,000	35	2,100
1-Apr-16	7AM	7AM	86400	1440	3,024,000	35	2,100
2-Apr-16	7AM	7AM	86400	1440	3,024,000	35	2,100
3-Apr-16	7AM	7AM	86400	1440	3,024,000	35	2,100
4-Apr-16	7AM	7AM	86400	1440	3,024,000	35	2,100
5-Apr-16	7AM	7AM	86400	1440	3,024,000	35	2,100
6-Apr-16	7AM	5PM	36000	600	1,260,000	35	2,100
7-Apr-16	NO PUMP		0	0	-	-	-
8-Apr-16	NO PUMP		0	0	-	-	-
9-Apr-16	NO PUMP		0	0	-	-	-
10-Apr-16	NO PUMP		0	0	-	-	-
11-Apr-16	7AM	7AM	86400	1440	3,024,000	35	2,100
12-Apr-16	NO PUMP		0	0	-	-	-
13-Apr-16	7AM	7AM	86400	1440	3,024,000	35	2,100
14-Apr-16	NO PUMP		0	0	-	-	-
15-Apr-16	NO PUMP		0	0	-	-	-
16-Apr-16	NO PUMP		0	0	-	-	-
17-Apr-16	NO PUMP		0	0	-	-	-
18-Apr-16	7AM	7AM	86400	1440	3,024,000	35	2,100
19-Apr-16	NO PUMP		0	0	-	-	-
20-Apr-16	7AM	3PM	28800	480	1,008,000	35	2,100
21-Apr-16	7AM	1PM	21600	360	756,000	35	2,100
22-Apr-16	NO PUMP		0	0	-	-	-
23-Apr-16	NO PUMP		0	0	-	-	-
24-Apr-16	NO PUMP		0	0	-	-	-
25-Apr-16	7AM	7AM	86400	1440	3,024,000	35	2,100
26-Apr-16	NO PUMP		0	0	-	-	-
27-Apr-16	NO PUMP		0	0	-	-	-
28-Apr-16	7AM	5PM	36000	600	1,260,000	35	2,100
29-Apr-16	7AM	2PM	25200	420	882,000	35	2,100
30-Apr-16	NO PUMP		0	0	-	-	-
1-May-16	NO PUMP		0	0	-	-	-
2-May-16	7AM	3PM	28800	480	1,008,000	35	2,100
3-May-16	7AM	3PM	28800	480	1,008,000	35	2,100
4-May-16	7AM	3PM	28800	480	1,008,000	35	2,100
5-May-16	NO PUMP		0	0	-	-	-
6-May-16	NO PUMP		0	0	-	-	-
7-May-16	NO PUMP		0	0	-	-	-
8-May-16	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
9-May-16	NO PUMP		0	0	-	-	-
10-May-16	NO PUMP		0	0	-	-	-
11-May-16	NO PUMP		0	0	-	-	-
12-May-16	NO PUMP		0	0	-	-	-
13-May-16	NO PUMP		0	0	-	-	-
14-May-16	NO PUMP		0	0	-	-	-
15-May-16	NO PUMP		0	0	-	-	-
16-May-16	7AM	5PM	36000	600	1,260,000	35	2,100
17-May-16	7AM	2PM	25200	420	882,000	35	2,100
18-May-16	7AM	3PM	28800	480	1,008,000	35	2,100
19-May-16	7AM	1PM	21600	360	756,000	35	2,100
20-May-16	7AM	1PM	21600	360	756,000	35	2,100
21-May-16	NO PUMP		0	0	-	-	-
22-May-16	NO PUMP		0	0	-	-	-
23-May-16	NO PUMP		0	0	-	-	-
24-May-16	7AM	3PM	28800	480	1,008,000	35	2,100
25-May-16	7AM	1PM	21600	360	756,000	35	2,100
26-May-16	7AM	12PM	18000	300	630,000	35	2,100
27-May-16	7AM	2PM	25200	420	882,000	35	2,100
28-May-16	NO PUMP		0	0	-	-	-
29-May-16	NO PUMP		0	0	-	-	-
30-May-16	NO PUMP		0	0	-	-	-
31-May-16	NO PUMP		0	0	-	-	-
1-Jun-16	NO PUMP		0	0	-	-	-
2-Jun-16	NO PUMP		0	0	-	-	-
3-Jun-16	NO PUMP		0	0	-	-	-
4-Jun-16	NO PUMP		0	0	-	-	-
5-Jun-16	NO PUMP		0	0	-	-	-
6-Jun-16	7AM	1PM	21600	360	756,000	35	2,100
7-Jun-16	NO PUMP		0	0	-	-	-
8-Jun-16	NO PUMP		0	0	-	-	-
9-Jun-16	NO PUMP		0	0	-	-	-
10-Jun-16	NO PUMP		0	0	-	-	-
11-Jun-16	NO PUMP		0	0	-	-	-
12-Jun-16	NO PUMP		0	0	-	-	-
13-Jun-16	NO PUMP		0	0	-	-	-
14-Jun-16	NO PUMP		0	0	-	-	-
15-Jun-16	NO PUMP		0	0	-	-	-
16-Jun-16	NO PUMP		0	0	-	-	-
17-Jun-16	NO PUMP		0	0	-	-	-
18-Jun-16	NO PUMP		0	0	-	-	-
19-Jun-16	NO PUMP		0	0	-	-	-
20-Jun-16	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
21-Jun-16	NO PUMP		0	0	-	-	-
22-Jun-16	NO PUMP		0	0	-	-	-
23-Jun-16	NO PUMP		0	0	-	-	-
24-Jun-16	NO PUMP		0	0	-	-	-
25-Jun-16	NO PUMP		0	0	-	-	-
26-Jun-16	NO PUMP		0	0	-	-	-
27-Jun-16	7AM	12PM	18000	300	630,000	35	2,100
28-Jun-16	7AM	12PM	18000	300	630,000	35	2,100
29-Jun-16	NO PUMP		0	0	-	-	-
30-Jun-16	NO PUMP		0	0	-	-	-
1-Jul-16	NO PUMP		0	0	-	-	-
2-Jul-16	NO PUMP		0	0	-	-	-
3-Jul-16	NO PUMP		0	0	-	-	-
4-Jul-16	7AM	12PM	18000	300	630,000	35	2,100
5-Jul-16	NO PUMP		0	0	-	-	-
6-Jul-16	NO PUMP		0	0	-	-	-
7-Jul-16	NO PUMP		0	0	-	-	-
8-Jul-16	NO PUMP		0	0	-	-	-
9-Jul-16	7AM	1PM	21600	360	756,000	35	2,100
10-Jul-16	NO PUMP		0	0	-	-	-
11-Jul-16	NO PUMP		0	0	-	-	-
12-Jul-16	NO PUMP		0	0	-	-	-
13-Jul-16	NO PUMP		0	0	-	-	-
14-Jul-16	NO PUMP		0	0	-	-	-
15-Jul-16	NO PUMP		0	0	-	-	-
16-Jul-16	NO PUMP		0	0	-	-	-
17-Jul-16	NO PUMP		0	0	-	-	-
18-Jul-16	7AM	12PM	18000	300	630,000	35	2,100
19-Jul-16	NO PUMP		0	0	-	-	-
20-Jul-16	NO PUMP		0	0	-	-	-
21-Jul-16	NO PUMP		0	0	-	-	-
22-Jul-16	NO PUMP		0	0	-	-	-
23-Jul-16	NO PUMP		0	0	-	-	-
24-Jul-16	NO PUMP		0	0	-	-	-
25-Jul-16	NO PUMP		0	0	-	-	-
26-Jul-16	NO PUMP		0	0	-	-	-
27-Jul-16	NO PUMP		0	0	-	-	-
28-Jul-16	NO PUMP		0	0	-	-	-
29-Jul-16	NO PUMP		0	0	-	-	-
30-Jul-16	NO PUMP		0	0	-	-	-
31-Jul-16	NO PUMP		0	0	-	-	-
1-Aug-16	NO PUMP		0	0	-	-	-
2-Aug-16	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
3-Aug-16	NO PUMP		0	0	-	-	-
4-Aug-16	NO PUMP		0	0	-	-	-
5-Aug-16	NO PUMP		0	0	-	-	-
6-Aug-16	7AM	1PM	21,600	360	756,000	35	2,100
7-Aug-16	NO PUMP		0	0	-	-	-
8-Aug-16	7AM	1PM	21,600	360	756,000	35	2,100
9-Aug-16	NO PUMP		0	0	-	-	-
10-Aug-16	NO PUMP		0	0	-	-	-
11-Aug-16	NO PUMP		0	0	-	-	-
12-Aug-16	7AM	12PM	18,000	300	630,000	35	2,100
13-Aug-16	NO PUMP		0	0	-	-	-
14-Aug-16	NO PUMP		0	0	-	-	-
15-Aug-16	NO PUMP		0	0	-	-	-
16-Aug-16	NO PUMP		0	0	-	-	-
17-Aug-16	NO PUMP		0	0	-	-	-
18-Aug-16	NO PUMP		0	0	-	-	-
19-Aug-16	NO PUMP		0	0	-	-	-
20-Aug-16	NO PUMP		0	0	-	-	-
21-Aug-16	NO PUMP		0	0	-	-	-
22-Aug-16	NO PUMP		0	0	-	-	-
23-Aug-16	NO PUMP		0	0	-	-	-
24-Aug-16	NO PUMP		0	0	-	-	-
25-Aug-16	NO PUMP		0	0	-	-	-
26-Aug-16	NO PUMP		0	0	-	-	-
27-Aug-16	NO PUMP		0	0	-	-	-
28-Aug-16	NO PUMP		0	0	-	-	-
29-Aug-16	NO PUMP		0	0	-	-	-
30-Aug-16	NO PUMP		0	0	-	-	-
31-Aug-16	NO PUMP		0	0	-	-	-
1-Sep-16	NO PUMP		0	0	-	-	-
2-Sep-16	NO PUMP		0	0	-	-	-
3-Sep-16	NO PUMP		0	0	-	-	-
4-Sep-16	NO PUMP		0	0	-	-	-
5-Sep-16	NO PUMP		0	0	-	-	-
6-Sep-16	NO PUMP		0	0	-	-	-
7-Sep-16	NO PUMP		0	0	-	-	-
8-Sep-16	NO PUMP		0	0	-	-	-
9-Sep-16	NO PUMP		0	0	-	-	-
10-Sep-16	NO PUMP		0	0	-	-	-
11-Sep-16	NO PUMP		0	0	-	-	-
12-Sep-16	NO PUMP		0	0	-	-	-
13-Sep-16	NO PUMP		0	0	-	-	-
14-Sep-16	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
15-Sep-16	NO PUMP		0	0	-	-	-
16-Sep-16	NO PUMP		0	0	-	-	-
17-Sep-16	NO PUMP		0	0	-	-	-
18-Sep-16	NO PUMP		0	0	-	-	-
19-Sep-16	NO PUMP		0	0	-	-	-
20-Sep-16	NO PUMP		0	0	-	-	-
21-Sep-16	NO PUMP		0	0	-	-	-
22-Sep-16	NO PUMP		0	0	-	-	-
23-Sep-16	NO PUMP		0	0	-	-	-
24-Sep-16	NO PUMP		0	0	-	-	-
25-Sep-16	NO PUMP		0	0	-	-	-
26-Sep-16	NO PUMP		0	0	-	-	-
27-Sep-16	NO PUMP		0	0	-	-	-
28-Sep-16	NO PUMP		0	0	-	-	-
29-Sep-16	NO PUMP		0	0	-	-	-
30-Sep-16	NO PUMP		0	0	-	-	-
1-Oct-16	NO PUMP		0	0	-	-	-
2-Oct-16	NO PUMP		0	0	-	-	-
3-Oct-16	NO PUMP		0	0	-	-	-
4-Oct-16	NO PUMP		0	0	-	-	-
5-Oct-16	12PM	3PM	10,800	180	378,000	35	2,100
6-Oct-16	6AM	9:30AM	12,600	210	441,000	35	2,100
7-Oct-16	NO PUMP		0	0	-	-	-
8-Oct-16	NO PUMP		0	0	-	-	-
9-Oct-16	NO PUMP		0	0	-	-	-
10-Oct-16	NO PUMP		0	0	-	-	-
11-Oct-16	NO PUMP		0	0	-	-	-
12-Oct-16	11:15AM	3:15PM	14,400	240	504,000	35	2,100
13-Oct-16	11:30AM	4PM	16,200	270	567,000	35	2,100
14-Oct-16	7AM	11AM	14,400	240	504,000	35	2,100
15-Oct-16	NO PUMP		0	0	-	-	-
16-Oct-16	NO PUMP		0	0	-	-	-
17-Oct-16	8AM	3PM	25,200	420	882,000	35	2,100
18-Oct-16	6AM	1PM	25,200	420	882,000	35	2,100
19-Oct-16	NO PUMP		0	0	-	-	-
20-Oct-16	6AM	1PM	25,200	420	882,000	35	2,100
21-Oct-16	NO PUMP		0	0	-	-	-
22-Oct-16	7AM	1PM	21,600	360	756,000	35	2,100
23-Oct-16	NO PUMP		0	0	-	-	-
24-Oct-16	NO PUMP		0	0	-	-	-
25-Oct-16	6AM	3PM	32,400	540	1,134,000	35	2,100
26-Oct-16	NO PUMP		0	0	-	-	-
27-Oct-16	6AM	12PM	21,600	360	756,000	35	2,100

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
28-Oct-16	NO PUMP		0	0	-	-	-
29-Oct-16	NO PUMP		0	0	-	-	-
30-Oct-16	NO PUMP		0	0	-	-	-
31-Oct-16	6AM	10:30AM	16,200	270	567,000	35	2,100
1-Nov-16	10AM	12PM	7200	120	252,000	35	2,100
2-Nov-16	6:30AM	11AM	16200	270	567,000	35	2,100
3-Nov-16	8:15AM	10AM	6300	105	220,500	35	2,100
4-Nov-16	NO PUMP		0	0	-	-	-
5-Nov-16	NO PUMP		0	0	-	-	-
6-Nov-16	NO PUMP		0	0	-	-	-
7-Nov-16	NO PUMP		0	0	-	-	-
8-Nov-16	NO PUMP		0	0	-	-	-
9-Nov-16	6:30AM	12PM	19800	330	693,000	35	2,100
10-Nov-16	7:30AM	12PM	16200	270	567,000	35	2,100
11-Nov-16	6:30AM	12:30PM	21600	360	756,000	35	2,100
12-Nov-16	NO PUMP		0	0	-	-	-
13-Nov-16	NO PUMP		0	0	-	-	-
14-Nov-16	6:30AM	12PM	19800	330	693,000	35	2,100
15-Nov-16	6:30AM	12PM	19800	330	693,000	35	2,100
16-Nov-16	NO PUMP		0	0	-	-	-
17-Nov-16	6:30AM	12PM	19800	330	693,000	35	2,100
18-Nov-16	NO PUMP		0	0	-	-	-
19-Nov-16	NO PUMP		0	0	-	-	-
20-Nov-16	NO PUMP		0	0	-	-	-
21-Nov-16	NO PUMP		0	0	-	-	-
22-Nov-16	NO PUMP		0	0	-	-	-
23-Nov-16	NO PUMP		0	0	-	-	-
24-Nov-16	NO PUMP		0	0	-	-	-
25-Nov-16	6:30AM	1:30PM	25200	420	882,000	35	2,100
26-Nov-16	NO PUMP		0	0	-	-	-
27-Nov-16	NO PUMP		0	0	-	-	-
28-Nov-16	10AM	6PM	28800	480	1,008,000	35	2,100
29-Nov-16	6:30AM	12:30PM	21600	360	756,000	35	2,100
30-Nov-16	6:30AM	4PM	34200	570	1,197,000	35	2,100
1-Dec-16	7AM	1PM	21600	360	756,000	35	2,100
2-Dec-16	NO PUMP		0	0	-	-	-
3-Dec-16	NO PUMP		0	0	-	-	-
4-Dec-16	NO PUMP		0	0	-	-	-
5-Dec-16	7AM	3PM	28800	480	1,008,000	35	2,100
6-Dec-16	7AM	10AM	10800	180	378,000	35	2,100
7-Dec-16	7AM	9AM	7200	120	252,000	35	2,100
8-Dec-16	NO PUMP		0	0	-	-	-
9-Dec-16	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
10-Dec-16	NO PUMP		0	0	-	-	-
11-Dec-16	NO PUMP		0	0	-	-	-
12-Dec-16	7AM	3:30PM	30600	510	1,071,000	35	2,100
13-Dec-16	7AM	12PM	18000	300	630,000	35	2,100
14-Dec-16	NO PUMP		0	0	-	-	-
15-Dec-16	7AM	2PM	25200	420	882,000	35	2,100
16-Dec-16	NO PUMP		0	0	-	-	-
17-Dec-16	NO PUMP		0	0	-	-	-
18-Dec-16	NO PUMP		0	0	-	-	-
19-Dec-16	7AM	3PM	28800	480	1,008,000	35	2,100
20-Dec-16	7AM	1PM	21600	360	756,000	35	2,100
21-Dec-16	NO PUMP		0	0	-	-	-
22-Dec-16	7AM	7PM	43200	720	1,512,000	35	2,100
23-Dec-16	NO PUMP		0	0	-	-	-
24-Dec-16	NO PUMP		0	0	-	-	-
25-Dec-16	NO PUMP		0	0	-	-	-
26-Dec-16	NO PUMP		0	0	-	-	-
27-Dec-16	7AM	7PM	43200	720	1,512,000	35	2,100
28-Dec-16	7AM	7PM	43200	720	1,512,000	35	2,100
29-Dec-16	7AM	7PM	43200	720	1,512,000	35	2,100
30-Dec-16	7AM	7PM	43200	720	1,512,000	35	2,100
31-Dec-16	NO PUMP		0	0	-	-	-

APPENDIX A

PTTW No. 7818-9QJNL4

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

PERMIT TO TAKE WATER

Ground Water
NUMBER 7818-9QJNL4

Pursuant to Section 34 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

QBJR Aggregates Inc.
949 Wilson Ave
Toronto, Ontario, M3K 1G2
Canada

For the water taking from: Quarry Sump, McCarthy Quarry

Located at: Lot 1, Concession 1, Geographic Township of Mara
Ramara, County of Simcoe

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment and Climate Change.

(d) "District Office" means the Barrie District Office.

(e) "Permit" means this Permit to Take Water No. 7818-9QJNL4 including its Schedules, if any, issued in accordance with Section 34 of the OWRA.

(f) "Permit Holder" means QBJR Aggregates Inc..

(g) "OWRA " means the *Ontario Water Resources Act,* R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated October 7, 2014 and signed by Jenny Coco, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections

The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act,* S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 **Expiry**

This Permit expires on **December 31, 2019**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Quarry Sump	Pond Connected	Pits and Quarries	Dewatering	4,545	24	6,544,800	150	17 650950 4933500
						Total Taking:	6,544,800		

3.3 There is an additional water taking limitation per year for Source 1 described as Quarry Sump within Table A. The maximum taking per year from the Quarry Sump is 196,500,000 litres.

4. Monitoring

4.1 The Permit Holder shall not lower the water in the quarry below an elevation of 232.0 metres above sea level.

4.2 The Permit Holder shall establish and maintain a weather station within 1 km of the McCarthy Quarry property that collects and records, at a minimum, the following climatic data on a daily basis:

a) Precipitation (rain and/or snow); and
b) Temperature (maximum and minimum).

4.3 The Permit Holder shall conduct daily water level monitoring with the use of pressure transducers and data loggers at:

a) The residential well known by the MOE Water Well Record Number 5727662 and identified as well DW3 on Figure 2 in Item 2 of Schedule A of this Permit, if granted permission by the property owner.
b) The monitoring wells named OW4-1, OW4-2, OW5-1, OW6-1, OW6-2, OW9-1, OW9-2, and Bored Well (shown on Figure 2, in Item 2 of Schedule A of this Permit).
c) The City of Kwartha Lakes monitoring well CKL-1, if granted permission by the property owner .

These pressure transducers and data loggers shall be inspected and downloaded at least every 6 months.

4.4 The Permit Holder shall conduct monthly water level monitoring with the use of a manual water level meter at:

a) The residential well known by the MOE Water Well Record Number 5727662 and identified as well DW3 on Figure 2 in Item 2 of Schedule A of this Permit, if granted permission by the property owner.
b) The residential wells named DW1, DW2, and DW4, if granted permission by the property owner (shown on Figure 2, in Item 2 of Schedule A of this Permit).

c) The monitoring wells named AM1b, AMx, TW1-1, OW4-1, OW4-2, OW5-1, OW5-2, OW5-3, OW6-1, OW6-2, OW6-3, OW7-1, OW7-2, OW7-3, OW8-1, OW8-2, OW8-3, OW9-1, OW9-2, and Bored Well (shown on Figure 2 in Item 2 of Schedule A of this Permit).

d) The City of Kwartha Lakes monitoring wells CKL-1 and CKL-2, if granted permission by the property owner .

The Permit Holder may suspend monthly water level monitoring under Condition 4.4 for the months of January and/or February if no water is taken from the quarry on those months.

4.5 The Permit Holder shall, if granted permission by the property owner, measure and record static water levels in the residential wells named DW5, DW6, DW7, and DW8, as shown on Figure 2 in Item 2 of Schedule A of this Permit, at least once in every two (2) month period during which water is taken from the quarry. The Permit Holder may suspend monthly water level monitoring under Condition 4.5 for the months of January and/or February if no water is taken from the quarry on those months.

4.6 The Permit Holder shall, if granted permission by the property owner, on a semi-annual basis collect raw water samples from the residential wells named DW1, DW2, and the well identified in condition 4.3(a). Each sample shall be tested, at a minimum, for the parameters listed in Table 1 below:

Table 1: Water Quality Parameters for Residential Wells

pH	Sulphate	DOC	Copper
Alkalinity (CaCO3)	Magnesium	Colour	Iron
Bicarbonate	Calcium	Turbidity	Lead
Conductivity	Sodium	Aluminium	Manganese
Fluoride	Potassium	Arsenic	Selenium
Chloride	Ammonia (N)	Barium	Zinc
Nitrate	Phosphate	Boron	Hardness (CaCO3)
Nitrite	Phosphorus	Cadmium	TDS (iron sum calc.)
Chromium	Anion Sum	Ion Ratio	Langelier Index
Tannins	Cation Sum	% Difference	

The Permit Holder shall immediately report to the respective well owner, the Director, and District Office any sampling result that exceeds the Ontario Drinking Water Quality Standards as prescribed by O.Reg. 169/03, as amended.

4.7 The Permit Holder shall on a semi-annual basis conduct the groundwater quality monitoring from the on-site groundwater monitors listed in Table 2. Each sample shall be tested, at a minimum, for the parameters listed in Table 3.

Table 2: On-Site Groundwater Monitors for Water Quality Sampling

AM1b	OW4-I	OW5-III	OW8-I
AMx	OW4-II	OW6-II	OW8-II
TW1-1	OW5-I	OW7-I	OW9-I
Bored Well	OW5-II	OW7-II	OW9-II

Table 3: Water Quality Parameters for On-Site Groundwater Monitors

pH	Magnesium	Sulphate	Conductivity
Alkalinity	Calcium	Nitrate	DOC
Bicarbonate	Sodium	Nitrite	Colour
Fluoride	Potassium	Phosphate	TDS
Chloride	Ammonia	Phosphorus	Hardness

4.8 Monitoring well AMx is within the quarry extraction area and will be mined out as the quarry face advances to the south. The Permit Holder shall continue to monitor AMx as listed in Conditions 4.4 and 4.7 until such monitoring is either deemed unsafe or the monitoring is not possible due to damage to AMx. Once monitoring of AMx is not possible under Conditions 4.4 and/or 4.7, then a replacement monitoring well must be established along the western property boundary between the quarry face and OW4. This replacement well shall be monitored as per Conditions 4.4 and 4.7 instead of AMx.

4.9 The Permit Holder shall notify the Director, in writing, within 30 days if the groundwater level or groundwater quality monitoring of any well listed under conditions 4.3, 4.4, 4.5, 4.6, and 4.7 is not possible, including being denied access to a private well. In the event of damage or loss of any monitoring well, monitoring devices or related equipment, the Permit Holder shall be allowed 30 calendar days from the date of discovery of the occurrence to repair or replace equipment. If a well is too damaged to be repaired or monitored, or if the well is deemed unsafe to be monitored, then the Director will decide if a replacement well is required and will modify the appropriate monitoring conditions in a written letter to the Permit Holder.

4.10 The Permit Holder shall maintain a record of all water takings. This record shall include the dates and times of water takings, and the total measured or calculated amounts for water pumped per day for each day that water is taken under the authorization of this Permit.

4.11 The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.

4.12 The Permit Holder shall provide to the Director an annual monitoring report no

later than March 1 each year during the life of this Permit. The annual monitoring report shall be prepared by an individual with P.Geo. or equivalent qualifications and shall include, at a minimum:

a) The review and assessment of all monitoring data required by this Permit.
b) An up-date of the quarry operations and predicted quarrying and dewatering for the next twelve (12) months.
c) An assessment of the groundwater trends using the on-site on off-site monitoring data. This analysis should state the actual impact area of quarry dewatering and determine the potential for off-site impacts. If any impacts are predicted then a detailed mitigation plan shall be included within this report.
d) Analysis that includes amount of water pumped, precipitation data, and an estimate of how much groundwater was pumped versus surface water.
e) Figures that include site maps with current quarry depths, groundwater contour maps, impact area of quarry dewatering, groundwater elevation graphs, and geological cross-sections.
f) Any groundwater interference complaints.
g) Description of all communication with the public.
h) Conclusions and recommendations, if any, to improve the monitoring and reporting at the site.

An electronic copy of the data collected must also accompany the report.

4.13 The Permit Holder shall make available on a publicly-accessible site on the internet the water quality and quantity data that it is required to monitor and record under this Permit and O.Reg. 387/04, as amended, and a copy of every report that is required to be prepared under this Permit. For greater clarity, the Permit Holder shall not publish any personal information as defined by the *Freedom of Information and Protection of Privacy Act,* R.S.O. 1990, c. F.31, as amended.

4.14 The Permit Holder shall maintain a Public Liaison Committee ("PLC") comprised of not more than seven (7) members that will meet at least once every four (4) months, unless the majority of the PLC decide that more or less frequent meetings are required. The PLC shall be comprised of: two (2) members appointed by the Permit Holder - one of whom shall act as Chairperson; one (1) member from each of the Township and the County, if they wish to have representatives; and three (3) members appointed by the public, if they wish to have representatives, who must be permanent residents within a 3 kilometre radius of the quarry property. The PLC shall serve in an advisory / community liaison role and shall have no powers to direct the Permit Holder or the Ministry.

4.15 Any request for an amendment or renewal of this Permit must be accompanied by a report prepared by an individual with P.Geo. or equivalent qualifications and shall include, at a minimum:

a) The review and assessment of all monitoring data required by this Permit.
b) An up-date of the quarry operations and predicted quarrying and dewatering for the duration of the requested permit.
c) An assessment of the groundwater trends using the on-site on off-site monitoring

data. This analysis should state the actual impact area of quarry dewatering and determine the potential for off-site impacts. If any impacts are predicted then a detailed mitigation plan shall be included within this report.

d) Analysis that includes amount of water pumped, precipitation data, and an estimate of how much groundwater was pumped versus surface water.

e) Figures that include site maps with current quarry depths, groundwater contour maps, impact area of quarry dewatering, groundwater elevation graphs, and geological cross-sections.

f) Any groundwater interference complaints.

g) Description of all communication with the public.

h) Conclusions and recommendations, if any, to improve the monitoring and reporting at the site.

An electronic copy of the data collected must also accompany the report. Any application for renewal of this Permit must be submitted to the Ministry at least ninety (90) days prior to the expiry of this Permit.

4.16 The Permit Holder shall, as directed by the Ministry, participate in a cumulative impact assessment for the Carden Plain Area with other quarry operators who have been issued a permit to take water in this area.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

5.2.1 Where the water supply provided by the well known by MOE Water Well Record Number 5727662 is restored in accordance with Condition 5.2, the Permit Holder shall

restore the supply in a manner satisfactory to the Director, taking into account the residential needs, requirements and preferences of the persons serviced by the well.

5.3 Upon the receipt of a groundwater interference complaint, the Permit Holder shall:

a) Implement the McCarthy Quarry Complaint Resolution Process as described in Item 3 of Schedule A of this Permit.

b) In addition, appropriate notification and actions must be taken as described in conditions 5.1 and 5.2 of this Permit. The provisions of conditions 5.1 and 5.2 shall take precedence over the provisions of condition 5.3(a) if there is a conflict.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written notice served upon me, the Environmental Review Tribunal and the Environmental Commissioner, ***Environmental Bill of Rights****, R.S.O. 1993, Chapter 28, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 101 of the Ontario Water Resources Act, as amended provides that the Notice requiring a hearing shall state:*

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 314-4506
Email:
ERTTribunalsecretary@ontario.ca

AND

The Environmental Commissioner
1075 Bay Street
6th Floor, Suite 605
Toronto, Ontario M5S 2W5

AND

The Director, Section 34,
Ministry of the Environment and Climate Change
8th Floor
5775 Yonge St
Toronto ON M2M 4J1
Fax: (416) 325-6347

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by telephone at (416) 314-4600 ***by fax at (416) 314-4506*** ***by e-mail at www.ert.gov.on.ca***

This instrument is subject to Section 38 of the ***Environmental Bill of Rights*** *that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek to appeal for 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry, you can determine when the leave to appeal period ends.*

This Permit cancels and replaces Permit Number 8271-8VQJGU, issued on 2012/07/11.

Dated at Toronto this 30th day of December, 2014.

H. Zhang

Helen Zhang, P.Eng.
Director, Section 34
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 7818-9QJNL4, dated December 30, 2014.

1. Permit To Take Water Application, signed by Jenny Coco, October 7, 2014.

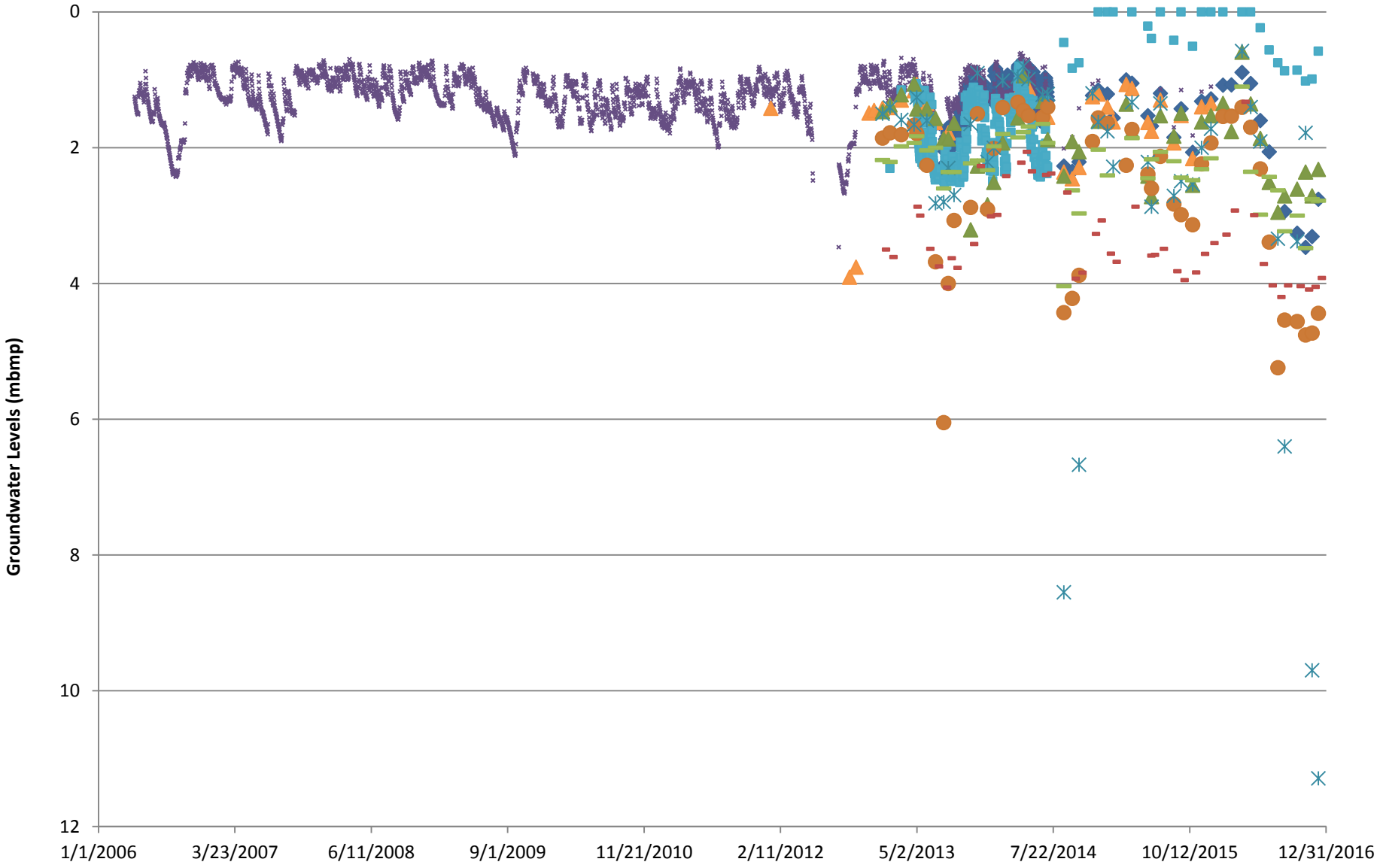
2. Permit To Take Water Application - Renewal Application for McCarthy Quarry, Township of Ramara. Golder Associates Ltd. October 2014.

3. McCarthy Quarry Complaint Resolution Process, Golder Associates Ltd. November 2014.

4. Further Changes to PTTW No. 8271-8VQJGU. Golder Associates Ltd. November 11, 2014.

APPENDIX B

Hydrographs



◆ Bored	× OW5-1	▲ AM1b	
■ CKL-1	▲ DW1	● DW2	
✳ DW5	— DW6	- DW8	

Golder Associates

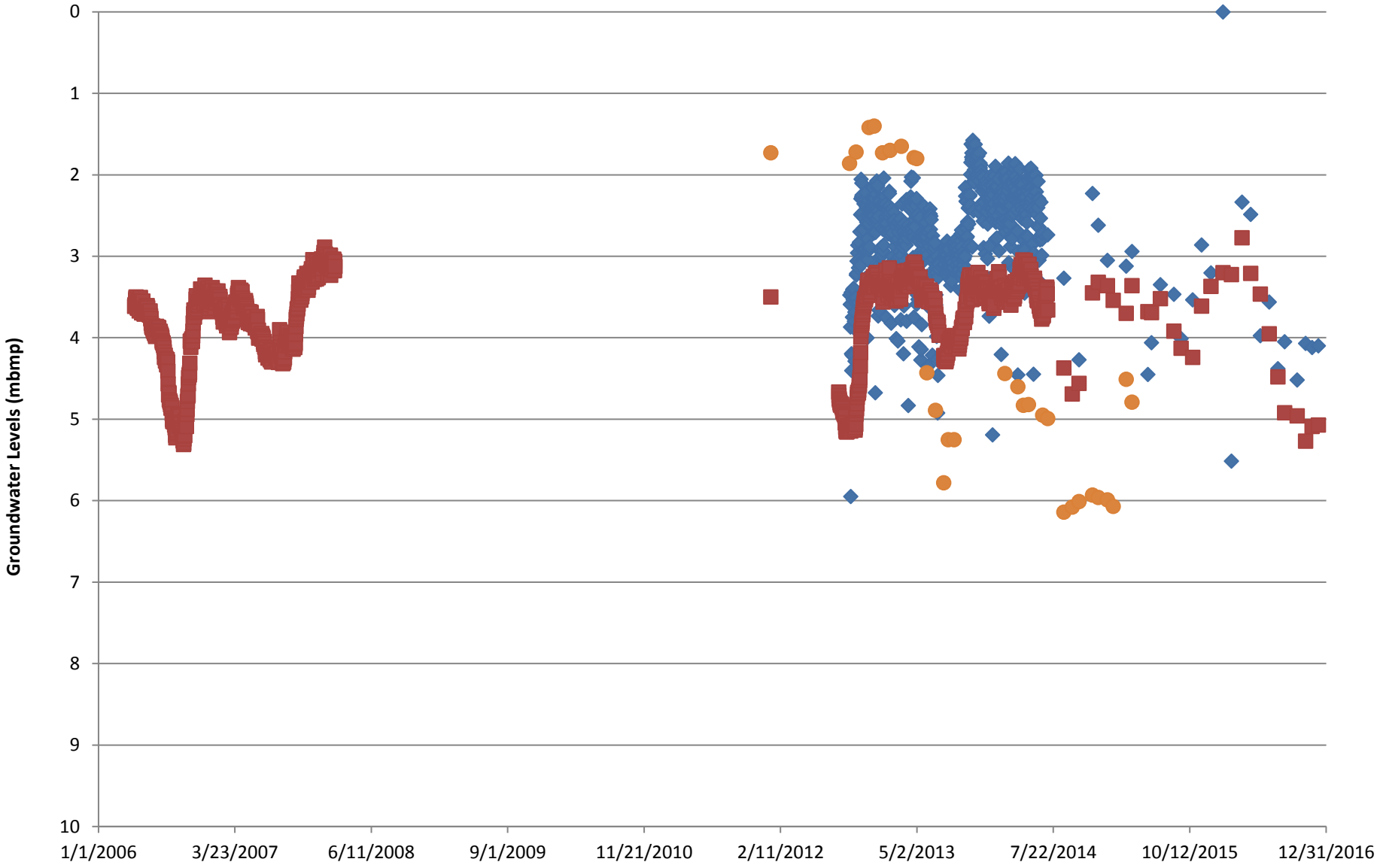
FILE No.		TEST:	
PROJECT No.	1407634	REVIEW:	JAE

SCALE:	NTS
DATE:	26/Jan/17
CAD:	JEB

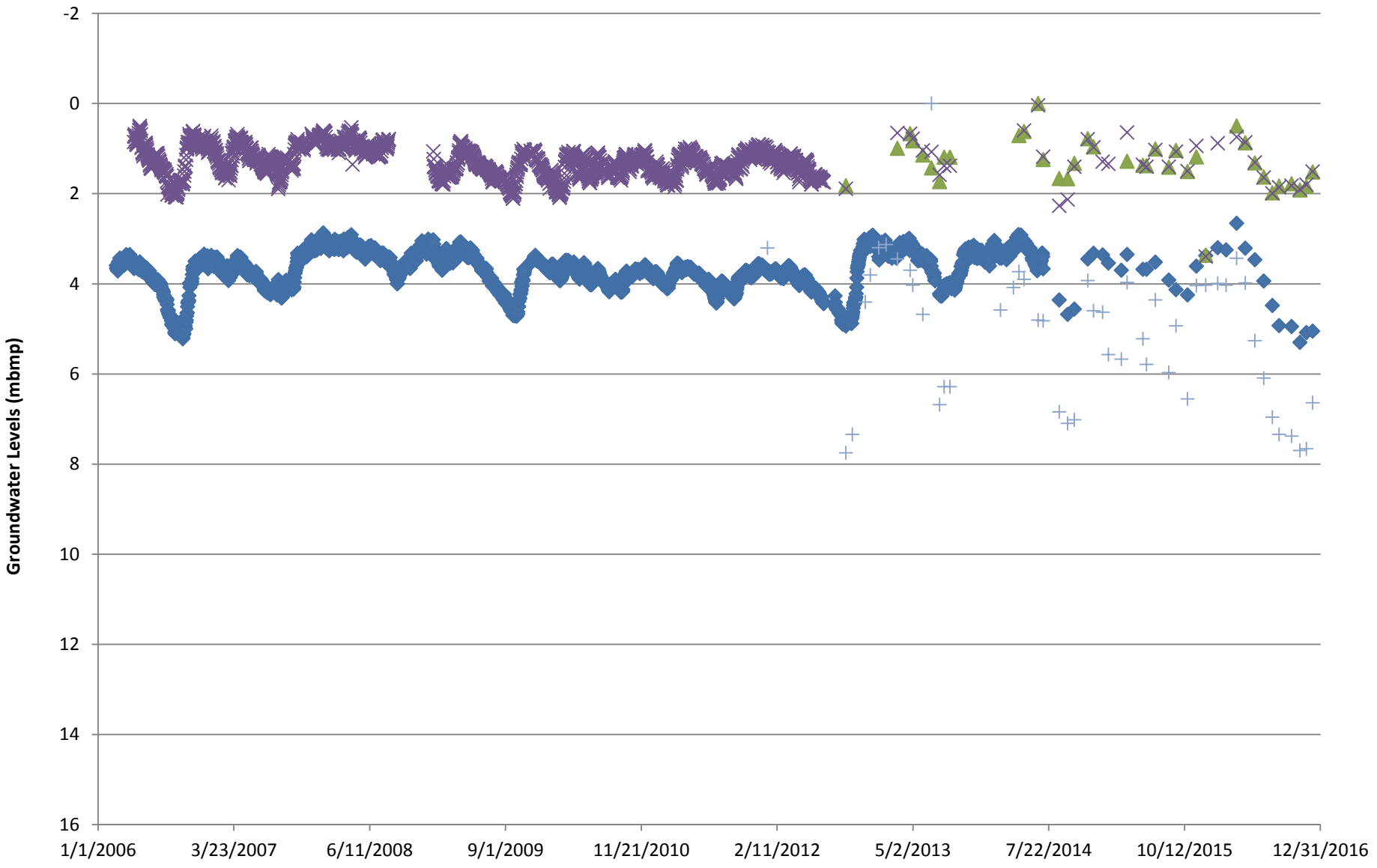
McCarthy Quarry
Overburden Monitoring Wells
GroundwaterLevel

QBJR/Coco Aggregates Inc.
PTTW Annual Report

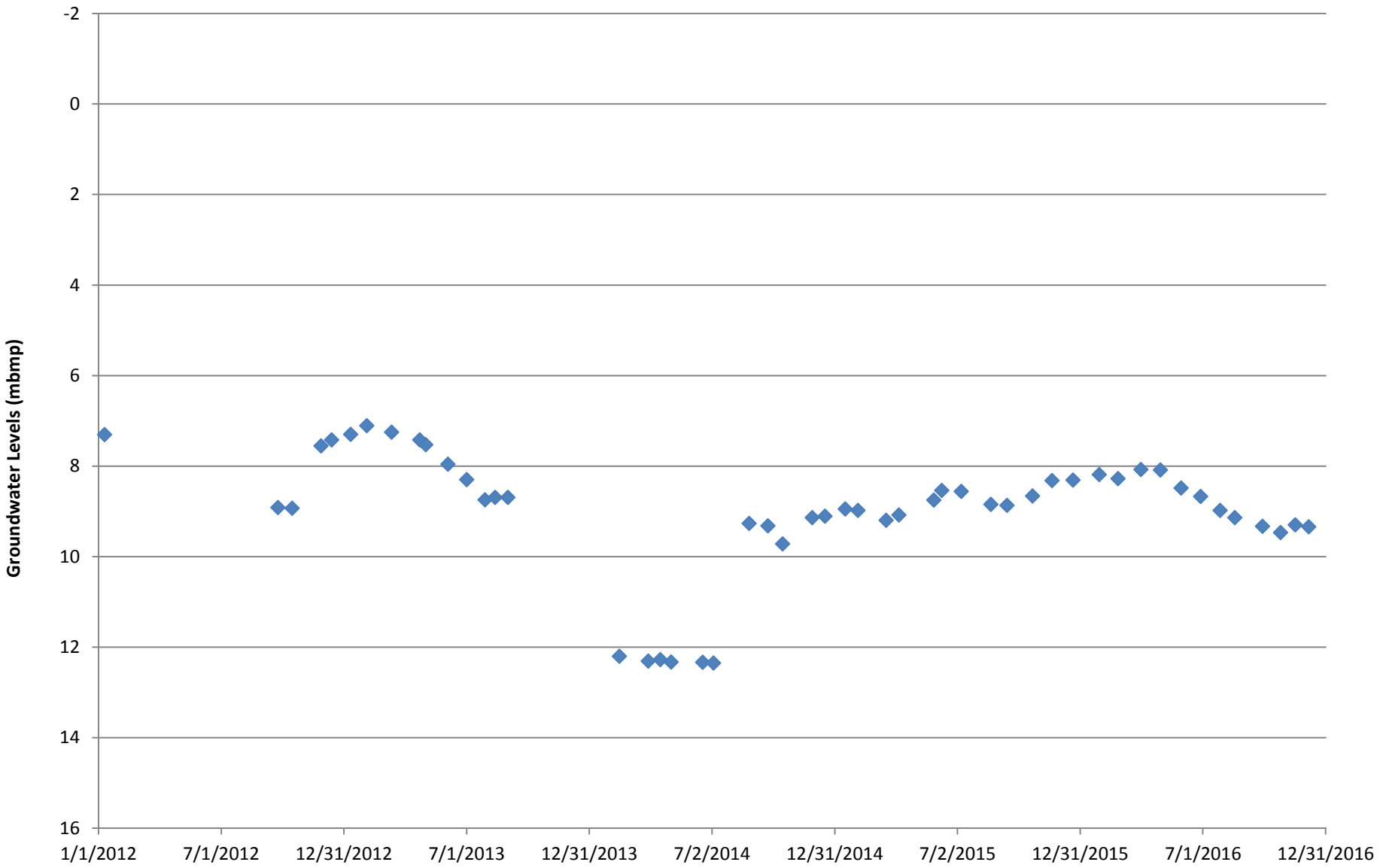
FIGURE No
B-1



Golder Associates	SCALE: NTS	McCarthy Quarry Verulam Monitoring Wells Groundwater Level	
	DATE: 26/Jan/17		
	CAD: JEB		
FILE No.	TEST:	QBJR/Coco Aggregates Inc. PTTW Annual Report	FIGURE No B-2
PROJECT No. 1407634	REVIEW: JAE		



Golder Associates	SCALE: NTS	McCarthy Quarry Bobcaygeon Monitoring Wells Groundwater Level	
	DATE: 27/Jan/17		
	CAD: JEB		
FILE No.	TEST:	QBJR/Coco Aggregates Inc. PTTW Annual Report	FIGURE No B-3
PROJECT No. 1407634	REVIEW: JAE		



	SCALE: NTS	**McCarthy Quarry**	
	DATE: 27/Jan/17	**Precambrian Monitoring Wells**	
	CAD: JEB	**Groundwater Level**	
FILE No.	TEST:	QBJR/Coco Aggregates Inc.	FIGURE No
PROJECT No. 1407634	REVIEW: JAE	PTTW Annual Report	**B-4**

APPENDIX C

Certificates of Analysis

Maxxam
A Bureau Veritas Group Company

Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 561446-01-01

Attention:Dawn Hoyle

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
L4N 8X1

Report Date: 2016/06/07
Report #: R4018814
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A9933
Received: 2016/05/31, 11:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	3	N/A	2016/06/03	CAM SOP-00448	SM 22 2320 B m
Carbonate, Bicarbonate and Hydroxide	3	N/A	2016/06/06	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	3	N/A	2016/06/03	CAM SOP-00463	EPA 325.2 m
Colour	3	N/A	2016/06/02	CAM SOP-00412	SM 22 2120C m
Conductivity	3	N/A	2016/06/03	CAM SOP-00414	SM 22 2510 m
Dissolved Organic Carbon (DOC) (1)	3	N/A	2016/06/02	CAM SOP-00446	SM 22 5310 B m
Fluoride	3	2016/06/03	2016/06/03	CAM SOP-00449	SM 22 4500-F C m
Hardness (calculated as CaCO3)	3	N/A	2016/06/03	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	3	N/A	2016/06/02	CAM SOP-00447	EPA 6020A m
Ion Balance (% Difference)	3	N/A	2016/06/06		
Anion and Cation Sum	3	N/A	2016/06/06		
Total Ammonia-N	3	N/A	2016/06/06	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	3	N/A	2016/06/06	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	3	N/A	2016/06/03	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	3	N/A	2016/06/02	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	3	N/A	2016/06/06		
Sat. pH and Langelier Index (@ 4C)	3	N/A	2016/06/06		
Sulphate by Automated Colourimetry	3	N/A	2016/06/03	CAM SOP-00464	EPA 375.4 m
Tannins & Lignins	3	N/A	2016/06/03	CAM SOP-00410	SM 22 5550 B m
Total Dissolved Solids (TDS calc)	3	N/A	2016/06/06		
Turbidity	3	N/A	2016/06/01	CAM SOP-00417	SM 22 2130 B m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

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

(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 561446-01-01

Attention:Dawn Hoyle

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
L4N 8X1

Report Date: 2016/06/07
Report #: R4018814
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A9933
Received: 2016/05/31, 11:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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

Maxxam Job #: B6A9933
Report Date: 2016/06/07

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID				CLH537	CLH537			CLH538		
Sampling Date				2016/05/30 13:15	2016/05/30 13:15			2016/05/30 12:30		
COC Number				561446-01-01	561446-01-01			561446-01-01		
	UNITS	MAC	A/O	DW1	DW1 Lab-Dup	RDL	QC Batch	DW2	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L	-	-	12.6		N/A	4518634	8.62	N/A	4518634
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	330		1.0	4518630	340	1.0	4518630
Calculated TDS	mg/L	-	500	700		1.0	4518631	470	1.0	4518631
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	1.3		1.0	4518630	2.1	1.0	4518630
Cation Sum	me/L	-	-	13.8		N/A	4518634	9.22	N/A	4518634
Hardness (CaCO3)	mg/L	-	80:100	600		1.0	4518632	400	1.0	4518632
Ion Balance (% Difference)	%	-	-	4.69		N/A	4518633	3.37	N/A	4518633
Langelier Index (@ 20C)	N/A	-	-	0.917			4518628	1.01		4518628
Langelier Index (@ 4C)	N/A	-	-	0.670			4518629	0.757		4518629
Saturation pH (@ 20C)	N/A	-	-	6.71			4518628	6.81		4518628
Saturation pH (@ 4C)	N/A	-	-	6.96			4518629	7.06		4518629
Inorganics										
Total Ammonia-N	mg/L	-	-	<0.050		0.050	4522817	<0.050	0.050	4522817
Colour	TCU	-	5	<2		2	4522016	<2	2	4522016
Conductivity	umho/cm	-	-	1300	1300	1.0	4524909	810	1.0	4524909
Fluoride (F-)	mg/L	**1.5**	-	0.10	<0.10	0.10	4524919	0.10	0.10	4524919
Dissolved Organic Carbon	mg/L	-	5	1.1		0.20	4522444	3.6	0.20	4520034
Orthophosphate (P)	mg/L	-	-	<0.010		0.010	4522053	<0.010	0.010	4522053
pH	pH	-	6.5:8.5	7.62	7.67		4524910	7.81		4524910
Dissolved Sulphate (SO4)	mg/L	-	500	35		1.0	4522051	32	1.0	4522051
Tannins & Lignins	mg/L	-	-	<0.2	<0.2	0.2	4524752	<0.2	0.2	4524752
Turbidity	NTU	-	5	0.2		0.1	4520009	0.6	0.1	4520009
Alkalinity (Total as CaCO3)	mg/L	-	30:500	330	330	1.0	4524902	340	1.0	4524902
Dissolved Chloride (Cl)	mg/L	-	250	190		2.0	4522046	38	1.0	4522046
Nitrite (N)	mg/L	**1**	-	<0.010		0.010	4525665	<0.010	0.010	4525665
Nitrate (N)	mg/L	**10**	-	0.29		0.10	4525665	<0.10	0.10	4525665
Nitrate + Nitrite (N)	mg/L	**10**	-	0.29		0.10	4525665	<0.10	0.10	4525665

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [Criteria A / MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6A9933
Report Date: 2016/06/07

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID				CLH538		CLH539		
Sampling Date				2016/05/30 12:30		2016/05/30 08:15		
COC Number				561446-01-01		561446-01-01		
	UNITS	MAC	A/O	DW2 Lab-Dup	QC Batch	DW3	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	-	-		4518634	8.90	N/A	4518634
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-		4518630	240	1.0	4518630
Calculated TDS	mg/L	-	500		4518631	490	1.0	4518631
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-		4518630	2.1	1.0	4518630
Cation Sum	me/L	-	-		4518634	9.05	N/A	4518634
Hardness (CaCO3)	mg/L	-	80:100		4518632	200	1.0	4518632
Ion Balance (% Difference)	%	-	-		4518633	0.820	N/A	4518633
Langelier Index (@ 20C)	N/A	-	-		4518628	0.439		4518628
Langelier Index (@ 4C)	N/A	-	-		4518629	0.191		4518629
Saturation pH (@ 20C)	N/A	-	-		4518628	7.53		4518628
Saturation pH (@ 4C)	N/A	-	-		4518629	7.78		4518629
Inorganics								
Total Ammonia-N	mg/L	-	-	<0.050	4522817	<0.050	0.050	4522817
Colour	TCU	-	5		4522016	<2	2	4522016
Conductivity	umho/cm	-	-		4524909	900	1.0	4524909
Fluoride (F-)	mg/L	**1.5**	-		4524919	0.75	0.10	4524919
Dissolved Organic Carbon	mg/L	-	5		4520034	0.23	0.20	4522444
Orthophosphate (P)	mg/L	-	-		4522053	<0.010	0.010	4522053
pH	pH	-	6.5:8.5		4524910	7.97		4524910
Dissolved Sulphate (SO4)	mg/L	-	500		4522051	6.9	1.0	4522051
Tannins & Lignins	mg/L	-	-		4524752	<0.2	0.2	4524752
Turbidity	NTU	-	5		4520009	0.1	0.1	4520009
Alkalinity (Total as CaCO3)	mg/L	-	30:500		4524902	240	1.0	4524902
Dissolved Chloride (Cl)	mg/L	-	250		4522046	140	1.0	4522046
Nitrite (N)	mg/L	**1**	-		4525665	<0.010	0.010	4525665
Nitrate (N)	mg/L	**10**	-		4525665	<0.10	0.10	4525665
Nitrate + Nitrite (N)	mg/L	**10**	-		4525665	<0.10	0.10	4525665

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [Criteria A / MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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N/A = Not Applicable

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Maxxam Job #: B6A9933
Report Date: 2016/06/07

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID					CLH537	CLH538	CLH539		
Sampling Date					2016/05/30 13:15	2016/05/30 12:30	2016/05/30 08:15		
COC Number					561446-01-01	561446-01-01	561446-01-01		
	UNITS	MAC	IMC	A/O	DW1	DW2	DW3	RDL	QC Batch
Metals									
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0	<5.0	<5.0	5.0	4520924
Dissolved Antimony (Sb)	ug/L	-	6	-	<0.50	<0.50	<0.50	0.50	4520924
Dissolved Arsenic (As)	ug/L	-	25	-	<1.0	<1.0	<1.0	1.0	4520924
Dissolved Barium (Ba)	ug/L	**1000**	-	-	170	85	190	2.0	4520924
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.50	<0.50	<0.50	0.50	4520924
Dissolved Boron (B)	ug/L	-	5000	-	25	30	730	10	4520924
Dissolved Cadmium (Cd)	ug/L	**5**	-	-	<0.10	<0.10	<0.10	0.10	4520924
Dissolved Calcium (Ca)	ug/L	-	-	-	190000	130000	36000	200	4520924
Dissolved Chromium (Cr)	ug/L	**50**	-	-	<5.0	<5.0	<5.0	5.0	4520924
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50	<0.50	<0.50	0.50	4520924
Dissolved Copper (Cu)	ug/L	-	-	1000	110	1.3	9.5	1.0	4520924
Dissolved Iron (Fe)	ug/L	-	-	300	<100	<100	<100	100	4520924
Dissolved Lead (Pb)	ug/L	**10**	-	-	2.5	<0.50	<0.50	0.50	4520924
Dissolved Magnesium (Mg)	ug/L	-	-	-	30000	19000	26000	50	4520924
Dissolved Manganese (Mn)	ug/L	-	-	50	3.1	32	<2.0	2.0	4520924
Dissolved Molybdenum (Mo)	ug/L	-	-	-	<0.50	<0.50	<0.50	0.50	4520924
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0	1.3	<1.0	1.0	4520924
Dissolved Phosphorus (P)	ug/L	-	-	-	<100	<100	<100	100	4520924
Dissolved Potassium (K)	ug/L	-	-	-	1600	8600	6900	200	4520924
Dissolved Selenium (Se)	ug/L	**10**	-	-	<2.0	<2.0	<2.0	2.0	4520924
Dissolved Silicon (Si)	ug/L	-	-	-	7200	5000	5600	50	4520924
Dissolved Silver (Ag)	ug/L	-	-	-	<0.10	<0.10	<0.10	0.10	4520924
Dissolved Sodium (Na)	ug/L	**20000**	-	200000	**41000**	**22000**	**110000**	100	4520924
Dissolved Strontium (Sr)	ug/L	-	-	-	580	350	2400	1.0	4520924
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050	<0.050	<0.050	0.050	4520924
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0	<5.0	<5.0	5.0	4520924
Dissolved Uranium (U)	ug/L	**20**	-	-	1.5	0.72	<0.10	0.10	4520924
Dissolved Vanadium (V)	ug/L	-	-	-	<0.50	<0.50	<0.50	0.50	4520924
Dissolved Zinc (Zn)	ug/L	-	-	5000	36	19	210	5.0	4520924

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [Criteria A / MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively (Made under the Ontario Safe Drinking Water Act, 2002)

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Maxxam Job #: B6A9933
Report Date: 2016/06/07

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH537
Sample ID: DW1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4522046	N/A	2016/06/03	Deonarine Ramnarine
Colour	SPEC	4522016	N/A	2016/06/02	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522444	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4518632	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4520924	N/A	2016/06/02	Arefa Dabhad
Ion Balance (% Difference)	CALC	4518633	N/A	2016/06/06	Automated Statchk
Anion and Cation Sum	CALC	4518634	N/A	2016/06/06	Automated Statchk
Total Ammonia-N	LACH/NH4	4522817	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525665	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4522053	N/A	2016/06/02	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4518628	N/A	2016/06/06	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4518629	N/A	2016/06/06	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4522051	N/A	2016/06/03	Deonarine Ramnarine
Tannins & Lignins	SPEC	4524752	N/A	2016/06/03	Birenkumar Patel
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk
Turbidity	AT	4520009	N/A	2016/06/01	Lemeneh Addis

Maxxam ID: CLH537 Dup
Sample ID: DW1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Tannins & Lignins	SPEC	4524752	N/A	2016/06/03	Birenkumar Patel

Maxxam ID: CLH538
Sample ID: DW2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4522046	N/A	2016/06/03	Deonarine Ramnarine
Colour	SPEC	4522016	N/A	2016/06/02	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520034	N/A	2016/06/02	Anastasia Hamanov

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Maxxam Job #: B6A9933
Report Date: 2016/06/07

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH538
Sample ID: DW2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4518632	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4520924	N/A	2016/06/02	Arefa Dabhad
Ion Balance (% Difference)	CALC	4518633	N/A	2016/06/06	Automated Statchk
Anion and Cation Sum	CALC	4518634	N/A	2016/06/06	Automated Statchk
Total Ammonia-N	LACH/NH4	4522817	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525665	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4522053	N/A	2016/06/02	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4518628	N/A	2016/06/06	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4518629	N/A	2016/06/06	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4522051	N/A	2016/06/03	Deonarine Ramnarine
Tannins & Lignins	SPEC	4524752	N/A	2016/06/03	Birenkumar Patel
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk
Turbidity	AT	4520009	N/A	2016/06/01	Lemeneh Addis

Maxxam ID: CLH538 Dup
Sample ID: DW2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	4522817	N/A	2016/06/06	Charles Opoku-Ware

Maxxam ID: CLH539
Sample ID: DW3
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4522046	N/A	2016/06/03	Deonarine Ramnarine
Colour	SPEC	4522016	N/A	2016/06/02	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522444	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4518632	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4520924	N/A	2016/06/02	Arefa Dabhad
Ion Balance (% Difference)	CALC	4518633	N/A	2016/06/06	Automated Statchk
Anion and Cation Sum	CALC	4518634	N/A	2016/06/06	Automated Statchk
Total Ammonia-N	LACH/NH4	4522817	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525665	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4522053	N/A	2016/06/02	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4518628	N/A	2016/06/06	Automated Statchk

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Maxxam Job #: B6A9933
Report Date: 2016/06/07

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH539
Sample ID: DW3
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sat. pH and Langelier Index (@ 4C)	CALC	4518629	N/A	2016/06/06	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4522051	N/A	2016/06/03	Deonarine Ramnarine
Tannins & Lignins	SPEC	4524752	N/A	2016/06/03	Birenkumar Patel
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk
Turbidity	AT	4520009	N/A	2016/06/01	Lemeneh Addis

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GENERAL COMMENTS

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

Package 1	8.0°C
Package 2	8.3°C
Package 3	6.0°C

Results relate only to the items tested.

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Maxxam Job #: B6A9933
Report Date: 2016/06/07

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4520009	L_A	Spiked Blank	Turbidity	2016/06/01		99	%	85 - 115
4520009	L_A	Method Blank	Turbidity	2016/06/01	<0.1		NTU	
4520009	L_A	RPD	Turbidity	2016/06/01	3.6		%	20
4520034	AHA	Matrix Spike	Dissolved Organic Carbon	2016/06/02		99	%	80 - 120
4520034	AHA	Spiked Blank	Dissolved Organic Carbon	2016/06/02		100	%	80 - 120
4520034	AHA	Method Blank	Dissolved Organic Carbon	2016/06/02	0.22, RDL=0.20		mg/L	
4520034	AHA	RPD	Dissolved Organic Carbon	2016/06/02	0.75		%	20
4520924	ADA	Matrix Spike	Dissolved Aluminum (Al)	2016/06/02		111	%	80 - 120
			Dissolved Antimony (Sb)	2016/06/02		105	%	80 - 120
			Dissolved Arsenic (As)	2016/06/02		104	%	80 - 120
			Dissolved Barium (Ba)	2016/06/02		103	%	80 - 120
			Dissolved Beryllium (Be)	2016/06/02		95	%	80 - 120
			Dissolved Boron (B)	2016/06/02		NC	%	80 - 120
			Dissolved Cadmium (Cd)	2016/06/02		101	%	80 - 120
			Dissolved Calcium (Ca)	2016/06/02		NC	%	80 - 120
			Dissolved Chromium (Cr)	2016/06/02		103	%	80 - 120
			Dissolved Cobalt (Co)	2016/06/02		106	%	80 - 120
			Dissolved Copper (Cu)	2016/06/02		105	%	80 - 120
			Dissolved Iron (Fe)	2016/06/02		104	%	80 - 120
			Dissolved Lead (Pb)	2016/06/02		101	%	80 - 120
			Dissolved Magnesium (Mg)	2016/06/02		NC	%	80 - 120
			Dissolved Manganese (Mn)	2016/06/02		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2016/06/02		114	%	80 - 120
			Dissolved Nickel (Ni)	2016/06/02		101	%	80 - 120
			Dissolved Phosphorus (P)	2016/06/02		107	%	80 - 120
			Dissolved Potassium (K)	2016/06/02		NC	%	80 - 120
			Dissolved Selenium (Se)	2016/06/02		110	%	80 - 120
			Dissolved Silicon (Si)	2016/06/02		109	%	80 - 120
			Dissolved Silver (Ag)	2016/06/02		90	%	80 - 120
			Dissolved Sodium (Na)	2016/06/02		NC	%	80 - 120
			Dissolved Strontium (Sr)	2016/06/02		NC	%	80 - 120
			Dissolved Thallium (Tl)	2016/06/02		105	%	80 - 120
			Dissolved Titanium (Ti)	2016/06/02		107	%	80 - 120
			Dissolved Uranium (U)	2016/06/02		108	%	80 - 120
			Dissolved Vanadium (V)	2016/06/02		108	%	80 - 120
			Dissolved Zinc (Zn)	2016/06/02		98	%	80 - 120
4520924	ADA	Spiked Blank	Dissolved Aluminum (Al)	2016/06/02		102	%	80 - 120
			Dissolved Antimony (Sb)	2016/06/02		100	%	80 - 120
			Dissolved Arsenic (As)	2016/06/02		100	%	80 - 120
			Dissolved Barium (Ba)	2016/06/02		102	%	80 - 120
			Dissolved Beryllium (Be)	2016/06/02		99	%	80 - 120
			Dissolved Boron (B)	2016/06/02		95	%	80 - 120
			Dissolved Cadmium (Cd)	2016/06/02		99	%	80 - 120
			Dissolved Calcium (Ca)	2016/06/02		103	%	80 - 120
			Dissolved Chromium (Cr)	2016/06/02		97	%	80 - 120
			Dissolved Cobalt (Co)	2016/06/02		100	%	80 - 120
			Dissolved Copper (Cu)	2016/06/02		98	%	80 - 120
			Dissolved Iron (Fe)	2016/06/02		99	%	80 - 120
			Dissolved Lead (Pb)	2016/06/02		101	%	80 - 120
			Dissolved Magnesium (Mg)	2016/06/02		102	%	80 - 120
			Dissolved Manganese (Mn)	2016/06/02		100	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Molybdenum (Mo)	2016/06/02		99	%	80 - 120
			Dissolved Nickel (Ni)	2016/06/02		99	%	80 - 120
			Dissolved Phosphorus (P)	2016/06/02		102	%	80 - 120
			Dissolved Potassium (K)	2016/06/02		104	%	80 - 120
			Dissolved Selenium (Se)	2016/06/02		99	%	80 - 120
			Dissolved Silicon (Si)	2016/06/02		105	%	80 - 120
			Dissolved Silver (Ag)	2016/06/02		99	%	80 - 120
			Dissolved Sodium (Na)	2016/06/02		100	%	80 - 120
			Dissolved Strontium (Sr)	2016/06/02		101	%	80 - 120
			Dissolved Thallium (Tl)	2016/06/02		103	%	80 - 120
			Dissolved Titanium (Ti)	2016/06/02		105	%	80 - 120
			Dissolved Uranium (U)	2016/06/02		103	%	80 - 120
			Dissolved Vanadium (V)	2016/06/02		100	%	80 - 120
			Dissolved Zinc (Zn)	2016/06/02		100	%	80 - 120
4520924	ADA	Method Blank	Dissolved Aluminum (Al)	2016/06/02	<5.0		ug/L	
			Dissolved Antimony (Sb)	2016/06/02	<0.50		ug/L	
			Dissolved Arsenic (As)	2016/06/02	<1.0		ug/L	
			Dissolved Barium (Ba)	2016/06/02	<2.0		ug/L	
			Dissolved Beryllium (Be)	2016/06/02	<0.50		ug/L	
			Dissolved Boron (B)	2016/06/02	15, RDL=10		ug/L	
			Dissolved Cadmium (Cd)	2016/06/02	<0.10		ug/L	
			Dissolved Calcium (Ca)	2016/06/02	<200		ug/L	
			Dissolved Chromium (Cr)	2016/06/02	<5.0		ug/L	
			Dissolved Cobalt (Co)	2016/06/02	<0.50		ug/L	
			Dissolved Copper (Cu)	2016/06/02	<1.0		ug/L	
			Dissolved Iron (Fe)	2016/06/02	<100		ug/L	
			Dissolved Lead (Pb)	2016/06/02	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2016/06/02	<50		ug/L	
			Dissolved Manganese (Mn)	2016/06/02	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2016/06/02	<0.50		ug/L	
			Dissolved Nickel (Ni)	2016/06/02	<1.0		ug/L	
			Dissolved Phosphorus (P)	2016/06/02	<100		ug/L	
			Dissolved Potassium (K)	2016/06/02	<200		ug/L	
			Dissolved Selenium (Se)	2016/06/02	<2.0		ug/L	
			Dissolved Silicon (Si)	2016/06/02	<50		ug/L	
			Dissolved Silver (Ag)	2016/06/02	<0.10		ug/L	
			Dissolved Sodium (Na)	2016/06/02	150, RDL=100		ug/L	
			Dissolved Strontium (Sr)	2016/06/02	<1.0		ug/L	
			Dissolved Thallium (Tl)	2016/06/02	<0.050		ug/L	
			Dissolved Titanium (Ti)	2016/06/02	<5.0		ug/L	
			Dissolved Uranium (U)	2016/06/02	<0.10		ug/L	
			Dissolved Vanadium (V)	2016/06/02	<0.50		ug/L	
			Dissolved Zinc (Zn)	2016/06/02	<5.0		ug/L	
4520924	ADA	RPD	Dissolved Antimony (Sb)	2016/06/02	NC		%	20
			Dissolved Arsenic (As)	2016/06/02	NC		%	20
			Dissolved Barium (Ba)	2016/06/02	1.1		%	20
			Dissolved Beryllium (Be)	2016/06/02	NC		%	20
			Dissolved Boron (B)	2016/06/02	0.65		%	20
			Dissolved Cadmium (Cd)	2016/06/02	NC		%	20
			Dissolved Chromium (Cr)	2016/06/02	NC		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Cobalt (Co)	2016/06/02	3.2		%	20
			Dissolved Copper (Cu)	2016/06/02	NC		%	20
			Dissolved Lead (Pb)	2016/06/02	NC		%	20
			Dissolved Molybdenum (Mo)	2016/06/02	6.2		%	20
			Dissolved Nickel (Ni)	2016/06/02	NC		%	20
			Dissolved Selenium (Se)	2016/06/02	NC		%	20
			Dissolved Silver (Ag)	2016/06/02	NC		%	20
			Dissolved Sodium (Na)	2016/06/02	0.66		%	20
			Dissolved Thallium (Tl)	2016/06/02	NC		%	20
			Dissolved Uranium (U)	2016/06/02	2.7		%	20
			Dissolved Vanadium (V)	2016/06/02	NC		%	20
			Dissolved Zinc (Zn)	2016/06/02	NC		%	20
4522016	EAX	Spiked Blank	Colour	2016/06/02		99	%	80 - 120
4522016	EAX	Method Blank	Colour	2016/06/02	<2		TCU	
4522016	EAX	RPD	Colour	2016/06/02	NC		%	25
4522046	DRM	Matrix Spike	Dissolved Chloride (Cl)	2016/06/03		NC	%	80 - 120
4522046	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/06/03		102	%	80 - 120
4522046	DRM	Method Blank	Dissolved Chloride (Cl)	2016/06/03	<1.0		mg/L	
4522046	DRM	RPD	Dissolved Chloride (Cl)	2016/06/03	0.043		%	20
4522051	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2016/06/03		NC	%	75 - 125
4522051	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2016/06/03		103	%	80 - 120
4522051	DRM	Method Blank	Dissolved Sulphate (SO4)	2016/06/03	<1.0		mg/L	
4522051	DRM	RPD	Dissolved Sulphate (SO4)	2016/06/03	0.14		%	20
4522053	ADB	Matrix Spike	Orthophosphate (P)	2016/06/02		111	%	75 - 125
4522053	ADB	Spiked Blank	Orthophosphate (P)	2016/06/02		99	%	80 - 120
4522053	ADB	Method Blank	Orthophosphate (P)	2016/06/02	<0.010		mg/L	
4522053	ADB	RPD	Orthophosphate (P)	2016/06/02	NC		%	25
4522444	AHA	Matrix Spike	Dissolved Organic Carbon	2016/06/02		95	%	80 - 120
4522444	AHA	Spiked Blank	Dissolved Organic Carbon	2016/06/02		94	%	80 - 120
4522444	AHA	Method Blank	Dissolved Organic Carbon	2016/06/02	<0.20		mg/L	
4522444	AHA	RPD	Dissolved Organic Carbon	2016/06/02	1.6		%	20
4522817	COP	Matrix Spike [CLH538-03]	Total Ammonia-N	2016/06/06		91	%	80 - 120
4522817	COP	Spiked Blank	Total Ammonia-N	2016/06/06		97	%	85 - 115
4522817	COP	Method Blank	Total Ammonia-N	2016/06/06	<0.050		mg/L	
4522817	COP	RPD [CLH538-03]	Total Ammonia-N	2016/06/06	NC		%	20
4524752	BIP	Matrix Spike [CLH537-01]	Tannins & Lignins	2016/06/03		92	%	80 - 120
4524752	BIP	Spiked Blank	Tannins & Lignins	2016/06/03		95	%	80 - 120
4524752	BIP	Method Blank	Tannins & Lignins	2016/06/03	<0.2		mg/L	
4524752	BIP	RPD [CLH537-01]	Tannins & Lignins	2016/06/03	NC		%	25
4524902	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2016/06/03		97	%	85 - 115
4524902	SAU	Method Blank	Alkalinity (Total as CaCO3)	2016/06/03	1.2, RDL=1.0		mg/L	
4524902	SAU	RPD [CLH537-01]	Alkalinity (Total as CaCO3)	2016/06/03	0.96		%	25
4524909	SAU	Spiked Blank	Conductivity	2016/06/03		101	%	85 - 115
4524909	SAU	Method Blank	Conductivity	2016/06/03	1.5, RDL=1.0		umho/cm	
4524909	SAU	RPD [CLH537-01]	Conductivity	2016/06/03	0.079		%	25
4524910	SAU	Spiked Blank	pH	2016/06/03		102	%	98 - 103
4524910	SAU	RPD [CLH537-01]	pH	2016/06/03	0.65		%	N/A
4524919	SAU	Matrix Spike [CLH537-01]	Fluoride (F-)	2016/06/03		102	%	80 - 120
4524919	SAU	Spiked Blank	Fluoride (F-)	2016/06/03		102	%	80 - 120
4524919	SAU	Method Blank	Fluoride (F-)	2016/06/03	<0.10		mg/L	

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Maxxam Job #: B6A9933
Report Date: 2016/06/07

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4524919	SAU	RPD [CLH537-01]	Fluoride (F-)	2016/06/03	NC		%	20
4525665	C_N	Matrix Spike	Nitrite (N)	2016/06/06		109	%	80 - 120
			Nitrate (N)	2016/06/06		89	%	80 - 120
4525665	C_N	Spiked Blank	Nitrite (N)	2016/06/06		109	%	80 - 120
			Nitrate (N)	2016/06/06		97	%	80 - 120
4525665	C_N	Method Blank	Nitrite (N)	2016/06/06	<0.010		mg/L	
			Nitrate (N)	2016/06/06	<0.10		mg/L	
4525665	C_N	RPD	Nitrite (N)	2016/06/06	NC		%	25
			Nitrate (N)	2016/06/06	NC		%	25

N/A = Not Applicable

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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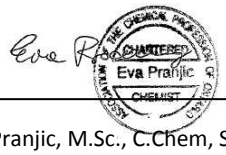
Maxxam Job #: B6A9933
Report Date: 2016/06/07

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

VALIDATION SIGNATURE PAGE

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



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Exceedence Summary Table – ODWS (2002)

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
DW1	CLH537-04	Dissolved Sodium (Na)	20000	41000	100	ug/L
DW2	CLH538-04	Dissolved Sodium (Na)	20000	22000	100	ug/L
DW3	CLH539-04	Dissolved Sodium (Na)	20000	110000	100	ug/L

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 561769-01-01

Attention:Dawn Hoyle

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
L4N 8X1

Report Date: 2016/06/09
Report #: R4020648
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A9952
Received: 2016/05/31, 11:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/06/04	CAM SOP-00448	SM 22 2320 B m
Alkalinity	1	N/A	2016/06/07	CAM SOP-00448	SM 22 2320 B m
Carbonate, Bicarbonate and Hydroxide	2	N/A	2016/06/06	CAM SOP-00102	APHA 4500-CO2 D
Carbonate, Bicarbonate and Hydroxide	1	N/A	2016/06/07	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	2	N/A	2016/06/06	CAM SOP-00463	EPA 325.2 m
Chloride by Automated Colourimetry	1	N/A	2016/06/07	CAM SOP-00463	EPA 325.2 m
Conductivity	2	N/A	2016/06/04	CAM SOP-00414	SM 22 2510 m
Conductivity	1	N/A	2016/06/07	CAM SOP-00414	SM 22 2510 m
Dissolved Organic Carbon (DOC) (1)	3	N/A	2016/06/03	CAM SOP-00446	SM 22 5310 B m
Fluoride	2	2016/06/04	2016/06/04	CAM SOP-00449	SM 22 4500-F C m
Fluoride	1	2016/06/06	2016/06/07	CAM SOP-00449	SM 22 4500-F C m
Hardness (calculated as CaCO3)	2	N/A	2016/06/06	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	1	N/A	2016/06/07	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals Analysis by ICP	2	2016/06/03	2016/06/06	CAM SOP-00408	EPA 6010C m
Lab Filtered Metals Analysis by ICP	1	2016/06/03	2016/06/07	CAM SOP-00408	EPA 6010C m
Total Metals Analysis by ICPMS	3	N/A	2016/06/06	CAM SOP-00447	EPA 6020A m
Ion Balance (% Difference)	2	N/A	2016/06/06		
Ion Balance (% Difference)	1	N/A	2016/06/07		
Anion and Cation Sum	2	N/A	2016/06/06		
Anion and Cation Sum	1	N/A	2016/06/07		
Total Ammonia-N	3	N/A	2016/06/06	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	3	N/A	2016/06/06	CAM SOP-00440	SM 22 4500-NO3I/NO2B
Total Oil and Grease	3	2016/06/02	2016/06/02	CAM SOP-00326	EPA1664B m,SM5520A m
pH	2	N/A	2016/06/04	CAM SOP-00413	SM 4500H+ B m
pH	1	N/A	2016/06/07	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/06/02	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP)	1	N/A	2016/06/03	CAM SOP-00444	OMOE E3179 m
Sat. pH and Langelier Index (@ 20C)	2	N/A	2016/06/06		

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Maxxam
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Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 561769-01-01

Attention:Dawn Hoyle

Golder Associates Ltd
121 Commerce Park Drive
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Report Date: 2016/06/09
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CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A9952
Received: 2016/05/31, 11:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Sat. pH and Langelier Index (@ 20C)	1	N/A	2016/06/07		
Sat. pH and Langelier Index (@ 4C)	2	N/A	2016/06/06		
Sat. pH and Langelier Index (@ 4C)	1	N/A	2016/06/07		
Sulphate by Automated Colourimetry	2	N/A	2016/06/06	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	1	N/A	2016/06/07	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	3	N/A	2016/06/03	CAM SOP-00428	SM 22 2540C m
Total Kjeldahl Nitrogen in Water	2	2016/06/02	2016/06/03	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	1	2016/06/02	2016/06/06	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2016/06/02	2016/06/03	CAM SOP-00407	SM 22 4500 P B H m
Low Level Total Suspended Solids	3	N/A	2016/06/02	CAM SOP-00428	SM 22 2540D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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

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Maxxam Job #: B6A9952
Report Date: 2016/06/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID			CLH627	CLH627			CLH628		
Sampling Date			2016/05/30 14:30	2016/05/30 14:30			2016/05/30 16:00		
COC Number			561769-01-01	561769-01-01			561769-01-01		
	UNITS	Criteria	POND	POND Lab-Dup	RDL	QC Batch	SW1	RDL	QC Batch
Calculated Parameters									
Anion Sum	me/L	-	9.92		N/A	4518634	10.2	N/A	4518634
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	86		1.0	4518630	130	1.0	4518630
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	3.9		1.0	4518630	1.3	1.0	4518630
Cation Sum	me/L	-	11.6		N/A	4518634	10.9	N/A	4518634
Hardness (CaCO3)	mg/L	-	210		1.0	4518632	240	1.0	4518632
Ion Balance (% Difference)	%	-	7.65		N/A	4518633	3.52	N/A	4518633
Langelier Index (@ 20C)	N/A	-	0.682			4518628	0.356		4518628
Langelier Index (@ 4C)	N/A	-	0.435			4518629	0.108		4518629
Saturation pH (@ 20C)	N/A	-	8.00			4518628	7.67		4518628
Saturation pH (@ 4C)	N/A	-	8.25			4518629	7.92		4518629
Inorganics									
Total Ammonia-N	mg/L	-	0.069		0.050	4523746	0.093	0.050	4523746
Conductivity	umho/cm	-	1100		1.0	4525967	1100	1.0	4527288
Total Dissolved Solids	mg/L	-	628		10	4521252	604	10	4521252
Fluoride (F-)	mg/L	-	0.67		0.10	4525971	0.63	0.10	4527283
Total Kjeldahl Nitrogen (TKN)	mg/L	-	0.64		0.10	4523641	0.67	0.10	4523641
Dissolved Organic Carbon	mg/L	-	5.8		0.20	4522589	7.0	0.20	4522589
pH	pH	**6.5:8.5**	**8.68**			4525973	8.03		4527287
Phenols-4AAP	mg/L	**0.001**	<0.0010		0.0010	4522270	<0.0010	0.0010	4522903
Total Phosphorus	mg/L	**0.01**	**0.019**	**0.017**	0.004	4522837	**0.043**	0.004	4522837
Total Suspended Solids	mg/L	-	14		1	4521261	30	1	4521261
Dissolved Sulphate (SO4)	mg/L	-	200		1.0	4525679	170	1.0	4528006
Alkalinity (Total as CaCO3)	mg/L	-	90		1.0	4525977	130	1.0	4527282
Dissolved Chloride (Cl)	mg/L	-	140		2.0	4525677	140	1.0	4527999
Nitrite (N)	mg/L	-	0.051		0.010	4525672	0.038	0.010	4527392
Nitrate (N)	mg/L	-	1.01		0.10	4525672	0.77	0.10	4527392
Petroleum Hydrocarbons									
Total Oil & Grease	mg/L	-	<0.50		0.50	4522853	<0.50	0.50	4522853

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable

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Maxxam Job #: B6A9952
Report Date: 2016/06/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID			CLH628			CLH629	CLH629		
Sampling Date			2016/05/30 16:00			2016/05/30 12:15	2016/05/30 12:15		
COC Number			561769-01-01			561769-01-01	561769-01-01		
	UNITS	Criteria	SW1 Lab-Dup	RDL	QC Batch	SW2	SW2 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Anion Sum	me/L	-		N/A	4518634	8.47		N/A	4518634
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-		1.0	4518630	380		1.0	4518630
Carb. Alkalinity (calc. as CaCO3)	mg/L	-		1.0	4518630	2.9		1.0	4518630
Cation Sum	me/L	-		N/A	4518634	9.58		N/A	4518634
Hardness (CaCO3)	mg/L	-		1.0	4518632	450		1.0	4518632
Ion Balance (% Difference)	%	-		N/A	4518633	6.16		N/A	4518633
Langelier Index (@ 20C)	N/A	-			4518628	1.21			4518628
Langelier Index (@ 4C)	N/A	-			4518629	0.962			4518629
Saturation pH (@ 20C)	N/A	-			4518628	6.70			4518628
Saturation pH (@ 4C)	N/A	-			4518629	6.95			4518629
Inorganics									
Total Ammonia-N	mg/L	-		0.050	4523746	0.056		0.050	4523746
Conductivity	umho/cm	-	1100	1.0	4527288	750	750	1.0	4525967
Total Dissolved Solids	mg/L	-		10	4521252	444		10	4521252
Fluoride (F-)	mg/L	-	0.62	0.10	4527283	0.11	0.10	0.10	4525971
Total Kjeldahl Nitrogen (TKN)	mg/L	-		0.10	4523641	0.70		0.10	4523641
Dissolved Organic Carbon	mg/L	-		0.20	4522589	13		0.20	4522589
pH	pH	**6.5:8.5**	8.03		4527287	7.91	7.88		4525973
Phenols-4AAP	mg/L	**0.001**		0.0010	4522903	<0.0010		0.0010	4522270
Total Phosphorus	mg/L	**0.01**		0.004	4522837	**0.12**		0.008	4522837
Total Suspended Solids	mg/L	**-**		1	4521261	13		1	4521261
Dissolved Sulphate (SO4)	mg/L	**-**		1.0	4528006	13		1.0	4526028
Alkalinity (Total as CaCO3)	mg/L	**-**	130	1.0	4527282	390	390	1.0	4525977
Dissolved Chloride (Cl)	mg/L	**-**		1.0	4527999	17		1.0	4526019
Nitrite (N)	mg/L	**-**	0.038	0.010	4527392	<0.010		0.010	4525672
Nitrate (N)	mg/L	**-**	0.76	0.10	4527392	<0.10		0.10	4525672
Petroleum Hydrocarbons									
Total Oil & Grease	mg/L	**-**		0.50	4522853	<0.50		0.50	4522853

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Maxxam Job #: B6A9952
Report Date: 2016/06/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID			CLH627		CLH628	CLH628		CLH629		
Sampling Date			2016/05/30 14:30		2016/05/30 16:00	2016/05/30 16:00		2016/05/30 12:15		
COC Number			561769-01-01		561769-01-01	561769-01-01		561769-01-01		
	UNITS	Criteria	POND	QC Batch	SW1	SW1 Lab-Dup	QC Batch	SW2	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	mg/L	-	34	4524885	51	52	4527863	150	0.05	4524885
Dissolved Magnesium (Mg)	mg/L	-	30	4524885	27	28	4527863	18	0.05	4524885
Dissolved Potassium (K)	mg/L	-	12	4524885	10	10	4527863	4	1	4524885
Dissolved Sodium (Na)	mg/L	-	160	4524885	130	140	4527863	13	0.5	4524885
Total Aluminum (Al)	ug/L	-	150	4525683	380		4525683	22	5.0	4525683
Total Antimony (Sb)	ug/L	**20**	<0.50	4525683	<0.50		4525683	<0.50	0.50	4525683
Total Arsenic (As)	ug/L	**100**	<1.0	4525683	<1.0		4525683	<1.0	1.0	4525683
Total Barium (Ba)	ug/L	**-**	19	4525683	36		4525683	58	2.0	4525683
Total Beryllium (Be)	ug/L	**11**	<0.50	4525683	<0.50		4525683	<0.50	0.50	4525683
Total Boron (B)	ug/L	**200**	**610**	4525683	**520**		4525683	51	10	4525683
Total Cadmium (Cd)	ug/L	**0.2**	<0.10	4525683	<0.10		4525683	<0.10	0.10	4525683
Total Calcium (Ca)	ug/L	**-**	31000	4525683	51000		4525683	130000	200	4525683
Total Chromium (Cr)	ug/L	**-**	<5.0	4525683	<5.0		4525683	<5.0	5.0	4525683
Total Cobalt (Co)	ug/L	**0.9**	<0.50	4525683	<0.50		4525683	<0.50	0.50	4525683
Total Copper (Cu)	ug/L	**5**	1.1	4525683	1.4		4525683	<1.0	1.0	4525683
Total Iron (Fe)	ug/L	**300**	160	4525683	**520**		4525683	**860**	100	4525683
Total Lead (Pb)	ug/L	**5**	<0.50	4525683	<0.50		4525683	<0.50	0.50	4525683
Total Magnesium (Mg)	ug/L	**-**	28000	4525683	25000		4525683	18000	50	4525683
Total Manganese (Mn)	ug/L	**-**	19	4525683	170		4525683	230	2.0	4525683
Total Molybdenum (Mo)	ug/L	**40**	3.1	4525683	2.7		4525683	<0.50	0.50	4525683
Total Nickel (Ni)	ug/L	**25**	1.3	4525683	1.7		4525683	1.5	1.0	4525683
Total Potassium (K)	ug/L	**-**	10000	4525683	8800		4525683	3100	200	4525683
Total Selenium (Se)	ug/L	**100**	<2.0	4525683	<2.0		4525683	<2.0	2.0	4525683
Total Silicon (Si)	ug/L	**-**	590	4525683	1400		4525683	8600	50	4525683
Total Silver (Ag)	ug/L	**0.1**	<0.10	4525683	<0.10		4525683	<0.10	0.10	4525683
Total Sodium (Na)	ug/L	**-**	140000	4525683	120000		4525683	12000	100	4525683
Total Strontium (Sr)	ug/L	**-**	1800	4525683	1600		4525683	400	1.0	4525683
Total Thallium (Tl)	ug/L	**0.3**	<0.050	4525683	<0.050		4525683	<0.050	0.050	4525683
Total Titanium (Ti)	ug/L	**-**	6.6	4525683	19		4525683	<5.0	5.0	4525683
Total Vanadium (V)	ug/L	**6**	0.56	4525683	1.6		4525683	0.68	0.50	4525683
Total Zinc (Zn)	ug/L	**30**	<5.0	4525683	<5.0		4525683	<5.0	5.0	4525683

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Maxxam Job #: B6A9952
Report Date: 2016/06/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH627
Sample ID: POND
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4525977	N/A	2016/06/04	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4525677	N/A	2016/06/06	Deonarine Ramnarine
Conductivity	AT	4525967	N/A	2016/06/04	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522589	N/A	2016/06/03	Anastasia Hamanov
Fluoride	ISE	4525971	2016/06/04	2016/06/04	Yogesh Patel
Hardness (calculated as CaCO3)		4518632	N/A	2016/06/06	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	4524885	2016/06/03	2016/06/06	Azita Fazaeli
Total Metals Analysis by ICPMS	ICP/MS	4525683	N/A	2016/06/06	Arefa Dabhad
Ion Balance (% Difference)	CALC	4518633	N/A	2016/06/06	Automated Statchk
Anion and Cation Sum	CALC	4518634	N/A	2016/06/06	Automated Statchk
Total Ammonia-N	LACH/NH4	4523746	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525672	N/A	2016/06/06	Chandra Nandlal
Total Oil and Grease	BAL	4522853	2016/06/02	2016/06/02	Amjad Mir
pH	AT	4525973	N/A	2016/06/04	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	4522270	N/A	2016/06/02	Faye Sabet
Sat. pH and Langelier Index (@ 20C)	CALC	4518628	N/A	2016/06/06	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4518629	N/A	2016/06/06	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4525679	N/A	2016/06/06	Deonarine Ramnarine
Total Dissolved Solids	BAL	4521252	N/A	2016/06/03	Fang Wang
Total Kjeldahl Nitrogen in Water	SKAL	4523641	2016/06/02	2016/06/03	Amarinder Sawhney
Total Phosphorus (Colourimetric)	LACH/P	4522837	2016/06/02	2016/06/03	Sarabjit Raina
Low Level Total Suspended Solids	BAL	4521261	N/A	2016/06/02	Gurpreet Kaur

Maxxam ID: CLH627 Dup
Sample ID: POND
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	LACH/P	4522837	2016/06/02	2016/06/03	Sarabjit Raina

Maxxam ID: CLH628
Sample ID: SW1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4527282	N/A	2016/06/07	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/07	Automated Statchk
Chloride by Automated Colourimetry	KONE	4527999	N/A	2016/06/07	Deonarine Ramnarine
Conductivity	AT	4527288	N/A	2016/06/07	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522589	N/A	2016/06/03	Anastasia Hamanov
Fluoride	ISE	4527283	2016/06/06	2016/06/07	Surinder Rai
Hardness (calculated as CaCO3)		4518632	N/A	2016/06/07	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	4527863	2016/06/03	2016/06/07	Azita Fazaeli

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Maxxam Job #: B6A9952
Report Date: 2016/06/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH628
Sample ID: SW1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	4525683	N/A	2016/06/06	Arefa Dabhad
Ion Balance (% Difference)	CALC	4518633	N/A	2016/06/07	Automated Statchk
Anion and Cation Sum	CALC	4518634	N/A	2016/06/07	Automated Statchk
Total Ammonia-N	LACH/NH4	4523746	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4527392	N/A	2016/06/06	Chandra Nandlal
Total Oil and Grease	BAL	4522853	2016/06/02	2016/06/02	Amjad Mir
pH	AT	4527287	N/A	2016/06/07	Surinder Rai
Phenols (4AAP)	TECH/PHEN	4522903	N/A	2016/06/03	Faye Sabet
Sat. pH and Langelier Index (@ 20C)	CALC	4518628	N/A	2016/06/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4518629	N/A	2016/06/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4528006	N/A	2016/06/07	Alina Dobreanu
Total Dissolved Solids	BAL	4521252	N/A	2016/06/03	Fang Wang
Total Kjeldahl Nitrogen in Water	SKAL	4523641	2016/06/02	2016/06/03	Amarinder Sawhney
Total Phosphorus (Colourimetric)	LACH/P	4522837	2016/06/02	2016/06/03	Sarabjit Raina
Low Level Total Suspended Solids	BAL	4521261	N/A	2016/06/02	Gurpreet Kaur

Maxxam ID: CLH628 Dup
Sample ID: SW1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4527282	N/A	2016/06/07	Surinder Rai
Conductivity	AT	4527288	N/A	2016/06/07	Surinder Rai
Fluoride	ISE	4527283	2016/06/06	2016/06/07	Surinder Rai
Lab Filtered Metals Analysis by ICP	ICP	4527863	2016/06/06	2016/06/07	Azita Fazaeli
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4527392	N/A	2016/06/06	Chandra Nandlal
pH	AT	4527287	N/A	2016/06/07	Surinder Rai

Maxxam ID: CLH629
Sample ID: SW2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4525977	N/A	2016/06/04	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526019	N/A	2016/06/06	Deonarine Ramnarine
Conductivity	AT	4525967	N/A	2016/06/04	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522589	N/A	2016/06/03	Anastasia Hamanov
Fluoride	ISE	4525971	2016/06/04	2016/06/04	Yogesh Patel
Hardness (calculated as CaCO3)		4518632	N/A	2016/06/06	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	4524885	2016/06/03	2016/06/06	Azita Fazaeli
Total Metals Analysis by ICPMS	ICP/MS	4525683	N/A	2016/06/06	Arefa Dabhad
Ion Balance (% Difference)	CALC	4518633	N/A	2016/06/06	Automated Statchk
Anion and Cation Sum	CALC	4518634	N/A	2016/06/06	Automated Statchk

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Maxxam Job #: B6A9952
Report Date: 2016/06/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH629
Sample ID: SW2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	4523746	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525672	N/A	2016/06/06	Chandra Nandlal
Total Oil and Grease	BAL	4522853	2016/06/02	2016/06/02	Amjad Mir
pH	AT	4525973	N/A	2016/06/04	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	4522270	N/A	2016/06/02	Faye Sabet
Sat. pH and Langelier Index (@ 20C)	CALC	4518628	N/A	2016/06/06	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4518629	N/A	2016/06/06	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4526028	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids	BAL	4521252	N/A	2016/06/03	Fang Wang
Total Kjeldahl Nitrogen in Water	SKAL	4523641	2016/06/02	2016/06/06	Amarinder Sawhney
Total Phosphorus (Colourimetric)	LACH/P	4522837	2016/06/02	2016/06/03	Sarabjit Raina
Low Level Total Suspended Solids	BAL	4521261	N/A	2016/06/02	Gurpreet Kaur

Maxxam ID: CLH629 Dup
Sample ID: SW2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4525977	N/A	2016/06/04	Yogesh Patel
Conductivity	AT	4525967	N/A	2016/06/04	Yogesh Patel
Fluoride	ISE	4525971	2016/06/04	2016/06/04	Yogesh Patel
pH	AT	4525973	N/A	2016/06/04	Yogesh Patel

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GENERAL COMMENTS

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

Package 1	8.0°C
Package 2	8.3°C
Package 3	6.0°C

Results relate only to the items tested.

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Site Location: MCCARTHY
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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4521252	FW	QC Standard	Total Dissolved Solids	2016/06/03		97	%	90 - 110
4521252	FW	Method Blank	Total Dissolved Solids	2016/06/03	<10		mg/L	
4521252	FW	RPD	Total Dissolved Solids	2016/06/03	NC		%	25
4521261	GKR	QC Standard	Total Suspended Solids	2016/06/02		101	%	85 - 115
4521261	GKR	Method Blank	Total Suspended Solids	2016/06/02	<1		mg/L	
4521261	GKR	RPD	Total Suspended Solids	2016/06/02	NC		%	25
4522270	FFS	Matrix Spike	Phenols-4AAP	2016/06/02		NC	%	80 - 120
4522270	FFS	Spiked Blank	Phenols-4AAP	2016/06/02		101	%	85 - 115
4522270	FFS	Method Blank	Phenols-4AAP	2016/06/02	<0.0010		mg/L	
4522270	FFS	RPD	Phenols-4AAP	2016/06/02	2.7		%	20
4522589	AHA	Matrix Spike	Dissolved Organic Carbon	2016/06/02		92	%	80 - 120
4522589	AHA	Spiked Blank	Dissolved Organic Carbon	2016/06/02		94	%	80 - 120
4522589	AHA	Method Blank	Dissolved Organic Carbon	2016/06/02	<0.20		mg/L	
4522589	AHA	RPD	Dissolved Organic Carbon	2016/06/02	NC		%	20
4522837	SNR	Matrix Spike [CLH627-04]	Total Phosphorus	2016/06/03		99	%	80 - 120
4522837	SNR	QC Standard	Total Phosphorus	2016/06/03		104	%	80 - 120
4522837	SNR	Spiked Blank	Total Phosphorus	2016/06/03		97	%	80 - 120
4522837	SNR	Method Blank	Total Phosphorus	2016/06/03	<0.004		mg/L	
4522837	SNR	RPD [CLH627-04]	Total Phosphorus	2016/06/03	NC		%	20
4522853	AMJ	Spiked Blank	Total Oil & Grease	2016/06/02		98	%	85 - 115
4522853	AMJ	RPD	Total Oil & Grease	2016/06/02	2.5		%	25
4522853	AMJ	Method Blank	Total Oil & Grease	2016/06/02	<0.50		mg/L	
4522903	FFS	Matrix Spike	Phenols-4AAP	2016/06/03		97	%	80 - 120
4522903	FFS	Spiked Blank	Phenols-4AAP	2016/06/03		98	%	85 - 115
4522903	FFS	Method Blank	Phenols-4AAP	2016/06/03	<0.0010		mg/L	
4522903	FFS	RPD	Phenols-4AAP	2016/06/03	NC		%	20
4523641	AAY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2016/06/03		100	%	80 - 120
4523641	AAY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2016/06/03		100	%	80 - 120
4523641	AAY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2016/06/03		100	%	80 - 120
4523641	AAY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2016/06/03	<0.10		mg/L	
4523641	AAY	RPD	Total Kjeldahl Nitrogen (TKN)	2016/06/03	NC		%	20
4523746	COP	Matrix Spike	Total Ammonia-N	2016/06/06		89	%	80 - 120
4523746	COP	Spiked Blank	Total Ammonia-N	2016/06/06		98	%	85 - 115
4523746	COP	Method Blank	Total Ammonia-N	2016/06/06	<0.050		mg/L	
4523746	COP	RPD	Total Ammonia-N	2016/06/06	NC		%	20
4524885	AFZ	Matrix Spike	Dissolved Calcium (Ca)	2016/06/06		108	%	80 - 120
			Dissolved Magnesium (Mg)	2016/06/06		101	%	80 - 120
			Dissolved Potassium (K)	2016/06/06		109	%	80 - 120
			Dissolved Sodium (Na)	2016/06/06		110	%	80 - 120
4524885	AFZ	Spiked Blank	Dissolved Calcium (Ca)	2016/06/06		102	%	80 - 120
			Dissolved Magnesium (Mg)	2016/06/06		93	%	80 - 120
			Dissolved Potassium (K)	2016/06/06		102	%	80 - 120
			Dissolved Sodium (Na)	2016/06/06		103	%	80 - 120
4524885	AFZ	Method Blank	Dissolved Calcium (Ca)	2016/06/06	<0.05		mg/L	
			Dissolved Magnesium (Mg)	2016/06/06	<0.05		mg/L	
			Dissolved Potassium (K)	2016/06/06	<1		mg/L	
			Dissolved Sodium (Na)	2016/06/06	<0.5		mg/L	
4524885	AFZ	RPD	Dissolved Calcium (Ca)	2016/06/06	2.6		%	25
			Dissolved Magnesium (Mg)	2016/06/06	0.50		%	25
			Dissolved Potassium (K)	2016/06/06	NC		%	25
			Dissolved Sodium (Na)	2016/06/06	NC		%	25
4525672	C_N	Matrix Spike	Nitrite (N)	2016/06/06		109	%	80 - 120

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Report Date: 2016/06/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Nitrate (N)	2016/06/06		93	%	80 - 120
4525672	C_N	Spiked Blank	Nitrite (N)	2016/06/06		109	%	80 - 120
			Nitrate (N)	2016/06/06		98	%	80 - 120
4525672	C_N	Method Blank	Nitrite (N)	2016/06/06	<0.010		mg/L	
			Nitrate (N)	2016/06/06	<0.10		mg/L	
4525672	C_N	RPD	Nitrite (N)	2016/06/06	NC		%	25
			Nitrate (N)	2016/06/06	NC		%	25
4525677	DRM	Matrix Spike	Dissolved Chloride (Cl)	2016/06/06		106	%	80 - 120
4525677	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/06/06		101	%	80 - 120
4525677	DRM	Method Blank	Dissolved Chloride (Cl)	2016/06/06	<1.0		mg/L	
4525677	DRM	RPD	Dissolved Chloride (Cl)	2016/06/06	NC		%	20
4525679	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2016/06/06		119	%	75 - 125
4525679	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2016/06/06		102	%	80 - 120
4525679	DRM	Method Blank	Dissolved Sulphate (SO4)	2016/06/06	<1.0		mg/L	
4525679	DRM	RPD	Dissolved Sulphate (SO4)	2016/06/06	NC		%	20
4525683	ADA	Matrix Spike	Total Aluminum (Al)	2016/06/06		NC	%	80 - 120
			Total Antimony (Sb)	2016/06/06		101	%	80 - 120
			Total Arsenic (As)	2016/06/06		101	%	80 - 120
			Total Barium (Ba)	2016/06/06		102	%	80 - 120
			Total Beryllium (Be)	2016/06/06		95	%	80 - 120
			Total Boron (B)	2016/06/06		87	%	80 - 120
			Total Cadmium (Cd)	2016/06/06		100	%	80 - 120
			Total Calcium (Ca)	2016/06/06		NC	%	80 - 120
			Total Chromium (Cr)	2016/06/06		99	%	80 - 120
			Total Cobalt (Co)	2016/06/06		101	%	80 - 120
			Total Copper (Cu)	2016/06/06		100	%	80 - 120
			Total Iron (Fe)	2016/06/06		99	%	80 - 120
			Total Lead (Pb)	2016/06/06		97	%	80 - 120
			Total Magnesium (Mg)	2016/06/06		99	%	80 - 120
			Total Manganese (Mn)	2016/06/06		100	%	80 - 120
			Total Molybdenum (Mo)	2016/06/06		101	%	80 - 120
			Total Nickel (Ni)	2016/06/06		100	%	80 - 120
			Total Potassium (K)	2016/06/06		99	%	80 - 120
			Total Selenium (Se)	2016/06/06		103	%	80 - 120
			Total Silicon (Si)	2016/06/06		98	%	80 - 120
			Total Silver (Ag)	2016/06/06		100	%	80 - 120
			Total Sodium (Na)	2016/06/06		NC	%	80 - 120
			Total Strontium (Sr)	2016/06/06		NC	%	80 - 120
			Total Thallium (Tl)	2016/06/06		100	%	80 - 120
			Total Titanium (Ti)	2016/06/06		99	%	80 - 120
			Total Vanadium (V)	2016/06/06		98	%	80 - 120
			Total Zinc (Zn)	2016/06/06		102	%	80 - 120
4525683	ADA	Spiked Blank	Total Aluminum (Al)	2016/06/06		105	%	80 - 120
			Total Antimony (Sb)	2016/06/06		102	%	80 - 120
			Total Arsenic (As)	2016/06/06		104	%	80 - 120
			Total Barium (Ba)	2016/06/06		104	%	80 - 120
			Total Beryllium (Be)	2016/06/06		96	%	80 - 120
			Total Boron (B)	2016/06/06		91	%	80 - 120
			Total Cadmium (Cd)	2016/06/06		102	%	80 - 120
			Total Calcium (Ca)	2016/06/06		104	%	80 - 120
			Total Chromium (Cr)	2016/06/06		103	%	80 - 120
			Total Cobalt (Co)	2016/06/06		107	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Copper (Cu)	2016/06/06		101	%	80 - 120
			Total Iron (Fe)	2016/06/06		103	%	80 - 120
			Total Lead (Pb)	2016/06/06		100	%	80 - 120
			Total Magnesium (Mg)	2016/06/06		103	%	80 - 120
			Total Manganese (Mn)	2016/06/06		104	%	80 - 120
			Total Molybdenum (Mo)	2016/06/06		102	%	80 - 120
			Total Nickel (Ni)	2016/06/06		105	%	80 - 120
			Total Potassium (K)	2016/06/06		102	%	80 - 120
			Total Selenium (Se)	2016/06/06		109	%	80 - 120
			Total Silicon (Si)	2016/06/06		101	%	80 - 120
			Total Silver (Ag)	2016/06/06		103	%	80 - 120
			Total Sodium (Na)	2016/06/06		105	%	80 - 120
			Total Strontium (Sr)	2016/06/06		100	%	80 - 120
			Total Thallium (Tl)	2016/06/06		105	%	80 - 120
			Total Titanium (Ti)	2016/06/06		101	%	80 - 120
			Total Vanadium (V)	2016/06/06		101	%	80 - 120
			Total Zinc (Zn)	2016/06/06		107	%	80 - 120
4525683	ADA	Method Blank	Total Aluminum (Al)	2016/06/06	<5.0		ug/L	
			Total Antimony (Sb)	2016/06/06	<0.50		ug/L	
			Total Arsenic (As)	2016/06/06	<1.0		ug/L	
			Total Barium (Ba)	2016/06/06	<2.0		ug/L	
			Total Beryllium (Be)	2016/06/06	<0.50		ug/L	
			Total Boron (B)	2016/06/06	<10		ug/L	
			Total Cadmium (Cd)	2016/06/06	<0.10		ug/L	
			Total Calcium (Ca)	2016/06/06	<200		ug/L	
			Total Chromium (Cr)	2016/06/06	<5.0		ug/L	
			Total Cobalt (Co)	2016/06/06	<0.50		ug/L	
			Total Copper (Cu)	2016/06/06	<1.0		ug/L	
			Total Iron (Fe)	2016/06/06	<100		ug/L	
			Total Lead (Pb)	2016/06/06	<0.50		ug/L	
			Total Magnesium (Mg)	2016/06/06	<50		ug/L	
			Total Manganese (Mn)	2016/06/06	<2.0		ug/L	
			Total Molybdenum (Mo)	2016/06/06	<0.50		ug/L	
			Total Nickel (Ni)	2016/06/06	<1.0		ug/L	
			Total Potassium (K)	2016/06/06	<200		ug/L	
			Total Selenium (Se)	2016/06/06	<2.0		ug/L	
			Total Silicon (Si)	2016/06/06	<50		ug/L	
			Total Silver (Ag)	2016/06/06	<0.10		ug/L	
			Total Sodium (Na)	2016/06/06	<100		ug/L	
			Total Strontium (Sr)	2016/06/06	<1.0		ug/L	
			Total Thallium (Tl)	2016/06/06	<0.050		ug/L	
			Total Titanium (Ti)	2016/06/06	<5.0		ug/L	
			Total Vanadium (V)	2016/06/06	<0.50		ug/L	
			Total Zinc (Zn)	2016/06/06	15, RDL=5.0		ug/L	
4525683	ADA	RPD	Total Aluminum (Al)	2016/06/06	1.6		%	20
			Total Antimony (Sb)	2016/06/06	NC		%	20
			Total Arsenic (As)	2016/06/06	NC		%	20
			Total Barium (Ba)	2016/06/06	2.4		%	20
			Total Beryllium (Be)	2016/06/06	NC		%	20
			Total Boron (B)	2016/06/06	1.3		%	20
			Total Cadmium (Cd)	2016/06/06	NC		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Calcium (Ca)	2016/06/06	4.1		%	20
			Total Chromium (Cr)	2016/06/06	NC		%	20
			Total Cobalt (Co)	2016/06/06	NC		%	20
			Total Copper (Cu)	2016/06/06	NC		%	20
			Total Lead (Pb)	2016/06/06	NC		%	20
			Total Magnesium (Mg)	2016/06/06	1.0		%	20
			Total Manganese (Mn)	2016/06/06	3.5		%	20
			Total Molybdenum (Mo)	2016/06/06	1.7		%	20
			Total Nickel (Ni)	2016/06/06	4.7		%	20
			Total Potassium (K)	2016/06/06	2.2		%	20
			Total Selenium (Se)	2016/06/06	NC		%	20
			Total Silicon (Si)	2016/06/06	0.53		%	20
			Total Silver (Ag)	2016/06/06	NC		%	20
			Total Sodium (Na)	2016/06/06	2.8		%	20
			Total Strontium (Sr)	2016/06/06	2.3		%	20
			Total Thallium (Tl)	2016/06/06	NC		%	20
			Total Titanium (Ti)	2016/06/06	NC		%	20
			Total Vanadium (V)	2016/06/06	NC		%	20
4525967	YPA	Spiked Blank	Conductivity	2016/06/04		100	%	85 - 115
4525967	YPA	Method Blank	Conductivity	2016/06/04	<1.0		umho/c	
4525967	YPA	RPD [CLH629-02]	Conductivity	2016/06/04	0.13		%	25
4525971	YPA	Matrix Spike [CLH629-02]	Fluoride (F-)	2016/06/04		102	%	80 - 120
4525971	YPA	Spiked Blank	Fluoride (F-)	2016/06/04		105	%	80 - 120
4525971	YPA	Method Blank	Fluoride (F-)	2016/06/04	<0.10		mg/L	
4525971	YPA	RPD [CLH629-02]	Fluoride (F-)	2016/06/04	NC		%	20
4525973	YPA	Spiked Blank	pH	2016/06/04		102	%	98 - 103
4525973	YPA	RPD [CLH629-02]	pH	2016/06/04	0.39		%	N/A
4525977	YPA	Spiked Blank	Alkalinity (Total as CaCO3)	2016/06/04		97	%	85 - 115
4525977	YPA	Method Blank	Alkalinity (Total as CaCO3)	2016/06/04	<1.0		mg/L	
4525977	YPA	RPD [CLH629-02]	Alkalinity (Total as CaCO3)	2016/06/04	1.0		%	25
4526019	DRM	Matrix Spike	Dissolved Chloride (Cl)	2016/06/06		NC	%	80 - 120
4526019	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/06/06		101	%	80 - 120
4526019	DRM	Method Blank	Dissolved Chloride (Cl)	2016/06/06	<1.0		mg/L	
4526019	DRM	RPD	Dissolved Chloride (Cl)	2016/06/06	1.5		%	20
4526028	ADB	Matrix Spike	Dissolved Sulphate (SO4)	2016/06/06		119	%	75 - 125
4526028	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2016/06/06		103	%	80 - 120
4526028	ADB	Method Blank	Dissolved Sulphate (SO4)	2016/06/06	<1.0		mg/L	
4526028	ADB	RPD	Dissolved Sulphate (SO4)	2016/06/06	NC		%	20
4527282	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2016/06/07		97	%	85 - 115
4527282	SAU	Method Blank	Alkalinity (Total as CaCO3)	2016/06/07	<1.0		mg/L	
4527282	SAU	RPD [CLH628-02]	Alkalinity (Total as CaCO3)	2016/06/07	0.60		%	25
4527283	SAU	Matrix Spike [CLH628-02]	Fluoride (F-)	2016/06/07		107	%	80 - 120
4527283	SAU	Spiked Blank	Fluoride (F-)	2016/06/07		103	%	80 - 120
4527283	SAU	Method Blank	Fluoride (F-)	2016/06/07	<0.10		mg/L	
4527283	SAU	RPD [CLH628-02]	Fluoride (F-)	2016/06/07	0.46		%	20
4527287	SAU	Spiked Blank	pH	2016/06/07		102	%	98 - 103
4527287	SAU	RPD [CLH628-02]	pH	2016/06/07	0.0025		%	N/A
4527288	SAU	Spiked Blank	Conductivity	2016/06/07		101	%	85 - 115
4527288	SAU	Method Blank	Conductivity	2016/06/07	<1.0		umho/c	
4527288	SAU	RPD [CLH628-02]	Conductivity	2016/06/07	0.59		%	25
4527392	C_N	Matrix Spike [CLH628-02]	Nitrite (N)	2016/06/06		107	%	80 - 120
			Nitrate (N)	2016/06/06		84	%	80 - 120

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Maxxam Job #: B6A9952
Report Date: 2016/06/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4527392	C_N	Spiked Blank	Nitrite (N)	2016/06/06		111	%	80 - 120
			Nitrate (N)	2016/06/06		97	%	80 - 120
4527392	C_N	Method Blank	Nitrite (N)	2016/06/06	<0.010		mg/L	
			Nitrate (N)	2016/06/06	<0.10		mg/L	
4527392	C_N	RPD [CLH628-02]	Nitrite (N)	2016/06/06	NC		%	25
			Nitrate (N)	2016/06/06	1.5		%	25
4527863	AFZ	Matrix Spike [CLH628-02]	Dissolved Calcium (Ca)	2016/06/07		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2016/06/07		NC	%	80 - 120
			Dissolved Potassium (K)	2016/06/07		NC	%	80 - 120
			Dissolved Sodium (Na)	2016/06/07		NC	%	80 - 120
4527863	AFZ	Spiked Blank	Dissolved Calcium (Ca)	2016/06/07		99	%	80 - 120
			Dissolved Magnesium (Mg)	2016/06/07		96	%	80 - 120
			Dissolved Potassium (K)	2016/06/07		97	%	80 - 120
			Dissolved Sodium (Na)	2016/06/07		98	%	80 - 120
4527863	AFZ	Method Blank	Dissolved Calcium (Ca)	2016/06/07	<0.05		mg/L	
			Dissolved Magnesium (Mg)	2016/06/07	<0.05		mg/L	
			Dissolved Potassium (K)	2016/06/07	<1		mg/L	
			Dissolved Sodium (Na)	2016/06/07	<0.5		mg/L	
4527863	AFZ	RPD [CLH628-02]	Dissolved Calcium (Ca)	2016/06/07	1.8		%	25
			Dissolved Magnesium (Mg)	2016/06/07	1.5		%	25
			Dissolved Potassium (K)	2016/06/07	3.0		%	25
			Dissolved Sodium (Na)	2016/06/07	1.6		%	25
4527999	DRM	Matrix Spike	Dissolved Chloride (Cl)	2016/06/07		NC	%	80 - 120
4527999	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/06/07		104	%	80 - 120
4527999	DRM	Method Blank	Dissolved Chloride (Cl)	2016/06/07	<1.0		mg/L	
4527999	DRM	RPD	Dissolved Chloride (Cl)	2016/06/07	0.44		%	20
4528006	ADB	Matrix Spike	Dissolved Sulphate (SO4)	2016/06/07		NC	%	75 - 125
4528006	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2016/06/07		102	%	80 - 120
4528006	ADB	Method Blank	Dissolved Sulphate (SO4)	2016/06/07	<1.0		mg/L	
4528006	ADB	RPD	Dissolved Sulphate (SO4)	2016/06/07	2.2		%	20

N/A = Not Applicable

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

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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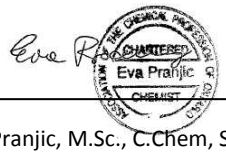
Maxxam Job #: B6A9952
Report Date: 2016/06/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

VALIDATION SIGNATURE PAGE

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



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Maxxam Job #: B6A9952
Report Date: 2016/06/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

Exceedence Summary Table – Prov. Water Quality Obj.

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
POND	CLH627-06	Total Boron (B)	200	610	10	ug/L
POND	CLH627-04-Lab Dup	Total Phosphorus	0.01	0.017	0.004	mg/L
POND	CLH627-04	Total Phosphorus	0.01	0.019	0.004	mg/L
SW1	CLH628-06	Total Boron (B)	200	520	10	ug/L
SW1	CLH628-06	Total Iron (Fe)	300	520	100	ug/L
SW1	CLH628-04	Total Phosphorus	0.01	0.043	0.004	mg/L
SW2	CLH629-06	Total Iron (Fe)	300	860	100	ug/L
SW2	CLH629-04	Total Phosphorus	0.01	0.12	0.008	mg/L

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 561478-01-01, 561478-02-01

Attention:Dawn Hoyle

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
L4N 8X1

Report Date: 2016/06/10
Report #: R4021997
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A9985
Received: 2016/05/31, 11:00

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	16	N/A	2016/06/03	CAM SOP-00448	SM 22 2320 B m
Alkalinity	1	N/A	2016/06/04	CAM SOP-00448	SM 22 2320 B m
Carbonate, Bicarbonate and Hydroxide	17	N/A	2016/06/06	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	16	N/A	2016/06/06	CAM SOP-00463	EPA 325.2 m
Chloride by Automated Colourimetry	1	N/A	2016/06/07	CAM SOP-00463	EPA 325.2 m
Colour	17	N/A	2016/06/03	CAM SOP-00412	SM 22 2120C m
Conductivity	16	N/A	2016/06/03	CAM SOP-00414	SM 22 2510 m
Conductivity	1	N/A	2016/06/04	CAM SOP-00414	SM 22 2510 m
Dissolved Organic Carbon (DOC) (1)	3	N/A	2016/06/01	CAM SOP-00446	SM 22 5310 B m
Dissolved Organic Carbon (DOC) (1)	14	N/A	2016/06/02	CAM SOP-00446	SM 22 5310 B m
Fluoride	16	2016/06/03	2016/06/03	CAM SOP-00449	SM 22 4500-F C m
Fluoride	1	2016/06/04	2016/06/04	CAM SOP-00449	SM 22 4500-F C m
Hardness (calculated as CaCO3)	17	N/A	2016/06/03	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	9	N/A	2016/06/02	CAM SOP-00447	EPA 6020A m
Dissolved Metals by ICPMS	8	N/A	2016/06/03	CAM SOP-00447	EPA 6020A m
Total Ammonia-N	17	N/A	2016/06/06	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	17	N/A	2016/06/06	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	16	N/A	2016/06/03	CAM SOP-00413	SM 4500H+ B m
pH	1	N/A	2016/06/04	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	17	N/A	2016/06/06	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	16	N/A	2016/06/06	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	1	N/A	2016/06/07	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	17	N/A	2016/06/06		

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 561478-01-01, 561478-02-01

Attention:Dawn Hoyle

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
L4N 8X1

Report Date: 2016/06/10
Report #: R4021997
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A9985
Received: 2016/05/31, 11:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID		CLH721			CLH722			CLH723		
Sampling Date		2016/05/30 15:45			2016/05/30 10:30			2016/05/30 15:15		
COC Number		561478-01-01			561478-01-01			561478-01-01		
	UNITS	AM1b	RDL	QC Batch	TW1-1	RDL	QC Batch	Bored	RDL	QC Batch
Calculated Parameters										
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	220	1.0	4518630	260	1.0	4518630	230	1.0	4518630
Calculated TDS	mg/L	290	1.0	4518631	1400	1.0	4518631	300	1.0	4518631
Hardness (CaCO3)	mg/L	240	1.0	4518632	650	1.0	4518632	210	1.0	4519918
Inorganics										
Total Ammonia-N	mg/L	0.14	0.050	4523748	1.0	0.050	4523656	<0.050	0.050	4523656
Colour	TCU	<2	2	4524210	<2	2	4524210	<2	2	4524210
Conductivity	umho/cm	480	1.0	4524909	2800	1.0	4524909	490	1.0	4524909
Fluoride (F-)	mg/L	0.24	0.10	4524919	0.54	0.10	4524919	0.15	0.10	4524919
Dissolved Organic Carbon	mg/L	0.81	0.20	4520034	1.6	0.20	4520034	0.91	0.20	4522444
Orthophosphate (P)	mg/L	<0.010	0.010	4526039	<0.010	0.010	4526039	<0.010	0.010	4526039
pH	pH	7.98		4524910	7.85		4524910	8.13		4524910
Dissolved Sulphate (SO4)	mg/L	41	1.0	4526040	17	1.0	4526040	34	1.0	4526040
Alkalinity (Total as CaCO3)	mg/L	220	1.0	4524902	260	1.0	4524902	230	1.0	4524902
Dissolved Chloride (Cl)	mg/L	3.0	1.0	4526038	690	10	4526038	4.2	1.0	4526038
Nitrite (N)	mg/L	0.012	0.010	4525646	<0.010	0.010	4525646	<0.010	0.010	4525646
Nitrate (N)	mg/L	<0.10	0.10	4525646	<0.10	0.10	4525646	0.36	0.10	4525646
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	4525646	<0.10	0.10	4525646	0.36	0.10	4525646

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID		CLH723		CLH724			CLH725		
Sampling Date		2016/05/30 15:15		2016/05/30 15:30			2016/05/30 15:30		
COC Number		561478-01-01		561478-01-01			561478-01-01		
	UNITS	Bored Lab-Dup	QC Batch	OW4-1	RDL	QC Batch	OW4-2	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L		4518630	280	1.0	4518630	280	1.0	4518630
Calculated TDS	mg/L		4518631	530	1.0	4518631	570	1.0	4518631
Hardness (CaCO3)	mg/L		4519918	94	1.0	4519918	130	1.0	4519918
Inorganics									
Total Ammonia-N	mg/L	<0.050	4523656	0.74	0.050	4523748	0.80	0.050	4523656
Colour	TCU		4524210	<2	2	4524210	<2	2	4524210
Conductivity	umho/cm		4524909	950	1.0	4524909	1100	1.0	4524909
Fluoride (F-)	mg/L		4524919	1.4	0.10	4524919	1.3	0.10	4524919
Dissolved Organic Carbon	mg/L		4522444	1.8	0.20	4522015	1.2	0.20	4520730
Orthophosphate (P)	mg/L		4526039	<0.010	0.010	4526039	0.014	0.010	4526039
pH	pH		4524910	8.28		4524910	8.09		4524910
Dissolved Sulphate (SO4)	mg/L		4526040	4.1	1.0	4526040	<1.0	1.0	4526040
Alkalinity (Total as CaCO3)	mg/L		4524902	290	1.0	4524902	280	1.0	4524902
Dissolved Chloride (Cl)	mg/L		4526038	130	1.0	4526038	160	2.0	4526038
Nitrite (N)	mg/L		4525646	<0.010	0.010	4525647	<0.010	0.010	4525646
Nitrate (N)	mg/L		4525646	<0.10	0.10	4525647	<0.10	0.10	4525646
Nitrate + Nitrite (N)	mg/L		4525646	<0.10	0.10	4525647	<0.10	0.10	4525646

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID		CLH725			CLH726			CLH727		
Sampling Date		2016/05/30 15:30			2016/05/30 13:45			2016/05/30 13:45		
COC Number		561478-01-01			561478-01-01			561478-01-01		
	UNITS	OW4-2 Lab-Dup	RDL	QC Batch	OW5-1	RDL	QC Batch	OW5-2	RDL	QC Batch
Calculated Parameters										
Bicarb. Alkalinity (calc. as CaCO3)	mg/L		1.0	4518630	230	1.0	4518630	110	1.0	4518630
Calculated TDS	mg/L		1.0	4518631	350	1.0	4518631	16000	1.0	4518631
Hardness (CaCO3)	mg/L		1.0	4519918	170	1.0	4519918	6300	1.0	4519918
Inorganics										
Total Ammonia-N	mg/L		0.050	4523656	0.65	0.050	4523656	9.2	0.25	4523748
Colour	TCU		2	4524210	<2	2	4524210	51	2	4524210
Conductivity	umho/cm		1.0	4524909	620	1.0	4524909	29000	1.0	4524909
Fluoride (F-)	mg/L		0.10	4524919	0.85	0.10	4524919	0.45	0.10	4524919
Dissolved Organic Carbon	mg/L	1.2	0.20	4520730	1.2	0.20	4520034	0.53	0.20	4522015
Orthophosphate (P)	mg/L		0.010	4526039	<0.010	0.010	4526039	<0.010	0.010	4526039
pH	pH			4524910	8.02		4524910	7.28		4524910
Dissolved Sulphate (SO4)	mg/L		1.0	4526040	32	1.0	4526040	<1.0	1.0	4526040
Alkalinity (Total as CaCO3)	mg/L		1.0	4524902	240	1.0	4524902	110	1.0	4524902
Dissolved Chloride (Cl)	mg/L		2.0	4526038	39	1.0	4526038	10000	100	4526038
Nitrite (N)	mg/L	<0.010	0.010	4525646	0.107	0.010	4525646	0.013	0.010	4525646
Nitrate (N)	mg/L	<0.10	0.10	4525646	0.41	0.10	4525646	<0.10	0.10	4525646
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	4525646	0.52	0.10	4525646	<0.10	0.10	4525646

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID		CLH728		CLH729	CLH729			CLH730		
Sampling Date		2016/05/30 14:00		2016/05/30 15:00	2016/05/30 15:00			2016/05/30 11:45		
COC Number		561478-01-01		561478-01-01	561478-01-01			561478-01-01		
	UNITS	OW5-3	RDL	OW6-2	OW6-2 Lab-Dup	RDL	QC Batch	OW7-1	RDL	QC Batch
Calculated Parameters										
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	110	1.0	160		1.0	4518630	270	1.0	4518630
Calculated TDS	mg/L	16000	1.0	3800		1.0	4518631	3100	1.0	4518631
Hardness (CaCO3)	mg/L	6600	1.0	1600		1.0	4519918	860	1.0	4519918
Inorganics										
Total Ammonia-N	mg/L	8.9	0.25	1.0		0.050	4523748	3.0	0.050	4523656
Colour	TCU	35	2	<2	<2	2	4524210	76	2	4524210
Conductivity	umho/cm	27000	1.0	6200		1.0	4524909	5800	1.0	4524909
Fluoride (F-)	mg/L	0.44	0.10	0.49		0.10	4524919	2.7	0.10	4524919
Dissolved Organic Carbon	mg/L	1.1	0.20	1.0		0.20	4520730	0.92	0.20	4522444
Orthophosphate (P)	mg/L	<0.010	0.010	<0.010		0.010	4526039	<0.010	0.010	4526039
pH	pH	7.28		7.69			4524910	7.93		4524910
Dissolved Sulphate (SO4)	mg/L	33	1.0	1000		5.0	4526040	9.1	1.0	4526040
Alkalinity (Total as CaCO3)	mg/L	110	1.0	160		1.0	4524902	280	1.0	4524902
Dissolved Chloride (Cl)	mg/L	9900	100	1400		15	4526038	1700	20	4526038
Nitrite (N)	mg/L	0.013	0.010	0.127		0.010	4525647	<0.010	0.010	4525646
Nitrate (N)	mg/L	<0.10	0.10	<0.10		0.10	4525647	<0.10	0.10	4525646
Nitrate + Nitrite (N)	mg/L	0.10	0.10	0.21		0.10	4525647	<0.10	0.10	4525646

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID		CLH736			CLH737			CLH738		
Sampling Date		2016/05/30 12:00			2016/05/30 11:30			2016/05/30 11:00		
COC Number		561478-02-01			561478-02-01			561478-02-01		
	UNITS	OW7-2	RDL	QC Batch	OW8-1	RDL	QC Batch	OW8-2	RDL	QC Batch
Calculated Parameters										
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	270	1.0	4518630	330	1.0	4518630	290	1.0	4518630
Calculated TDS	mg/L	5400	1.0	4518631	1100	1.0	4518631	2500	1.0	4518631
Hardness (CaCO3)	mg/L	1800	1.0	4519918	550	1.0	4519918	1300	1.0	4519918
Inorganics										
Total Ammonia-N	mg/L	2.6	0.050	4523748	0.72	0.050	4523748	1.1	0.050	4523748
Colour	TCU	20	2	4524210	<2	2	4524210	40	2	4524210
Conductivity	umho/cm	9800	1.0	4525967	2000	1.0	4524909	4700	1.0	4524909
Fluoride (F-)	mg/L	2.1	0.10	4525971	2.2	0.10	4524919	0.47	0.10	4524919
Dissolved Organic Carbon	mg/L	2.0	0.20	4522444	1.4	0.20	4520034	1.7	0.20	4520034
Orthophosphate (P)	mg/L	<0.010	0.010	4526039	<0.010	0.010	4526039	<0.010	0.010	4526039
pH	pH	7.73		4525973	7.92		4524910	7.65		4524910
Dissolved Sulphate (SO4)	mg/L	23	1.0	4526040	30	1.0	4528006	54	1.0	4526040
Alkalinity (Total as CaCO3)	mg/L	270	1.0	4525977	330	1.0	4524902	290	1.0	4524902
Dissolved Chloride (Cl)	mg/L	3200	30	4526038	420	5.0	4527999	1300	15	4526038
Nitrite (N)	mg/L	<0.010	0.010	4525647	<0.010	0.010	4525646	<0.010	0.010	4525646
Nitrate (N)	mg/L	<0.10	0.10	4525647	<0.10	0.10	4525646	<0.10	0.10	4525646
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	4525647	<0.10	0.10	4525646	<0.10	0.10	4525646

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID		CLH739			CLH740			CLH741		
Sampling Date		2016/05/30 09:15			2016/05/30 09:30			2016/05/30 13:45		
COC Number		561478-02-01			561478-02-01			561478-02-01		
	UNITS	OW9-1	RDL	QC Batch	OW9-2	RDL	QC Batch	OW5-2D	RDL	QC Batch
Calculated Parameters										
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	230	1.0	4518630	250	1.0	4518630	110	1.0	4518630
Calculated TDS	mg/L	31000	1.0	4518631	8300	1.0	4518631	16000	1.0	4518631
Hardness (CaCO3)	mg/L	16000	1.0	4519918	3300	1.0	4519918	6500	1.0	4519918
Inorganics										
Total Ammonia-N	mg/L	12	0.25	4523656	0.23	0.050	4523656	9.4	0.25	4523748
Colour	TCU	21	2	4524210	7	2	4524210	48	2	4524210
Conductivity	umho/cm	50000	1.0	4524909	15000	1.0	4524909	29000	1.0	4524909
Fluoride (F-)	mg/L	<0.10	0.10	4524919	0.11	0.10	4524919	0.45	0.10	4524919
Dissolved Organic Carbon	mg/L	10	0.20	4522444	8.8	0.20	4522444	0.75	0.20	4520034
Orthophosphate (P)	mg/L	<0.010	0.010	4526039	<0.010	0.010	4526039	<0.010	0.010	4526039
pH	pH	7.02		4524910	7.37		4524910	7.19		4524910
Dissolved Sulphate (SO4)	mg/L	150	1.0	4526040	380	2.0	4526040	<1.0	1.0	4526040
Alkalinity (Total as CaCO3)	mg/L	230	1.0	4524902	250	1.0	4524902	110	1.0	4524902
Dissolved Chloride (Cl)	mg/L	19000	200	4526038	4700	50	4526038	10000	100	4526038
Nitrite (N)	mg/L	<0.050	0.050	4525647	0.065	0.010	4525646	0.011	0.010	4525646
Nitrate (N)	mg/L	<0.50	0.50	4525647	3.38	0.10	4525646	<0.10	0.10	4525646
Nitrate + Nitrite (N)	mg/L	<0.50	0.50	4525647	3.44	0.10	4525646	<0.10	0.10	4525646

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID		CLH742		
Sampling Date		2016/05/30 15:30		
COC Number		561478-02-01		
	UNITS	OW4-2D	RDL	QC Batch
Calculated Parameters				
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	280	1.0	4519917
Calculated TDS	mg/L	590	1.0	4518631
Hardness (CaCO3)	mg/L	130	1.0	4519918
Inorganics				
Total Ammonia-N	mg/L	0.80	0.050	4523748
Colour	TCU	<2	2	4524210
Conductivity	umho/cm	1100	1.0	4524909
Fluoride (F-)	mg/L	1.3	0.10	4524919
Dissolved Organic Carbon	mg/L	1.2	0.20	4520034
Orthophosphate (P)	mg/L	<0.010	0.010	4526039
pH	pH	8.09		4524910
Dissolved Sulphate (SO4)	mg/L	<1.0	1.0	4526040
Alkalinity (Total as CaCO3)	mg/L	280	1.0	4524902
Dissolved Chloride (Cl)	mg/L	160	2.0	4526038
Nitrite (N)	mg/L	<0.010	0.010	4525647
Nitrate (N)	mg/L	<0.10	0.10	4525647
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	4525647

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CLH721		CLH722		CLH723		CLH724		
Sampling Date		2016/05/30 15:45		2016/05/30 10:30		2016/05/30 15:15		2016/05/30 15:30		
COC Number		561478-01-01		561478-01-01		561478-01-01		561478-01-01		
	UNITS	AM1b	RDL	TW1-1	RDL	Bored	QC Batch	OW4-1	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	ug/L	47000	200	140000	400	48000	4521500	18000	200	4520924
Dissolved Magnesium (Mg)	ug/L	31000	50	75000	50	23000	4521500	12000	50	4520924
Dissolved Phosphorus (P)	ug/L	<100	100	<100	100	<100	4521500	<100	100	4520924
Dissolved Potassium (K)	ug/L	2300	200	12000	200	13000	4521500	6200	200	4520924
Dissolved Sodium (Na)	ug/L	6500	100	300000	100	21000	4521500	170000	100	4520924

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CLH725	CLH726		CLH727	CLH728		CLH729		
Sampling Date		2016/05/30 15:30	2016/05/30 13:45		2016/05/30 13:45	2016/05/30 14:00		2016/05/30 15:00		
COC Number		561478-01-01	561478-01-01		561478-01-01	561478-01-01		561478-01-01		
	UNITS	OW4-2	OW5-1	RDL	OW5-2	OW5-3	RDL	OW6-2	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	ug/L	24000	31000	200	1300000	1400000	4000	330000	1000	4521500
Dissolved Magnesium (Mg)	ug/L	16000	22000	50	750000	770000	500	180000	50	4521500
Dissolved Phosphorus (P)	ug/L	<100	<100	100	<1000	<1000	1000	<100	100	4521500
Dissolved Potassium (K)	ug/L	7300	7200	200	69000	67000	2000	15000	200	4521500
Dissolved Sodium (Na)	ug/L	180000	63000	100	3800000	4200000	1000	760000	500	4521500

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CLH730		CLH736		CLH737		CLH738		
Sampling Date		2016/05/30 11:45		2016/05/30 12:00		2016/05/30 11:30		2016/05/30 11:00		
COC Number		561478-01-01		561478-02-01		561478-02-01		561478-02-01		
	UNITS	OW7-1	QC Batch	OW7-2	RDL	OW8-1	RDL	OW8-2	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	ug/L	170000	4521500	380000	1000	140000	200	340000	1000	4520924
Dissolved Magnesium (Mg)	ug/L	110000	4521500	210000	50	45000	50	120000	50	4520924
Dissolved Phosphorus (P)	ug/L	<100	4521500	<100	100	<100	100	<100	100	4520924
Dissolved Potassium (K)	ug/L	15000	4521500	21000	200	6900	200	9500	200	4520924
Dissolved Sodium (Na)	ug/L	890000	4521500	1400000	500	270000	100	430000	100	4520924

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CLH739		CLH740		CLH741			CLH742		
Sampling Date		2016/05/30 09:15		2016/05/30 09:30		2016/05/30 13:45			2016/05/30 15:30		
COC Number		561478-02-01		561478-02-01		561478-02-01			561478-02-01		
	UNITS	**OW9-1**	**RDL**	**OW9-2**	**RDL**	**OW5-2D**	**RDL**	**QC Batch**	**OW4-2D**	**RDL**	**QC Batch**
Metals											
Dissolved Calcium (Ca)	ug/L	3500000	10000	800000	1000	1300000	4000	4520924	25000	200	4521500
Dissolved Magnesium (Mg)	ug/L	1800000	500	310000	250	780000	500	4520924	17000	50	4521500
Dissolved Phosphorus (P)	ug/L	<1000	1000	<500	500	<1000	1000	4520924	<100	100	4521500
Dissolved Potassium (K)	ug/L	100000	2000	34000	1000	71000	2000	4520924	7800	200	4521500
Dissolved Sodium (Na)	ug/L	6500000	5000	1900000	500	4000000	1000	4520924	190000	100	4521500

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH721
Sample ID: AM1b
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520034	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4518632	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4521500	N/A	2016/06/02	Cristina Petran
Total Ammonia-N	LACH/NH4	4523748	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH722
Sample ID: TW1-1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520034	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4518632	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4521500	N/A	2016/06/02	Cristina Petran
Total Ammonia-N	LACH/NH4	4523656	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH723
Sample ID: Bored
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH723
Sample ID: Bored
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522444	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4521500	N/A	2016/06/02	Cristina Petran
Total Ammonia-N	LACH/NH4	4523656	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH723 Dup
Sample ID: Bored
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	4523656	N/A	2016/06/06	Charles Opoku-Ware

Maxxam ID: CLH724
Sample ID: OW4-1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522015	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4520924	N/A	2016/06/02	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4523748	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525647	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH725
Sample ID: OW4-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520730	N/A	2016/06/01	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4521500	N/A	2016/06/02	Cristina Petran
Total Ammonia-N	LACH/NH4	4523656	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH725 Dup
Sample ID: OW4-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520730	N/A	2016/06/01	Anastasia Hamanov
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal

Maxxam ID: CLH726
Sample ID: OW5-1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520034	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4521500	N/A	2016/06/02	Cristina Petran
Total Ammonia-N	LACH/NH4	4523656	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH727
Sample ID: OW5-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522015	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4521500	N/A	2016/06/03	Cristina Petran
Total Ammonia-N	LACH/NH4	4523748	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH728
Sample ID: OW5-3
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520730	N/A	2016/06/01	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4521500	N/A	2016/06/03	Cristina Petran
Total Ammonia-N	LACH/NH4	4523748	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525647	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH729
Sample ID: OW6-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH729
Sample ID: OW6-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520730	N/A	2016/06/01	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4521500	N/A	2016/06/03	Cristina Petran
Total Ammonia-N	LACH/NH4	4523748	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525647	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH729 Dup
Sample ID: OW6-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex

Maxxam ID: CLH730
Sample ID: OW7-1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522444	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4521500	N/A	2016/06/03	Cristina Petran
Total Ammonia-N	LACH/NH4	4523656	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH736
Sample ID: OW7-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4525977	N/A	2016/06/04	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4525967	N/A	2016/06/04	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522444	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4525971	2016/06/04	2016/06/04	Yogesh Patel
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4520924	N/A	2016/06/03	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4523748	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525647	N/A	2016/06/06	Chandra Nandlal
pH	AT	4525973	N/A	2016/06/04	Yogesh Patel
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH737
Sample ID: OW8-1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Brad Newman
Chloride by Automated Colourimetry	KONE	4527999	N/A	2016/06/07	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520034	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Brad Newman
Dissolved Metals by ICPMS	ICP/MS	4520924	N/A	2016/06/02	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4523748	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4528006	N/A	2016/06/07	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Brad Newman

Maxxam ID: CLH738
Sample ID: OW8-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH738
Sample ID: OW8-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520034	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4520924	N/A	2016/06/02	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4523748	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH739
Sample ID: OW9-1
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522444	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4520924	N/A	2016/06/03	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4523656	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525647	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH740
Sample ID: OW9-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH740
Sample ID: OW9-2
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4522444	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4520924	N/A	2016/06/03	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4523656	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH741
Sample ID: OW5-2D
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4518630	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520034	N/A	2016/06/02	Anastasia Hamanov
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4520924	N/A	2016/06/03	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4523748	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525646	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

Maxxam ID: CLH742
Sample ID: OW4-2D
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4524902	N/A	2016/06/03	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4519917	N/A	2016/06/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	4526038	N/A	2016/06/06	Deonarine Ramnarine
Colour	SPEC	4524210	N/A	2016/06/03	Elsamma Alex
Conductivity	AT	4524909	N/A	2016/06/03	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4520034	N/A	2016/06/02	Anastasia Hamanov

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: CLH742
Sample ID: OW4-2D
Matrix: Water

Collected: 2016/05/30
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fluoride	ISE	4524919	2016/06/03	2016/06/03	Surinder Rai
Hardness (calculated as CaCO3)		4519918	N/A	2016/06/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4521500	N/A	2016/06/02	Cristina Petran
Total Ammonia-N	LACH/NH4	4523748	N/A	2016/06/06	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4525647	N/A	2016/06/06	Chandra Nandlal
pH	AT	4524910	N/A	2016/06/03	Surinder Rai
Orthophosphate	KONE	4526039	N/A	2016/06/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4526040	N/A	2016/06/06	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	4518631	N/A	2016/06/06	Automated Statchk

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GENERAL COMMENTS

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

Package 1	8.0°C
Package 2	8.3°C
Package 3	6.0°C

Sample CLH727-01 : Metal Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample CLH728-01 : Metal Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample CLH739-01 : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Nitrite+Nitrate: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample CLH740-01 : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample CLH741-01 : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4520034	AHA	Matrix Spike	Dissolved Organic Carbon	2016/06/02		99	%	80 - 120
4520034	AHA	Spiked Blank	Dissolved Organic Carbon	2016/06/02		100	%	80 - 120
4520034	AHA	Method Blank	Dissolved Organic Carbon	2016/06/02	0.22, RDL=0.20		mg/L	
4520034	AHA	RPD	Dissolved Organic Carbon	2016/06/02	0.75		%	20
4520730	AHA	Matrix Spike [CLH725-03]	Dissolved Organic Carbon	2016/06/01		102	%	80 - 120
4520730	AHA	Spiked Blank	Dissolved Organic Carbon	2016/06/01		98	%	80 - 120
4520730	AHA	Method Blank	Dissolved Organic Carbon	2016/06/01	0.23, RDL=0.20		mg/L	
4520730	AHA	RPD [CLH725-03]	Dissolved Organic Carbon	2016/06/01	1.1		%	20
4520924	ADA	Matrix Spike	Dissolved Calcium (Ca)	2016/06/02		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2016/06/02		NC	%	80 - 120
			Dissolved Phosphorus (P)	2016/06/02		107	%	80 - 120
			Dissolved Potassium (K)	2016/06/02		NC	%	80 - 120
			Dissolved Sodium (Na)	2016/06/02		NC	%	80 - 120
4520924	ADA	Spiked Blank	Dissolved Calcium (Ca)	2016/06/02		103	%	80 - 120
			Dissolved Magnesium (Mg)	2016/06/02		102	%	80 - 120
			Dissolved Phosphorus (P)	2016/06/02		102	%	80 - 120
			Dissolved Potassium (K)	2016/06/02		104	%	80 - 120
			Dissolved Sodium (Na)	2016/06/02		100	%	80 - 120
4520924	ADA	Method Blank	Dissolved Calcium (Ca)	2016/06/02	<200		ug/L	
			Dissolved Magnesium (Mg)	2016/06/02	<50		ug/L	
			Dissolved Phosphorus (P)	2016/06/02	<100		ug/L	
			Dissolved Potassium (K)	2016/06/02	<200		ug/L	
			Dissolved Sodium (Na)	2016/06/02	150, RDL=100		ug/L	
4520924	ADA	RPD	Dissolved Sodium (Na)	2016/06/02	0.66		%	20
4521500	CPE	Matrix Spike	Dissolved Calcium (Ca)	2016/06/02		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2016/06/02		NC	%	80 - 120
			Dissolved Phosphorus (P)	2016/06/02		116	%	80 - 120
			Dissolved Potassium (K)	2016/06/02		111	%	80 - 120
			Dissolved Sodium (Na)	2016/06/02		109	%	80 - 120
4521500	CPE	Spiked Blank	Dissolved Calcium (Ca)	2016/06/02		103	%	80 - 120
			Dissolved Magnesium (Mg)	2016/06/02		102	%	80 - 120
			Dissolved Phosphorus (P)	2016/06/02		109	%	80 - 120
			Dissolved Potassium (K)	2016/06/02		103	%	80 - 120
			Dissolved Sodium (Na)	2016/06/02		102	%	80 - 120
4521500	CPE	Method Blank	Dissolved Calcium (Ca)	2016/06/02	<200		ug/L	
			Dissolved Magnesium (Mg)	2016/06/02	<50		ug/L	
			Dissolved Phosphorus (P)	2016/06/02	<100		ug/L	
			Dissolved Potassium (K)	2016/06/02	<200		ug/L	
			Dissolved Sodium (Na)	2016/06/02	180, RDL=100		ug/L	
4521500	CPE	RPD	Dissolved Sodium (Na)	2016/06/02	1.1		%	20
4522015	AHA	Matrix Spike	Dissolved Organic Carbon	2016/06/02		94	%	80 - 120
4522015	AHA	Spiked Blank	Dissolved Organic Carbon	2016/06/02		97	%	80 - 120
4522015	AHA	Method Blank	Dissolved Organic Carbon	2016/06/02	<0.20		mg/L	
4522015	AHA	RPD	Dissolved Organic Carbon	2016/06/02	1.5		%	20
4522444	AHA	Matrix Spike	Dissolved Organic Carbon	2016/06/02		95	%	80 - 120
4522444	AHA	Spiked Blank	Dissolved Organic Carbon	2016/06/02		94	%	80 - 120
4522444	AHA	Method Blank	Dissolved Organic Carbon	2016/06/02	<0.20		mg/L	
4522444	AHA	RPD	Dissolved Organic Carbon	2016/06/02	1.6		%	20

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4523656	COP	Matrix Spike [CLH723-02]	Total Ammonia-N	2016/06/06		92	%	80 - 120
4523656	COP	Spiked Blank	Total Ammonia-N	2016/06/06		98	%	85 - 115
4523656	COP	Method Blank	Total Ammonia-N	2016/06/06	<0.050		mg/L	
4523656	COP	RPD [CLH723-02]	Total Ammonia-N	2016/06/06	NC		%	20
4523748	COP	Matrix Spike	Total Ammonia-N	2016/06/06		88	%	80 - 120
4523748	COP	Spiked Blank	Total Ammonia-N	2016/06/06		98	%	85 - 115
4523748	COP	Method Blank	Total Ammonia-N	2016/06/06	<0.050		mg/L	
4523748	COP	RPD	Total Ammonia-N	2016/06/06	NC		%	20
4524210	EAX	Spiked Blank	Colour	2016/06/03		98	%	80 - 120
4524210	EAX	Method Blank	Colour	2016/06/03	<2		TCU	
4524210	EAX	RPD [CLH729-01]	Colour	2016/06/03	NC		%	25
4524902	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2016/06/03		97	%	85 - 115
4524902	SAU	Method Blank	Alkalinity (Total as CaCO3)	2016/06/03	1.2, RDL=1.0		mg/L	
4524902	SAU	RPD	Alkalinity (Total as CaCO3)	2016/06/03	0.96		%	25
4524909	SAU	Spiked Blank	Conductivity	2016/06/03		101	%	85 - 115
4524909	SAU	Method Blank	Conductivity	2016/06/03	1.5, RDL=1.0		umho/cm	
4524909	SAU	RPD	Conductivity	2016/06/03	0.079		%	25
4524910	SAU	Spiked Blank	pH	2016/06/03		102	%	98 - 103
4524910	SAU	RPD	pH	2016/06/03	0.65		%	N/A
4524919	SAU	Matrix Spike	Fluoride (F-)	2016/06/03		102	%	80 - 120
4524919	SAU	Spiked Blank	Fluoride (F-)	2016/06/03		102	%	80 - 120
4524919	SAU	Method Blank	Fluoride (F-)	2016/06/03	<0.10		mg/L	
4524919	SAU	RPD	Fluoride (F-)	2016/06/03	NC		%	20
4525646	C_N	Matrix Spike [CLH725-01]	Nitrite (N)	2016/06/06		108	%	80 - 120
			Nitrate (N)	2016/06/06		92	%	80 - 120
4525646	C_N	Spiked Blank	Nitrite (N)	2016/06/06		109	%	80 - 120
			Nitrate (N)	2016/06/06		96	%	80 - 120
4525646	C_N	Method Blank	Nitrite (N)	2016/06/06	<0.010		mg/L	
			Nitrate (N)	2016/06/06	<0.10		mg/L	
4525646	C_N	RPD [CLH725-01]	Nitrite (N)	2016/06/06	NC		%	25
			Nitrate (N)	2016/06/06	NC		%	25
4525647	C_N	Matrix Spike	Nitrite (N)	2016/06/06		108	%	80 - 120
			Nitrate (N)	2016/06/06		NC	%	80 - 120
4525647	C_N	Spiked Blank	Nitrite (N)	2016/06/06		110	%	80 - 120
			Nitrate (N)	2016/06/06		99	%	80 - 120
4525647	C_N	Method Blank	Nitrite (N)	2016/06/06	<0.010		mg/L	
			Nitrate (N)	2016/06/06	<0.10		mg/L	
4525647	C_N	RPD	Nitrite (N)	2016/06/06	NC		%	25
			Nitrate (N)	2016/06/06	0.23		%	25
4525967	YPA	Spiked Blank	Conductivity	2016/06/04		100	%	85 - 115
4525967	YPA	Method Blank	Conductivity	2016/06/04	<1.0		umho/c	
4525967	YPA	RPD	Conductivity	2016/06/04	0.13		%	25
4525971	YPA	Matrix Spike	Fluoride (F-)	2016/06/04		102	%	80 - 120
4525971	YPA	Spiked Blank	Fluoride (F-)	2016/06/04		105	%	80 - 120
4525971	YPA	Method Blank	Fluoride (F-)	2016/06/04	<0.10		mg/L	
4525971	YPA	RPD	Fluoride (F-)	2016/06/04	NC		%	20
4525973	YPA	Spiked Blank	pH	2016/06/04		102	%	98 - 103
4525973	YPA	RPD	pH	2016/06/04	0.39		%	N/A
4525977	YPA	Spiked Blank	Alkalinity (Total as CaCO3)	2016/06/04		97	%	85 - 115
4525977	YPA	Method Blank	Alkalinity (Total as CaCO3)	2016/06/04	<1.0		mg/L	

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Maxxam Job #: B6A9985
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4525977	YPA	RPD	Alkalinity (Total as CaCO3)	2016/06/04	1.0		%	25
4526038	DRM	Matrix Spike	Dissolved Chloride (Cl)	2016/06/06		NC	%	80 - 120
4526038	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/06/06		102	%	80 - 120
4526038	DRM	Method Blank	Dissolved Chloride (Cl)	2016/06/06	<1.0		mg/L	
4526038	DRM	RPD	Dissolved Chloride (Cl)	2016/06/06	0.20		%	20
4526039	ADB	Matrix Spike	Orthophosphate (P)	2016/06/06		NC	%	75 - 125
4526039	ADB	Spiked Blank	Orthophosphate (P)	2016/06/06		99	%	80 - 120
4526039	ADB	Method Blank	Orthophosphate (P)	2016/06/06	<0.010		mg/L	
4526039	ADB	RPD	Orthophosphate (P)	2016/06/06	0.54		%	25
4526040	ADB	Matrix Spike	Dissolved Sulphate (SO4)	2016/06/06		NC	%	75 - 125
4526040	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2016/06/06		106	%	80 - 120
4526040	ADB	Method Blank	Dissolved Sulphate (SO4)	2016/06/06	<1.0		mg/L	
4526040	ADB	RPD	Dissolved Sulphate (SO4)	2016/06/06	0.73		%	20
4527999	DRM	Matrix Spike	Dissolved Chloride (Cl)	2016/06/07		NC	%	80 - 120
4527999	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/06/07		104	%	80 - 120
4527999	DRM	Method Blank	Dissolved Chloride (Cl)	2016/06/07	<1.0		mg/L	
4527999	DRM	RPD	Dissolved Chloride (Cl)	2016/06/07	0.44		%	20
4528006	ADB	Matrix Spike	Dissolved Sulphate (SO4)	2016/06/07		NC	%	75 - 125
4528006	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2016/06/07		102	%	80 - 120
4528006	ADB	Method Blank	Dissolved Sulphate (SO4)	2016/06/07	<1.0		mg/L	
4528006	ADB	RPD	Dissolved Sulphate (SO4)	2016/06/07	2.2		%	20

N/A = Not Applicable

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

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

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 583844-01-01, 583844-02-01

Attention:Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
L4N 8X1

Report Date: 2016/11/04
Report #: R4234938
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N1527
Received: 2016/10/26, 09:23

Sample Matrix: Water
Samples Received: 20

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	20	N/A	2016/10/28	CAM SOP-00448	SM 22 2320 B m
Carbonate, Bicarbonate and Hydroxide	20	N/A	2016/10/31	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	17	N/A	2016/10/31	CAM SOP-00463	EPA 325.2 m
Chloride by Automated Colourimetry	3	N/A	2016/11/02	CAM SOP-00463	EPA 325.2 m
Colour	17	N/A	2016/10/28	CAM SOP-00412	SM 22 2120C m
Colour	3	N/A	2016/10/31	CAM SOP-00412	SM 22 2120C m
Conductivity	20	N/A	2016/10/28	CAM SOP-00414	SM 22 2510 m
Dissolved Organic Carbon (DOC) (1)	15	N/A	2016/10/27	CAM SOP-00446	SM 22 5310 B m
Dissolved Organic Carbon (DOC) (1)	5	N/A	2016/10/28	CAM SOP-00446	SM 22 5310 B m
Fluoride	20	2016/10/27	2016/10/28	CAM SOP-00449	SM 22 4500-F C m
Hardness (calculated as CaCO3)	14	N/A	2016/11/01	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	6	N/A	2016/11/03	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	14	N/A	2016/11/01	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	1	N/A	2016/11/02	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	5	N/A	2016/11/03	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	14	N/A	2016/11/01		
Ion Balance (% Difference)	6	N/A	2016/11/03		
Anion and Cation Sum	14	N/A	2016/11/01		
Anion and Cation Sum	6	N/A	2016/11/03		
Total Ammonia-N	4	N/A	2016/10/29	CAM SOP-00441	EPA GS I-2522-90 m
Total Ammonia-N	10	N/A	2016/10/31	CAM SOP-00441	EPA GS I-2522-90 m
Total Ammonia-N	6	N/A	2016/11/01	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	14	N/A	2016/10/31	CAM SOP-00440	SM 22 4500-NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (2)	6	N/A	2016/11/01	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	20	N/A	2016/10/28	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	20	N/A	2016/10/28	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	14	N/A	2016/11/01		
Sat. pH and Langelier Index (@ 20C)	6	N/A	2016/11/03		

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Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 583844-01-01, 583844-02-01

Attention:Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
L4N 8X1

Report Date: 2016/11/04
Report #: R4234938
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N1527
Received: 2016/10/26, 09:23

Sample Matrix: Water
Samples Received: 20

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Sat. pH and Langelier Index (@ 4C)	14	N/A	2016/11/01		
Sat. pH and Langelier Index (@ 4C)	6	N/A	2016/11/03		
Sulphate by Automated Colourimetry	20	N/A	2016/10/28	CAM SOP-00464	EPA 375.4 m
Tannins & Lignins	20	N/A	2016/10/27	CAM SOP-00410	SM 22 5550 B m
Total Dissolved Solids (TDS calc)	14	N/A	2016/11/01		
Total Dissolved Solids (TDS calc)	6	N/A	2016/11/03		
Turbidity	17	N/A	2016/10/27	CAM SOP-00417	SM 22 2130 B m
Turbidity	3	N/A	2016/10/28	CAM SOP-00417	SM 22 2130 B m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

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

(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

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Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 583844-01-01, 583844-02-01

Attention:Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
L4N 8X1

Report Date: 2016/11/04
Report #: R4234938
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N1527
Received: 2016/10/26, 09:23

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

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

Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC225			DIC226		
Sampling Date					2016/10/25 14:15			2016/10/25 13:15		
COC Number					583844-01-01			583844-01-01		
	UNITS	MAC	IMC	A/O	DW1	RDL	QC Batch	DW2	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L	-	-	-	12.3	N/A	4719275	11.2	N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	340	1.0	4718410	330	1.0	4718410
Calculated TDS	mg/L	-	-	500	**640**	1.0	4719377	**570**	1.0	4719377
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	2.4	1.0	4718410	2.7	1.0	4718410
Cation Sum	me/L	-	-	-	11.5	N/A	4719275	10.3	N/A	4719275
Hardness (CaCO3)	mg/L	-	-	80:100	**500**	1.0	4718406	**450**	1.0	4718406
Ion Balance (% Difference)	%	-	-	-	3.23	N/A	4718407	4.12	N/A	4718407
Langelier Index (@ 20C)	N/A	-	-	-	1.10		4719375	0.923		4719375
Langelier Index (@ 4C)	N/A	-	-	-	0.848		4719376	0.675		4719376
Saturation pH (@ 20C)	N/A	-	-	-	6.77		4719375	7.01		4719375
Saturation pH (@ 4C)	N/A	-	-	-	7.02		4719376	7.26		4719376
Inorganics										
Total Ammonia-N	mg/L	-	-	-	<0.050	0.050	4721517	<0.050	0.050	4721559
Conductivity	umho/cm	-	-	-	1200	1.0	4721120	1100	1.0	4721120
Dissolved Organic Carbon	mg/L	-	-	5	1.5	0.20	4719546	1.9	0.20	4722687
Orthophosphate (P)	mg/L	-	-	-	<0.010	0.010	4721316	<0.010	0.010	4721316
pH	pH	-	-	6.5:8.5	7.86		4721122	7.94		4721122
Dissolved Sulphate (SO4)	mg/L	-	-	500	32	1.0	4721315	47	1.0	4721315
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	350	1.0	4721115	330	1.0	4721115
Dissolved Chloride (Cl)	mg/L	-	-	250	170	2.0	4721309	130	1.0	4721309
Nitrite (N)	mg/L	1	-	-	<0.010	0.010	4720902	<0.010	0.010	4720916
Nitrate (N)	mg/L	10	-	-	0.16	0.10	4720902	1.39	0.10	4720916
Nitrate + Nitrite (N)	mg/L	10	-	-	0.16	0.10	4720902	1.39	0.10	4720916
Metals										
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0	5.0	4722597	<5.0	5.0	4722597
Dissolved Antimony (Sb)	ug/L	-	6	-	<0.50	0.50	4722597	<0.50	0.50	4722597
Dissolved Arsenic (As)	ug/L	-	25	-	<1.0	1.0	4722597	<1.0	1.0	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC225			DIC226		
Sampling Date					2016/10/25 14:15			2016/10/25 13:15		
COC Number					583844-01-01			583844-01-01		
	UNITS	MAC	IMC	A/O	DW1	RDL	QC Batch	DW2	RDL	QC Batch
Dissolved Barium (Ba)	ug/L	1000	-	-	110	2.0	4722597	170	2.0	4722597
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50	0.50	4722597
Dissolved Boron (B)	ug/L	-	5000	-	30	10	4722597	33	10	4722597
Dissolved Cadmium (Cd)	ug/L	5	-	-	<0.10	0.10	4722597	<0.10	0.10	4722597
Dissolved Calcium (Ca)	ug/L	-	-	-	150000	200	4722597	89000	200	4722597
Dissolved Chromium (Cr)	ug/L	50	-	-	<5.0	5.0	4722597	<5.0	5.0	4722597
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50	0.50	4722597
Dissolved Copper (Cu)	ug/L	-	-	1000	1.6	1.0	4722597	1.9	1.0	4722597
Dissolved Iron (Fe)	ug/L	-	-	300	<100	100	4722597	<100	100	4722597
Dissolved Lead (Pb)	ug/L	10	-	-	<0.50	0.50	4722597	<0.50	0.50	4722597
Dissolved Magnesium (Mg)	ug/L	-	-	-	29000	50	4722597	55000	50	4722597
Dissolved Manganese (Mn)	ug/L	-	-	50	34	2.0	4722597	6.6	2.0	4722597
Dissolved Molybdenum (Mo)	ug/L	-	-	-	<0.50	0.50	4722597	1.4	0.50	4722597
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	4722597	<1.0	1.0	4722597
Dissolved Phosphorus (P)	ug/L	-	-	-	<100	100	4722597	<100	100	4722597
Dissolved Potassium (K)	ug/L	-	-	-	2000	200	4722597	3300	200	4722597
Dissolved Selenium (Se)	ug/L	10	-	-	<2.0	2.0	4722597	<2.0	2.0	4722597
Dissolved Silicon (Si)	ug/L	-	-	-	8000	50	4722597	9100	50	4722597
Dissolved Silver (Ag)	ug/L	-	-	-	<0.10	0.10	4722597	<0.10	0.10	4722597
Dissolved Sodium (Na)	ug/L	20000	-	200000	**33000**	100	4722597	**30000**	100	4722597
Dissolved Strontium (Sr)	ug/L	-	-	-	520	1.0	4722597	630	1.0	4722597
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	4722597	<0.050	0.050	4722597
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	4722597	<5.0	5.0	4722597
Dissolved Uranium (U)	ug/L	20	-	-	0.88	0.10	4722597	2.9	0.10	4722597
Dissolved Vanadium (V)	ug/L	-	-	-	<0.50	0.50	4722597	0.77	0.50	4722597
Dissolved Zinc (Zn)	ug/L	-	-	5000	<5.0	5.0	4722597	<5.0	5.0	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC227			DIC228	DIC228		
Sampling Date					2016/10/25 16:30			2016/10/25 15:45	2016/10/25 15:45		
COC Number					583844-01-01			583844-01-01	583844-01-01		
	UNITS	MAC	IMC	A/O	DW3	RDL	QC Batch	OW4-2-D	OW4-2-D Lab-Dup	RDL	QC Batch
Calculated Parameters											
Anion Sum	me/L	-	-	-	9.10	N/A	4719275	16.5		N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	230	1.0	4718410	240		1.0	4718410
Calculated TDS	mg/L	-	-	500	490	1.0	4719377	**900**		1.0	4719377
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	2.9	1.0	4718410	2.7		1.0	4718410
Cation Sum	me/L	-	-	-	8.86	N/A	4719275	16.1		N/A	4719275
Hardness (CaCO3)	mg/L	-	-	80:100	**180**	1.0	4718406	**240**		1.0	4718406
Ion Balance (% Difference)	%	-	-	-	1.34	N/A	4718407	1.28		N/A	4718407
Langelier Index (@ 20C)	N/A	-	-	-	0.548		4719375	0.576			4719375
Langelier Index (@ 4C)	N/A	-	-	-	0.300		4719376	0.331			4719376
Saturation pH (@ 20C)	N/A	-	-	-	7.59		4719375	7.50			4719375
Saturation pH (@ 4C)	N/A	-	-	-	7.83		4719376	7.75			4719376
Inorganics											
Total Ammonia-N	mg/L	-	-	-	0.46	0.050	4721559	1.1		0.050	4721559
Conductivity	umho/cm	-	-	-	960	1.0	4721120	1800		1.0	4721120
Dissolved Organic Carbon	mg/L	-	-	5	1.1	0.20	4721117	1.1		0.20	4719546
Orthophosphate (P)	mg/L	-	-	-	<0.010	0.010	4721316	<0.010		0.010	4721316
pH	pH	-	-	6.5:8.5	8.13		4721122	8.08			4721122
Dissolved Sulphate (SO4)	mg/L	-	-	500	1.5	1.0	4721315	<1.0		1.0	4721315
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	230	1.0	4721115	240		1.0	4721115
Dissolved Chloride (Cl)	mg/L	-	-	250	160	2.0	4721309	**410**		5.0	4721309
Nitrite (N)	mg/L	1	-	-	<0.010	0.010	4720902	<0.010	<0.010	0.010	4720902
Nitrate (N)	mg/L	10	-	-	<0.10	0.10	4720902	<0.10	<0.10	0.10	4720902
Nitrate + Nitrite (N)	mg/L	10	-	-	<0.10	0.10	4720902	<0.10	<0.10	0.10	4720902
Metals											
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0	5.0	4722597	<5.0		5.0	4722597
Dissolved Antimony (Sb)	ug/L	-	6	-	<0.50	0.50	4722597	<0.50		0.50	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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N/A = Not Applicable

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC227			DIC228	DIC228		
Sampling Date					2016/10/25 16:30			2016/10/25 15:45	2016/10/25 15:45		
COC Number					583844-01-01			583844-01-01	583844-01-01		
	UNITS	MAC	IMC	A/O	DW3	RDL	QC Batch	OW4-2-D	OW4-2-D Lab-Dup	RDL	QC Batch
Dissolved Arsenic (As)	ug/L	-	25	-	<1.0	1.0	4722597	<1.0		1.0	4722597
Dissolved Barium (Ba)	ug/L	1000	-	-	210	2.0	4722597	72		2.0	4722597
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50		0.50	4722597
Dissolved Boron (B)	ug/L	-	5000	-	760	10	4722597	900		10	4722597
Dissolved Cadmium (Cd)	ug/L	5	-	-	<0.10	0.10	4722597	<0.10		0.10	4722597
Dissolved Calcium (Ca)	ug/L	-	-	-	33000	200	4722597	45000		200	4722597
Dissolved Chromium (Cr)	ug/L	50	-	-	<5.0	5.0	4722597	<5.0		5.0	4722597
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50		0.50	4722597
Dissolved Copper (Cu)	ug/L	-	-	1000	<1.0	1.0	4722597	<1.0		1.0	4722597
Dissolved Iron (Fe)	ug/L	-	-	300	100	100	4722597	<100		100	4722597
Dissolved Lead (Pb)	ug/L	10	-	-	<0.50	0.50	4722597	<0.50		0.50	4722597
Dissolved Magnesium (Mg)	ug/L	-	-	-	24000	50	4722597	32000		50	4722597
Dissolved Manganese (Mn)	ug/L	-	-	50	4.3	2.0	4722597	2.2		2.0	4722597
Dissolved Molybdenum (Mo)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50		0.50	4722597
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	4722597	<1.0		1.0	4722597
Dissolved Phosphorus (P)	ug/L	-	-	-	<100	100	4722597	<100		100	4722597
Dissolved Potassium (K)	ug/L	-	-	-	7600	200	4722597	10000		200	4722597
Dissolved Selenium (Se)	ug/L	10	-	-	<2.0	2.0	4722597	<2.0		2.0	4722597
Dissolved Silicon (Si)	ug/L	-	-	-	5000	50	4722597	4000		50	4722597
Dissolved Silver (Ag)	ug/L	-	-	-	<0.10	0.10	4722597	<0.10		0.10	4722597
Dissolved Sodium (Na)	ug/L	20000	-	200000	**120000**	100	4722597	**250000**		100	4722597
Dissolved Strontium (Sr)	ug/L	-	-	-	2500	1.0	4722597	3800		1.0	4722597
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	4722597	<0.050		0.050	4722597
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	4722597	<5.0		5.0	4722597
Dissolved Uranium (U)	ug/L	20	-	-	<0.10	0.10	4722597	<0.10		0.10	4722597
Dissolved Vanadium (V)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50		0.50	4722597
Dissolved Zinc (Zn)	ug/L	-	-	5000	<5.0	5.0	4722597	<5.0		5.0	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC229	DIC229			DIC230		
Sampling Date					2016/10/25 16:15	2016/10/25 16:15			2016/10/25 11:00		
COC Number					583844-01-01	583844-01-01			583844-01-01		
	UNITS	MAC	IMC	A/O	AM1B	AM1B Lab-Dup	RDL	QC Batch	TW1-1	RDL	QC Batch
Calculated Parameters											
Anion Sum	me/L	-	-	-	5.58		N/A	4719275	33.6	N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	240		1.0	4718410	280	1.0	4718410
Calculated TDS	mg/L	-	-	500	290		1.0	4719377	**1800**	1.0	4719377
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	2.4		1.0	4718410	1.8	1.0	4718410
Cation Sum	me/L	-	-	-	5.23		N/A	4719275	30.5	N/A	4719275
Hardness (CaCO3)	mg/L	-	-	80:100	**240**		1.0	4718406	**810**	1.0	4718406
Ion Balance (% Difference)	%	-	-	-	3.27		N/A	4718407	4.85	N/A	4718407
Langelier Index (@ 20C)	N/A	-	-	-	0.680			4719375	0.900		4719375
Langelier Index (@ 4C)	N/A	-	-	-	0.430			4719376	0.656		4719376
Saturation pH (@ 20C)	N/A	-	-	-	7.35			4719375	6.94		4719375
Saturation pH (@ 4C)	N/A	-	-	-	7.60			4719376	7.18		4719376
Inorganics											
Total Ammonia-N	mg/L	-	-	-	0.11		0.050	4721517	1.0	0.050	4723061
Conductivity	umho/cm	-	-	-	500		1.0	4721120	3500	1.0	4721120
Dissolved Organic Carbon	mg/L	-	-	5	0.61	0.61	0.20	4721400	1.7	0.20	4722687
Orthophosphate (P)	mg/L	-	-	-	<0.010		0.010	4721316	<0.010	0.010	4721316
pH	pH	-	-	6.5:8.5	8.03			4721122	7.84		4721122
Dissolved Sulphate (SO4)	mg/L	-	-	500	33		1.0	4721315	11	1.0	4721315
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	240		1.0	4721115	280	1.0	4721115
Dissolved Chloride (Cl)	mg/L	-	-	250	3.4		1.0	4721309	**980**	10	4721309
Nitrite (N)	mg/L	1	-	-	<0.010		0.010	4720902	<0.010	0.010	4720902
Nitrate (N)	mg/L	10	-	-	<0.10		0.10	4720902	<0.10	0.10	4720902
Nitrate + Nitrite (N)	mg/L	10	-	-	<0.10		0.10	4720902	<0.10	0.10	4720902
Metals											
Dissolved Aluminum (Al)	ug/L	-	-	100	8.5		5.0	4722597	<5.0	5.0	4722597
Dissolved Antimony (Sb)	ug/L	-	6	-	<0.50		0.50	4722597	<0.50	0.50	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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N/A = Not Applicable

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC229	DIC229			DIC230		
Sampling Date					2016/10/25 16:15	2016/10/25 16:15			2016/10/25 11:00		
COC Number					583844-01-01	583844-01-01			583844-01-01		
	UNITS	MAC	IMC	A/O	AM1B	AM1B Lab-Dup	RDL	QC Batch	TW1-1	RDL	QC Batch
Dissolved Arsenic (As)	ug/L	-	25	-	<1.0		1.0	4722597	<1.0	1.0	4722597
Dissolved Barium (Ba)	ug/L	1000	-	-	110		2.0	4722597	55	2.0	4722597
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.50		0.50	4722597	<0.50	0.50	4722597
Dissolved Boron (B)	ug/L	-	5000	-	51		10	4722597	480	10	4722597
Dissolved Cadmium (Cd)	ug/L	5	-	-	<0.10		0.10	4722597	<0.10	0.10	4722597
Dissolved Calcium (Ca)	ug/L	-	-	-	48000		200	4722597	180000	400	4722597
Dissolved Chromium (Cr)	ug/L	50	-	-	<5.0		5.0	4722597	<5.0	5.0	4722597
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50		0.50	4722597	<0.50	0.50	4722597
Dissolved Copper (Cu)	ug/L	-	-	1000	<1.0		1.0	4722597	<1.0	1.0	4722597
Dissolved Iron (Fe)	ug/L	-	-	300	**430**		100	4722597	**540**	100	4722597
Dissolved Lead (Pb)	ug/L	10	-	-	<0.50		0.50	4722597	<0.50	0.50	4722597
Dissolved Magnesium (Mg)	ug/L	-	-	-	30000		50	4722597	89000	50	4722597
Dissolved Manganese (Mn)	ug/L	-	-	50	9.6		2.0	4722597	41	2.0	4722597
Dissolved Molybdenum (Mo)	ug/L	-	-	-	1.5		0.50	4722597	<0.50	0.50	4722597
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0		1.0	4722597	<1.0	1.0	4722597
Dissolved Phosphorus (P)	ug/L	-	-	-	<100		100	4722597	<100	100	4722597
Dissolved Potassium (K)	ug/L	-	-	-	2300		200	4722597	9800	200	4722597
Dissolved Selenium (Se)	ug/L	10	-	-	<2.0		2.0	4722597	<2.0	2.0	4722597
Dissolved Silicon (Si)	ug/L	-	-	-	11000		50	4722597	3200	50	4722597
Dissolved Silver (Ag)	ug/L	-	-	-	<0.10		0.10	4722597	<0.10	0.10	4722597
Dissolved Sodium (Na)	ug/L	20000	-	200000	6500		100	4722597	**320000**	100	4722597
Dissolved Strontium (Sr)	ug/L	-	-	-	470		1.0	4722597	8600	1.0	4722597
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050		0.050	4722597	<0.050	0.050	4722597
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0		5.0	4722597	<5.0	5.0	4722597
Dissolved Uranium (U)	ug/L	20	-	-	<0.10		0.10	4722597	<0.10	0.10	4722597
Dissolved Vanadium (V)	ug/L	-	-	-	<0.50		0.50	4722597	<1.0 (1)	1.0	4722597
Dissolved Zinc (Zn)	ug/L	-	-	5000	<5.0		5.0	4722597	<5.0	5.0	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

(1) Detection Limit was raised due to matrix interferences.

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC231		DIC232		
Sampling Date					2016/10/25 15:15		2016/10/25 15:30		
COC Number					583844-01-01		583844-01-01		
	UNITS	MAC	IMC	A/O	BORED	QC Batch	OW4-1	RDL	QC Batch
Calculated Parameters									
Anion Sum	me/L	-	-	-	5.06	4719275	8.97	N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	210	4718410	260	1.0	4718410
Calculated TDS	mg/L	-	-	500	280	4719377	490	1.0	4719377
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	3.4	4718410	6.8	1.0	4718410
Cation Sum	me/L	-	-	-	4.92	4719275	8.42	N/A	4719275
Hardness (CaCO3)	mg/L	-	-	80:100	**190**	4718406	82	1.0	4718406
Ion Balance (% Difference)	%	-	-	-	1.37	4718407	3.14	N/A	4718407
Langelier Index (@ 20C)	N/A	-	-	-	0.745	4719375	0.608		4719375
Langelier Index (@ 4C)	N/A	-	-	-	0.496	4719376	0.360		4719376
Saturation pH (@ 20C)	N/A	-	-	-	7.49	4719375	7.84		4719375
Saturation pH (@ 4C)	N/A	-	-	-	7.74	4719376	8.09		4719376
Inorganics									
Total Ammonia-N	mg/L	-	-	-	<0.050	4723061	0.84	0.050	4721559
Conductivity	umho/cm	-	-	-	470	4721120	910	1.0	4721120
Dissolved Organic Carbon	mg/L	-	-	5	1.0	4719546	3.2	0.20	4719546
Orthophosphate (P)	mg/L	-	-	-	<0.010	4721316	<0.010	0.010	4721316
pH	pH	-	-	6.5:8.5	8.23	4721122	8.45		4721122
Dissolved Sulphate (SO4)	mg/L	-	-	500	31	4721315	11	1.0	4721315
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	210	4721115	270	1.0	4721115
Dissolved Chloride (Cl)	mg/L	-	-	250	4.5	4721309	120	1.0	4721309
Nitrite (N)	mg/L	1	-	-	<0.010	4720902	<0.010	0.010	4720902
Nitrate (N)	mg/L	10	-	-	0.44	4720902	<0.10	0.10	4720902
Nitrate + Nitrite (N)	mg/L	10	-	-	0.44	4720902	<0.10	0.10	4720902
Metals									
Dissolved Aluminum (Al)	ug/L	-	-	100	6.2	4722597	<5.0	5.0	4722597
Dissolved Antimony (Sb)	ug/L	-	6	-	<0.50	4722597	<0.50	0.50	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

N/A = Not Applicable

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC231		DIC232		
Sampling Date					2016/10/25 15:15		2016/10/25 15:30		
COC Number					583844-01-01		583844-01-01		
	UNITS	MAC	IMC	A/O	BORED	QC Batch	OW4-1	RDL	QC Batch
Dissolved Arsenic (As)	ug/L	-	25	-	<1.0	4722597	<1.0	1.0	4722597
Dissolved Barium (Ba)	ug/L	1000	-	-	46	4722597	31	2.0	4722597
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.50	4722597	<0.50	0.50	4722597
Dissolved Boron (B)	ug/L	-	5000	-	26	4722597	770	10	4722597
Dissolved Cadmium (Cd)	ug/L	5	-	-	<0.10	4722597	<0.10	0.10	4722597
Dissolved Calcium (Ca)	ug/L	-	-	-	40000	4722597	16000	200	4722597
Dissolved Chromium (Cr)	ug/L	50	-	-	<5.0	4722597	<5.0	5.0	4722597
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50	4722597	<0.50	0.50	4722597
Dissolved Copper (Cu)	ug/L	-	-	1000	<1.0	4722597	<1.0	1.0	4722597
Dissolved Iron (Fe)	ug/L	-	-	300	<100	4722597	<100	100	4722597
Dissolved Lead (Pb)	ug/L	10	-	-	<0.50	4722597	<0.50	0.50	4722597
Dissolved Magnesium (Mg)	ug/L	-	-	-	21000	4722597	10000	50	4722597
Dissolved Manganese (Mn)	ug/L	-	-	50	<2.0	4722597	32	2.0	4722597
Dissolved Molybdenum (Mo)	ug/L	-	-	-	4.2	4722597	4.5	0.50	4722597
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0	4722597	<1.0	1.0	4722597
Dissolved Phosphorus (P)	ug/L	-	-	-	<100	4722597	<100	100	4722597
Dissolved Potassium (K)	ug/L	-	-	-	14000	4722597	5200	200	4722597
Dissolved Selenium (Se)	ug/L	10	-	-	<2.0	4722597	<2.0	2.0	4722597
Dissolved Silicon (Si)	ug/L	-	-	-	8000	4722597	4800	50	4722597
Dissolved Silver (Ag)	ug/L	-	-	-	<0.10	4722597	<0.10	0.10	4722597
Dissolved Sodium (Na)	ug/L	20000	-	200000	19000	4722597	**150000**	100	4722597
Dissolved Strontium (Sr)	ug/L	-	-	-	230	4722597	660	1.0	4722597
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050	4722597	<0.050	0.050	4722597
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0	4722597	<5.0	5.0	4722597
Dissolved Uranium (U)	ug/L	20	-	-	1.7	4722597	0.58	0.10	4722597
Dissolved Vanadium (V)	ug/L	-	-	-	<0.50	4722597	<0.50	0.50	4722597
Dissolved Zinc (Zn)	ug/L	-	-	5000	<5.0	4722597	<5.0	5.0	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC233			DIC234		
Sampling Date					2016/10/25 15:45			2016/10/25 14:30		
COC Number					583844-01-01			583844-01-01		
	UNITS	MAC	IMC	A/O	OW4-2	RDL	QC Batch	OW5-1	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L	-	-	-	17.0	N/A	4719275	6.47	N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	240	1.0	4718410	240	1.0	4718410
Calculated TDS	mg/L	-	-	500	**930**	1.0	4719377	340	1.0	4719377
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	2.5	1.0	4718410	2.9	1.0	4718410
Cation Sum	me/L	-	-	-	16.5	N/A	4719275	6.23	N/A	4719275
Hardness (CaCO3)	mg/L	-	-	80:100	**250**	1.0	4718406	**160**	1.0	4718406
Ion Balance (% Difference)	%	-	-	-	1.33	N/A	4718407	1.95	N/A	4718407
Langelier Index (@ 20C)	N/A	-	-	-	0.545		4719375	0.527		4719375
Langelier Index (@ 4C)	N/A	-	-	-	0.299		4719376	0.278		4719376
Saturation pH (@ 20C)	N/A	-	-	-	7.51		4719375	7.58		4719375
Saturation pH (@ 4C)	N/A	-	-	-	7.75		4719376	7.83		4719376
Inorganics										
Total Ammonia-N	mg/L	-	-	-	1.1	0.050	4721517	0.78	0.050	4721559
Conductivity	umho/cm	-	-	-	1800	1.0	4721120	620	1.0	4721120
Dissolved Organic Carbon	mg/L	-	-	5	1.1	0.20	4719546	1.3	0.20	4719546
Orthophosphate (P)	mg/L	-	-	-	<0.010	0.010	4721316	<0.010	0.010	4721316
pH	pH	-	-	6.5:8.5	8.05		4721122	8.11		4721122
Dissolved Sulphate (SO4)	mg/L	-	-	500	<1.0	1.0	4721315	27	1.0	4721315
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	240	1.0	4721115	240	1.0	4721115
Dissolved Chloride (Cl)	mg/L	-	-	250	**430**	5.0	4721309	35	1.0	4721309
Nitrite (N)	mg/L	1	-	-	<0.010	0.010	4720902	0.066	0.010	4720902
Nitrate (N)	mg/L	10	-	-	<0.10	0.10	4720902	0.26	0.10	4720902
Nitrate + Nitrite (N)	mg/L	10	-	-	<0.10	0.10	4720902	0.32	0.10	4720902
Metals										
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0	5.0	4722597	<5.0	5.0	4722597
Dissolved Antimony (Sb)	ug/L	-	6	-	<0.50	0.50	4722597	<0.50	0.50	4722597
Dissolved Arsenic (As)	ug/L	-	25	-	<1.0	1.0	4722597	<1.0	1.0	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

N/A = Not Applicable

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC233			DIC234		
Sampling Date					2016/10/25 15:45			2016/10/25 14:30		
COC Number					583844-01-01			583844-01-01		
	UNITS	MAC	IMC	A/O	OW4-2	RDL	QC Batch	OW5-1	RDL	QC Batch
Dissolved Barium (Ba)	ug/L	1000	-	-	73	2.0	4722597	29	2.0	4722597
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50	0.50	4722597
Dissolved Boron (B)	ug/L	-	5000	-	870	10	4722597	670	10	4722597
Dissolved Cadmium (Cd)	ug/L	5	-	-	<0.10	0.10	4722597	<0.10	0.10	4722597
Dissolved Calcium (Ca)	ug/L	-	-	-	45000	200	4722597	29000	200	4722597
Dissolved Chromium (Cr)	ug/L	50	-	-	<5.0	5.0	4722597	<5.0	5.0	4722597
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50	0.50	4722597
Dissolved Copper (Cu)	ug/L	-	-	1000	<1.0	1.0	4722597	<1.0	1.0	4722597
Dissolved Iron (Fe)	ug/L	-	-	300	<100	100	4722597	110	100	4722597
Dissolved Lead (Pb)	ug/L	10	-	-	<0.50	0.50	4722597	<0.50	0.50	4722597
Dissolved Magnesium (Mg)	ug/L	-	-	-	32000	50	4722597	21000	50	4722597
Dissolved Manganese (Mn)	ug/L	-	-	50	2.3	2.0	4722597	2.9	2.0	4722597
Dissolved Molybdenum (Mo)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50	0.50	4722597
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	4722597	<1.0	1.0	4722597
Dissolved Phosphorus (P)	ug/L	-	-	-	<100	100	4722597	<100	100	4722597
Dissolved Potassium (K)	ug/L	-	-	-	9900	200	4722597	7500	200	4722597
Dissolved Selenium (Se)	ug/L	10	-	-	<2.0	2.0	4722597	<2.0	2.0	4722597
Dissolved Silicon (Si)	ug/L	-	-	-	4000	50	4722597	5000	50	4722597
Dissolved Silver (Ag)	ug/L	-	-	-	<0.10	0.10	4722597	<0.10	0.10	4722597
Dissolved Sodium (Na)	ug/L	20000	-	200000	**260000**	100	4722597	**64000**	100	4722597
Dissolved Strontium (Sr)	ug/L	-	-	-	3800	1.0	4722597	1600	1.0	4722597
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	4722597	<0.050	0.050	4722597
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	4722597	<5.0	5.0	4722597
Dissolved Uranium (U)	ug/L	20	-	-	<0.10	0.10	4722597	<0.10	0.10	4722597
Dissolved Vanadium (V)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50	0.50	4722597
Dissolved Zinc (Zn)	ug/L	-	-	5000	<5.0	5.0	4722597	<5.0	5.0	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC258	DIC258			DIC259		
Sampling Date					2016/10/25 14:45	2016/10/25 14:45			2016/10/25 15:00		
COC Number					583844-02-01	583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW5-2	OW5-2 Lab-Dup	RDL	QC Batch	OW5-3	RDL	QC Batch
Calculated Parameters											
Anion Sum	me/L	-	-	-	278		N/A	4719275	317	N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	110		1.0	4718410	120	1.0	4718410
Calculated TDS	mg/L	-	-	500	**16000**		1.0	4719377	**18000**	1.0	4719377
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	<1.0		1.0	4718410	<1.0	1.0	4718410
Cation Sum	me/L	-	-	-	298		N/A	4719275	328	N/A	4719275
Hardness (CaCO3)	mg/L	-	-	80:100	**6300**		1.0	4718406	**6900**	1.0	4718406
Ion Balance (% Difference)	%	-	-	-	3.45		N/A	4718407	1.60	N/A	4718407
Langelier Index (@ 20C)	N/A	-	-	-	0.600			4719375	0.781		4719375
Langelier Index (@ 4C)	N/A	-	-	-	0.363			4719376	0.543		4719376
Saturation pH (@ 20C)	N/A	-	-	-	6.74			4719375	6.67		4719375
Saturation pH (@ 4C)	N/A	-	-	-	6.97			4719376	6.91		4719376
Inorganics											
Total Ammonia-N	mg/L	-	-	-	9.5	9.4	0.25	4723405	10	0.25	4721559
Conductivity	umho/cm	-	-	-	27000		1.0	4721429	32000	1.0	4721120
Dissolved Organic Carbon	mg/L	-	-	5	0.48	0.47	0.20	4719546	1.3	0.20	4719546
Orthophosphate (P)	mg/L	-	-	-	<0.010		0.010	4721316	<0.010	0.010	4721316
pH	pH	-	-	6.5:8.5	7.34			4721432	7.45		4721122
Dissolved Sulphate (SO4)	mg/L	-	-	500	<1.0		1.0	4721315	77	1.0	4721315
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	110		1.0	4721423	120	1.0	4721115
Dissolved Chloride (Cl)	mg/L	-	-	250	**9800**		120	4721309	**11000**	120	4721309
Nitrite (N)	mg/L	1	-	-	<0.010		0.010	4721513	<0.010	0.010	4720902
Nitrate (N)	mg/L	10	-	-	<0.10		0.10	4721513	<0.10	0.10	4720902
Nitrate + Nitrite (N)	mg/L	10	-	-	<0.10		0.10	4721513	<0.10	0.10	4720902
Metals											
Dissolved Aluminum (Al)	ug/L	-	-	100	<50		50	4724761	59	50	4722597
Dissolved Antimony (Sb)	ug/L	-	6	-	<5.0		5.0	4724761	<5.0	5.0	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

N/A = Not Applicable

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC258	DIC258			DIC259		
Sampling Date					2016/10/25 14:45	2016/10/25 14:45			2016/10/25 15:00		
COC Number					583844-02-01	583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW5-2	OW5-2 Lab-Dup	RDL	QC Batch	OW5-3	RDL	QC Batch
Dissolved Arsenic (As)	ug/L	-	25	-	<10		10	4724761	<10	10	4722597
Dissolved Barium (Ba)	ug/L	1000	-	-	640		20	4724761	550	20	4722597
Dissolved Beryllium (Be)	ug/L	-	-	-	<5.0		5.0	4724761	<5.0	5.0	4722597
Dissolved Boron (B)	ug/L	-	5000	-	2700		100	4724761	2100	100	4722597
Dissolved Cadmium (Cd)	ug/L	5	-	-	<1.0		1.0	4724761	<1.0	1.0	4722597
Dissolved Calcium (Ca)	ug/L	-	-	-	1300000		4000	4724761	1400000	4000	4722597
Dissolved Chromium (Cr)	ug/L	50	-	-	<50		50	4724761	<50	50	4722597
Dissolved Cobalt (Co)	ug/L	-	-	-	<5.0		5.0	4724761	<5.0	5.0	4722597
Dissolved Copper (Cu)	ug/L	-	-	1000	<10		10	4724761	<10	10	4722597
Dissolved Iron (Fe)	ug/L	-	-	300	**1900**		1000	4724761	**5200**	1000	4722597
Dissolved Lead (Pb)	ug/L	10	-	-	<5.0		5.0	4724761	<5.0	5.0	4722597
Dissolved Magnesium (Mg)	ug/L	-	-	-	760000		500	4724761	800000	500	4722597
Dissolved Manganese (Mn)	ug/L	-	-	50	36		20	4724761	**230**	20	4722597
Dissolved Molybdenum (Mo)	ug/L	-	-	-	<5.0		5.0	4724761	7.9	5.0	4722597
Dissolved Nickel (Ni)	ug/L	-	-	-	<10		10	4724761	<10	10	4722597
Dissolved Phosphorus (P)	ug/L	-	-	-	<1000		1000	4724761	<1000	1000	4722597
Dissolved Potassium (K)	ug/L	-	-	-	77000		2000	4724761	71000	2000	4722597
Dissolved Selenium (Se)	ug/L	10	-	-	**<20 (1)**		20	4724761	**<20 (1)**	20	4722597
Dissolved Silicon (Si)	ug/L	-	-	-	3700		500	4724761	4500	500	4722597
Dissolved Silver (Ag)	ug/L	-	-	-	<1.0		1.0	4724761	<1.0	1.0	4722597
Dissolved Sodium (Na)	ug/L	20000	-	200000	**3900000**		1000	4724761	**4300000**	1000	4722597
Dissolved Strontium (Sr)	ug/L	-	-	-	83000		10	4724761	84000	10	4722597
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.50		0.50	4724761	<0.50	0.50	4722597
Dissolved Titanium (Ti)	ug/L	-	-	-	<50		50	4724761	<50	50	4722597
Dissolved Uranium (U)	ug/L	20	-	-	<1.0		1.0	4724761	10	1.0	4722597
Dissolved Vanadium (V)	ug/L	-	-	-	<10		10	4724761	<5.0	5.0	4722597
Dissolved Zinc (Zn)	ug/L	-	-	5000	<50		50	4724761	<50	50	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

(1) RDL exceeds criteria

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC260	DIC260			DIC261		
Sampling Date					2016/10/25 15:30	2016/10/25 15:30			2016/10/25 12:30		
COC Number					583844-02-01	583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW6-2	OW6-2 Lab-Dup	RDL	QC Batch	OW7-1	RDL	QC Batch
Calculated Parameters											
Anion Sum	me/L	-	-	-	68.9		N/A	4719275	6.70	N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	160		1.0	4718410	220	1.0	4718410
Calculated TDS	mg/L	-	-	500	**4000**		1.0	4719377	360	1.0	4719377
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	<1.0		1.0	4718410	1.6	1.0	4718410
Cation Sum	me/L	-	-	-	65.0		N/A	4719275	6.87	N/A	4719275
Hardness (CaCO3)	mg/L	-	-	80:100	**1600**		1.0	4718406	**250**	1.0	4718406
Ion Balance (% Difference)	%	-	-	-	2.93		N/A	4718407	1.27	N/A	4718407
Langelier Index (@ 20C)	N/A	-	-	-	0.720			4719375	0.518		4719375
Langelier Index (@ 4C)	N/A	-	-	-	0.480			4719376	0.270		4719376
Saturation pH (@ 20C)	N/A	-	-	-	7.05			4719375	7.38		4719375
Saturation pH (@ 4C)	N/A	-	-	-	7.29			4719376	7.63		4719376
Inorganics											
Total Ammonia-N	mg/L	-	-	-	1.3	1.3	0.050	4723061	2.5	0.050	4721517
Conductivity	umho/cm	-	-	-	6300		1.0	4721120	690	1.0	4721120
Dissolved Organic Carbon	mg/L	-	-	5	0.63		0.20	4723500	1.8	0.20	4719546
Orthophosphate (P)	mg/L	-	-	-	<0.010		0.010	4721316	<0.010	0.010	4721316
pH	pH	-	-	6.5:8.5	7.77			4721122	7.90		4721122
Dissolved Sulphate (SO4)	mg/L	-	-	500	**1100**		5.0	4721315	49	1.0	4721315
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	160		1.0	4721115	220	1.0	4721115
Dissolved Chloride (Cl)	mg/L	-	-	250	**1500**		15	4721309	46	1.0	4721309
Nitrite (N)	mg/L	1	-	-	0.020		0.010	4720902	<0.010	0.010	4720916
Nitrate (N)	mg/L	10	-	-	<0.10		0.10	4720902	<0.10	0.10	4720916
Nitrate + Nitrite (N)	mg/L	10	-	-	<0.10		0.10	4720902	<0.10	0.10	4720916
Metals											
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0		5.0	4722597	<5.0	5.0	4722597
Dissolved Antimony (Sb)	ug/L	-	6	-	<0.50		0.50	4722597	<0.50	0.50	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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N/A = Not Applicable

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC260	DIC260			DIC261		
Sampling Date					2016/10/25 15:30	2016/10/25 15:30			2016/10/25 12:30		
COC Number					583844-02-01	583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW6-2	OW6-2 Lab-Dup	RDL	QC Batch	OW7-1	RDL	QC Batch
Dissolved Arsenic (As)	ug/L	-	25	-	<1.0		1.0	4722597	<1.0	1.0	4722597
Dissolved Barium (Ba)	ug/L	1000	-	-	110		2.0	4722597	24	2.0	4722597
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.50		0.50	4722597	<0.50	0.50	4722597
Dissolved Boron (B)	ug/L	-	5000	-	3100		10	4722597	660	10	4722597
Dissolved Cadmium (Cd)	ug/L	5	-	-	<0.10		0.10	4722597	<0.10	0.10	4722597
Dissolved Calcium (Ca)	ug/L	-	-	-	320000		1000	4722597	52000	200	4722597
Dissolved Chromium (Cr)	ug/L	50	-	-	<5.0		5.0	4722597	<5.0	5.0	4722597
Dissolved Cobalt (Co)	ug/L	-	-	-	<1.0 (1)		1.0	4722597	<0.50	0.50	4722597
Dissolved Copper (Cu)	ug/L	-	-	1000	<1.0		1.0	4722597	<1.0	1.0	4722597
Dissolved Iron (Fe)	ug/L	-	-	300	**1000**		100	4722597	**3000**	100	4722597
Dissolved Lead (Pb)	ug/L	10	-	-	<0.50		0.50	4722597	<0.50	0.50	4722597
Dissolved Magnesium (Mg)	ug/L	-	-	-	190000		50	4722597	30000	50	4722597
Dissolved Manganese (Mn)	ug/L	-	-	50	**2200**		2.0	4722597	**160**	2.0	4722597
Dissolved Molybdenum (Mo)	ug/L	-	-	-	5.1		0.50	4722597	1.1	0.50	4722597
Dissolved Nickel (Ni)	ug/L	-	-	-	<2.0 (1)		2.0	4722597	<1.0	1.0	4722597
Dissolved Phosphorus (P)	ug/L	-	-	-	<100		100	4722597	<100	100	4722597
Dissolved Potassium (K)	ug/L	-	-	-	16000		200	4722597	12000	200	4722597
Dissolved Selenium (Se)	ug/L	10	-	-	<2.0		2.0	4722597	<2.0	2.0	4722597
Dissolved Silicon (Si)	ug/L	-	-	-	4000		50	4722597	3200	50	4722597
Dissolved Silver (Ag)	ug/L	-	-	-	<0.10		0.10	4722597	<0.10	0.10	4722597
Dissolved Sodium (Na)	ug/L	20000	-	200000	**770000**		500	4722597	**28000**	100	4722597
Dissolved Strontium (Sr)	ug/L	-	-	-	14000		1.0	4722597	2900	1.0	4722597
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050		0.050	4722597	<0.050	0.050	4722597
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0		5.0	4722597	<5.0	5.0	4722597
Dissolved Uranium (U)	ug/L	20	-	-	1.7		0.10	4722597	<0.10	0.10	4722597
Dissolved Vanadium (V)	ug/L	-	-	-	<2.5 (1)		2.5	4722597	<0.50	0.50	4722597
Dissolved Zinc (Zn)	ug/L	-	-	5000	<10 (1)		10	4722597	<5.0	5.0	4722597

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

(1) Detection Limit was raised due to matrix interferences.

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC262			DIC263		
Sampling Date					2016/10/25 12:45			2016/10/25 11:30		
COC Number					583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW7-2	RDL	QC Batch	OW8-1	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L	-	-	-	8.98	N/A	4719275	31.1	N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	290	1.0	4718410	370	1.0	4718410
Calculated TDS	mg/L	-	-	500	470	1.0	4719377	**1700**	1.0	4719377
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	3.8	1.0	4718410	2.5	1.0	4718410
Cation Sum	me/L	-	-	-	8.89	N/A	4719275	30.2	N/A	4719275
Hardness (CaCO3)	mg/L	-	-	80:100	**330**	1.0	4718406	**450**	1.0	4718406
Ion Balance (% Difference)	%	-	-	-	0.530	N/A	4718407	1.50	N/A	4718407
Langelier Index (@ 20C)	N/A	-	-	-	0.972		4719375	0.829		4719375
Langelier Index (@ 4C)	N/A	-	-	-	0.724		4719376	0.585		4719376
Saturation pH (@ 20C)	N/A	-	-	-	7.17		4719375	7.02		4719375
Saturation pH (@ 4C)	N/A	-	-	-	7.42		4719376	7.27		4719376
Inorganics										
Total Ammonia-N	mg/L	-	-	-	1.6	0.050	4721559	1.3	0.050	4723405
Conductivity	umho/cm	-	-	-	860	1.0	4721120	3200	1.0	4721429
Dissolved Organic Carbon	mg/L	-	-	5	3.2	0.20	4721117	1.3	0.20	4722687
Orthophosphate (P)	mg/L	-	-	-	<0.010	0.010	4721316	<0.010	0.010	4721353
pH	pH	-	-	6.5:8.5	8.14		4721122	7.85		4721432
Dissolved Sulphate (SO4)	mg/L	-	-	500	50	1.0	4721315	20	1.0	4721352
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	300	1.0	4721115	370	1.0	4721423
Dissolved Chloride (Cl)	mg/L	-	-	250	71	1.0	4721309	**820**	10	4721326
Nitrite (N)	mg/L	1	-	-	<0.010	0.010	4720902	<0.010	0.010	4721498
Nitrate (N)	mg/L	10	-	-	<0.10	0.10	4720902	<0.10	0.10	4721498
Nitrate + Nitrite (N)	mg/L	10	-	-	<0.10	0.10	4720902	<0.10	0.10	4721498
Metals										
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0	5.0	4722597	<5.0	5.0	4724761
Dissolved Antimony (Sb)	ug/L	-	6	-	<0.50	0.50	4722597	<0.50	0.50	4724761
Dissolved Arsenic (As)	ug/L	-	25	-	<1.0	1.0	4722597	<1.0	1.0	4724761

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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N/A = Not Applicable

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC262			DIC263		
Sampling Date					2016/10/25 12:45			2016/10/25 11:30		
COC Number					583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW7-2	RDL	QC Batch	OW8-1	RDL	QC Batch
Dissolved Barium (Ba)	ug/L	1000	-	-	31	2.0	4722597	220	2.0	4724761
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50	0.50	4724761
Dissolved Boron (B)	ug/L	-	5000	-	740	10	4722597	1400	10	4724761
Dissolved Cadmium (Cd)	ug/L	5	-	-	<0.10	0.10	4722597	<0.10	0.10	4724761
Dissolved Calcium (Ca)	ug/L	-	-	-	66000	200	4722597	110000	200	4724761
Dissolved Chromium (Cr)	ug/L	50	-	-	<5.0	5.0	4722597	<5.0	5.0	4724761
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	4722597	<0.50	0.50	4724761
Dissolved Copper (Cu)	ug/L	-	-	1000	<1.0	1.0	4722597	<1.0	1.0	4724761
Dissolved Iron (Fe)	ug/L	-	-	300	**350**	100	4722597	**1400**	100	4724761
Dissolved Lead (Pb)	ug/L	10	-	-	<0.50	0.50	4722597	<0.50	0.50	4724761
Dissolved Magnesium (Mg)	ug/L	-	-	-	39000	50	4722597	43000	50	4724761
Dissolved Manganese (Mn)	ug/L	-	-	50	5.4	2.0	4722597	**58**	2.0	4724761
Dissolved Molybdenum (Mo)	ug/L	-	-	-	<0.50	0.50	4722597	6.2	0.50	4724761
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	4722597	3.1	1.0	4724761
Dissolved Phosphorus (P)	ug/L	-	-	-	<100	100	4722597	<100	100	4724761
Dissolved Potassium (K)	ug/L	-	-	-	13000	200	4722597	11000	200	4724761
Dissolved Selenium (Se)	ug/L	10	-	-	<2.0	2.0	4722597	<2.0	2.0	4724761
Dissolved Silicon (Si)	ug/L	-	-	-	4700	50	4722597	3400	50	4724761
Dissolved Silver (Ag)	ug/L	-	-	-	<0.10	0.10	4722597	<0.10	0.10	4724761
Dissolved Sodium (Na)	ug/L	20000	-	200000	**44000**	100	4722597	**480000**	100	4724761
Dissolved Strontium (Sr)	ug/L	-	-	-	3600	1.0	4722597	4300	1.0	4724761
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	4722597	<0.050	0.050	4724761
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	4722597	<5.0	5.0	4724761
Dissolved Uranium (U)	ug/L	20	-	-	<0.10	0.10	4722597	<0.10	0.10	4724761
Dissolved Vanadium (V)	ug/L	-	-	-	<0.50	0.50	4722597	<1.0 (1)	1.0	4724761
Dissolved Zinc (Zn)	ug/L	-	-	5000	<5.0	5.0	4722597	<5.0	5.0	4724761

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

(1) Detection Limit was raised due to matrix interferences.

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC264	DIC264			DIC265		
Sampling Date					2016/10/25 11:45	2016/10/25 11:45			2016/10/25 08:15		
COC Number					583844-02-01	583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW8-2	OW8-2 Lab-Dup	RDL	QC Batch	OW9-1	RDL	QC Batch
Calculated Parameters											
Anion Sum	me/L	-	-	-	49.9		N/A	4719275	998	N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	340		1.0	4718410	150	1.0	4718410
Calculated TDS	mg/L	-	-	500	**2700**		1.0	4719377	**55000**	1.0	4719377
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	2.3		1.0	4718410	<1.0	1.0	4718410
Cation Sum	me/L	-	-	-	47.1		N/A	4719275	1000	N/A	4719275
Hardness (CaCO3)	mg/L	-	-	80:100	**780**		1.0	4718406	**26000**	1.0	4718406
Ion Balance (% Difference)	%	-	-	-	2.91		N/A	4718407	0.180	N/A	4718407
Langelier Index (@ 20C)	N/A	-	-	-	0.958			4719375	1.27		4719375
Langelier Index (@ 4C)	N/A	-	-	-	0.715			4719376	1.02		4719376
Saturation pH (@ 20C)	N/A	-	-	-	6.90			4719375	5.64		4719375
Saturation pH (@ 4C)	N/A	-	-	-	7.14			4719376	5.88		4719376
Inorganics											
Total Ammonia-N	mg/L	-	-	-	1.7		0.050	4723405	18	0.25	4723405
Conductivity	umho/cm	-	-	-	5100		1.0	4721120	80000	1.0	4721429
Dissolved Organic Carbon	mg/L	-	-	5	1.2		0.20	4719546	**9.1**	0.20	4719546
Orthophosphate (P)	mg/L	-	-	-	<0.010		0.010	4721353	<0.010	0.010	4721353
pH	pH	-	-	6.5:8.5	7.85			4721122	6.90		4721432
Dissolved Sulphate (SO4)	mg/L	-	-	500	8.4		1.0	4721352	210	1.0	4721352
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	340		1.0	4721115	150	1.0	4721423
Dissolved Chloride (Cl)	mg/L	-	-	250	**1500**		20	4721326	**35000**	500	4721326
Nitrite (N)	mg/L	1	-	-	<0.010		0.010	4721498	<0.050	0.050	4721498
Nitrate (N)	mg/L	10	-	-	<0.10		0.10	4721498	<0.50	0.50	4721498
Nitrate + Nitrite (N)	mg/L	10	-	-	<0.10		0.10	4721498	<0.50	0.50	4721498
Metals											
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0	<5.0	5.0	4724761	<50	50	4724761
Dissolved Antimony (Sb)	ug/L	-	6	-	<0.50	<0.50	0.50	4724761	5.0	5.0	4724761

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

N/A = Not Applicable

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC264	DIC264			DIC265		
Sampling Date					2016/10/25 11:45	2016/10/25 11:45			2016/10/25 08:15		
COC Number					583844-02-01	583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW8-2	OW8-2 Lab-Dup	RDL	QC Batch	OW9-1	RDL	QC Batch
Dissolved Arsenic (As)	ug/L	-	25	-	<1.0	<1.0	1.0	4724761	<10	10	4724761
Dissolved Barium (Ba)	ug/L	1000	-	-	370	360	2.0	4724761	**2300**	20	4724761
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.50	<0.50	0.50	4724761	<5.0	5.0	4724761
Dissolved Boron (B)	ug/L	-	5000	-	1400	1400	10	4724761	2900	100	4724761
Dissolved Cadmium (Cd)	ug/L	5	-	-	<0.10	<0.10	0.10	4724761	<1.0	1.0	4724761
Dissolved Calcium (Ca)	ug/L	-	-	-	180000	190000	400	4724761	5500000	20000	4724761
Dissolved Chromium (Cr)	ug/L	50	-	-	<5.0	<5.0	5.0	4724761	<50	50	4724761
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50	<0.50	0.50	4724761	79	10	4724761
Dissolved Copper (Cu)	ug/L	-	-	1000	<1.0	<1.0	1.0	4724761	<10	10	4724761
Dissolved Iron (Fe)	ug/L	-	-	300	230	230	100	4724761	**3200**	1000	4724761
Dissolved Lead (Pb)	ug/L	10	-	-	<0.50	<0.50	0.50	4724761	<5.0	5.0	4724761
Dissolved Magnesium (Mg)	ug/L	-	-	-	79000	80000	50	4724761	3100000	500	4724761
Dissolved Manganese (Mn)	ug/L	-	-	50	**120**	**110**	2.0	4724761	**3800**	20	4724761
Dissolved Molybdenum (Mo)	ug/L	-	-	-	<0.50	<0.50	0.50	4724761	18	5.0	4724761
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0	<1.0	1.0	4724761	<20	20	4724761
Dissolved Phosphorus (P)	ug/L	-	-	-	<100	<100	100	4724761	<1000	1000	4724761
Dissolved Potassium (K)	ug/L	-	-	-	14000	14000	200	4724761	150000	2000	4724761
Dissolved Selenium (Se)	ug/L	10	-	-	<2.0	<2.0	2.0	4724761	**<20 (1)**	20	4724761
Dissolved Silicon (Si)	ug/L	-	-	-	3400	3500	50	4724761	4400	500	4724761
Dissolved Silver (Ag)	ug/L	-	-	-	<0.10	<0.10	0.10	4724761	<1.0	1.0	4724761
Dissolved Sodium (Na)	ug/L	20000	-	200000	**710000**	**730000**	500	4724761	**11000000**	10000	4724761
Dissolved Strontium (Sr)	ug/L	-	-	-	7700	7600	1.0	4724761	270000	10	4724761
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050	<0.050	0.050	4724761	<0.50	0.50	4724761
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0	<5.0	5.0	4724761	<50	50	4724761
Dissolved Uranium (U)	ug/L	20	-	-	<0.10	<0.10	0.10	4724761	9.9	1.0	4724761
Dissolved Vanadium (V)	ug/L	-	-	-	<1.0 (2)	<1.0	1.0	4724761	<25	25	4724761

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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(1) RDL exceeds criteria

(2) Detection Limit was raised due to matrix interferences.

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC264	DIC264			DIC265		
Sampling Date					2016/10/25 11:45	2016/10/25 11:45			2016/10/25 08:15		
COC Number					583844-02-01	583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW8-2	OW8-2 Lab-Dup	RDL	QC Batch	OW9-1	RDL	QC Batch
Dissolved Zinc (Zn)	ug/L	-	-	5000	<5.0	<5.0	5.0	4724761	<50	50	4724761

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC266			DIC267		
Sampling Date					2016/10/25 08:45			2016/10/25 14:45		
COC Number					583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW9-2	RDL	QC Batch	OW5-2-D	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L	-	-	-	152	N/A	4719275	286	N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	230	1.0	4718410	110	1.0	4718410
Calculated TDS	mg/L	-	-	500	**9000**	1.0	4719377	**16000**	1.0	4719377
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	-	<1.0	1.0	4718410	<1.0	1.0	4718410
Cation Sum	me/L	-	-	-	174	N/A	4719275	292	N/A	4719275
Hardness (CaCO3)	mg/L	-	-	80:100	**3900**	1.0	4718406	**6200**	1.0	4718406
Ion Balance (% Difference)	%	-	-	-	6.75	N/A	4718407	1.01	N/A	4718407
Langelier Index (@ 20C)	N/A	-	-	-	0.877		4719375	0.610		4719375
Langelier Index (@ 4C)	N/A	-	-	-	0.639		4719376	0.373		4719376
Saturation pH (@ 20C)	N/A	-	-	-	6.53		4719375	6.74		4719375
Saturation pH (@ 4C)	N/A	-	-	-	6.76		4719376	6.98		4719376
Inorganics										
Total Ammonia-N	mg/L	-	-	-	0.22	0.050	4723405	9.7	0.25	4722953
Conductivity	umho/cm	-	-	-	16000	1.0	4721429	27000	1.0	4721429
Dissolved Organic Carbon	mg/L	-	-	5	**8.7**	0.20	4722687	0.44	0.20	4719546
Orthophosphate (P)	mg/L	-	-	-	<0.010	0.010	4721316	<0.010	0.010	4721316
pH	pH	-	-	6.5:8.5	7.40		4721432	7.35		4721432
Dissolved Sulphate (SO4)	mg/L	-	-	500	320	1.0	4721315	<1.0	1.0	4721315
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	240	1.0	4721423	110	1.0	4721423
Dissolved Chloride (Cl)	mg/L	-	-	250	**5000**	40	4721309	**10000**	120	4721309
Nitrite (N)	mg/L	1	-	-	0.026	0.010	4721513	<0.010	0.010	4721513
Nitrate (N)	mg/L	10	-	-	2.84	0.10	4721513	<0.10	0.10	4721513
Nitrate + Nitrite (N)	mg/L	10	-	-	2.86	0.10	4721513	<0.10	0.10	4721513
Metals										
Dissolved Aluminum (Al)	ug/L	-	-	100	<25	25	4724761	<50	50	4724761
Dissolved Antimony (Sb)	ug/L	-	6	-	<2.5	2.5	4724761	<5.0	5.0	4724761
Dissolved Arsenic (As)	ug/L	-	25	-	<5.0	5.0	4724761	<10	10	4724761

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

N/A = Not Applicable

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RCAP - COMPREHENSIVE (WATER)

Maxxam ID					DIC266			DIC267		
Sampling Date					2016/10/25 08:45			2016/10/25 14:45		
COC Number					583844-02-01			583844-02-01		
	UNITS	MAC	IMC	A/O	OW9-2	RDL	QC Batch	OW5-2-D	RDL	QC Batch
Dissolved Barium (Ba)	ug/L	1000	-	-	800	10	4724761	670	20	4724761
Dissolved Beryllium (Be)	ug/L	-	-	-	<2.5	2.5	4724761	<5.0	5.0	4724761
Dissolved Boron (B)	ug/L	-	5000	-	1200	50	4724761	2800	100	4724761
Dissolved Cadmium (Cd)	ug/L	5	-	-	1.3	0.50	4724761	<1.0	1.0	4724761
Dissolved Calcium (Ca)	ug/L	-	-	-	930000	1000	4724761	1300000	4000	4724761
Dissolved Chromium (Cr)	ug/L	50	-	-	<25	25	4724761	<50	50	4724761
Dissolved Cobalt (Co)	ug/L	-	-	-	16	2.5	4724761	<5.0	5.0	4724761
Dissolved Copper (Cu)	ug/L	-	-	1000	8.6	5.0	4724761	<10	10	4724761
Dissolved Iron (Fe)	ug/L	-	-	300	**<500 (1)**	500	4724761	**1900**	1000	4724761
Dissolved Lead (Pb)	ug/L	10	-	-	<2.5	2.5	4724761	<5.0	5.0	4724761
Dissolved Magnesium (Mg)	ug/L	-	-	-	370000	250	4724761	750000	500	4724761
Dissolved Manganese (Mn)	ug/L	-	-	50	**3500**	10	4724761	36	20	4724761
Dissolved Molybdenum (Mo)	ug/L	-	-	-	13	2.5	4724761	<5.0	5.0	4724761
Dissolved Nickel (Ni)	ug/L	-	-	-	5.6	5.0	4724761	<10	10	4724761
Dissolved Phosphorus (P)	ug/L	-	-	-	<500	500	4724761	<1000	1000	4724761
Dissolved Potassium (K)	ug/L	-	-	-	42000	1000	4724761	79000	2000	4724761
Dissolved Selenium (Se)	ug/L	10	-	-	<10	10	4724761	**<20 (1)**	20	4724761
Dissolved Silicon (Si)	ug/L	-	-	-	4300	250	4724761	3700	500	4724761
Dissolved Silver (Ag)	ug/L	-	-	-	<0.50	0.50	4724761	<1.0	1.0	4724761
Dissolved Sodium (Na)	ug/L	20000	-	200000	**2200000**	500	4724761	**3800000**	1000	4724761
Dissolved Strontium (Sr)	ug/L	-	-	-	19000	5.0	4724761	85000	10	4724761
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.25	0.25	4724761	<0.50	0.50	4724761
Dissolved Titanium (Ti)	ug/L	-	-	-	<25	25	4724761	<50	50	4724761
Dissolved Uranium (U)	ug/L	20	-	-	15	0.50	4724761	<1.0	1.0	4724761
Dissolved Vanadium (V)	ug/L	-	-	-	<5.0	5.0	4724761	<10	10	4724761
Dissolved Zinc (Zn)	ug/L	-	-	5000	<25	25	4724761	<50	50	4724761

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,IMC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

(1) RDL exceeds criteria

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID				DIC225	DIC225	DIC226	DIC227	DIC228		
Sampling Date				2016/10/25 14:15	2016/10/25 14:15	2016/10/25 13:15	2016/10/25 16:30	2016/10/25 15:45		
COC Number				583844-01-01	583844-01-01	583844-01-01	583844-01-01	583844-01-01		
	UNITS	MAC	A/O	DW1	DW1 Lab-Dup	DW2	DW3	OW4-2-D	RDL	QC Batch
Inorganics										
Colour	TCU	-	5	<2		<2	<2	<2	2	4721212
Fluoride (F-)	mg/L	1.5	-	<0.10		0.17	0.79	0.97	0.10	4721121
Tannins & Lignins	mg/L	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4720895
Turbidity	NTU	-	5	1.7		<0.1	0.3	3.0	0.1	4721104

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

Maxxam ID				DIC228		DIC229		DIC230	DIC231		
Sampling Date				2016/10/25 15:45		2016/10/25 16:15		2016/10/25 11:00	2016/10/25 15:15		
COC Number				583844-01-01		583844-01-01		583844-01-01	583844-01-01		
	UNITS	MAC	A/O	OW4-2-D Lab-Dup	RDL	AM1B	RDL	TW1-1	BORED	RDL	QC Batch
Inorganics											
Colour	TCU	-	5		2	<2	2	2	<2	2	4721212
Fluoride (F-)	mg/L	1.5	-		0.10	0.23	0.10	0.50	0.15	0.10	4721121
Tannins & Lignins	mg/L	-	-		0.2	<0.2	0.2	<0.2	<0.2	0.2	4720895
Turbidity	NTU	-	5	2.8	0.1	**1300**	0.5	**23**	0.3	0.1	4721104

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID				DIC232		DIC233		DIC234		
Sampling Date				2016/10/25 15:30		2016/10/25 15:45		2016/10/25 14:30		
COC Number				583844-01-01		583844-01-01		583844-01-01		
	UNITS	MAC	A/O	OW4-1	RDL	OW4-2	RDL	OW5-1	RDL	QC Batch
Inorganics										
Colour	TCU	-	5	<2	2	<2	2	4	2	4721212
Fluoride (F-)	mg/L	1.5	-	1.4	0.10	0.95	0.10	0.89	0.10	4721121
Tannins & Lignins	mg/L	-	-	0.2	0.2	<0.2	0.2	0.2	0.2	4720895
Turbidity	NTU	-	5	**940**	1	0.4	0.1	**4800**	2	4721104

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

Maxxam ID				DIC258			DIC259		DIC260	DIC261		
Sampling Date				2016/10/25 14:45			2016/10/25 15:00		2016/10/25 15:30	2016/10/25 12:30		
COC Number				583844-01-01			583844-01-01		583844-01-01	583844-01-01		
	UNITS	MAC	A/O	OW5-2	RDL	QC Batch	OW5-3	RDL	OW6-2	OW7-1	RDL	QC Batch
Inorganics												
Colour	TCU	-	5	**100**	4	4721212	**59**	2	<2	**21**	2	4721212
Fluoride (F-)	mg/L	1.5	-	0.45	0.10	4721430	0.43	0.10	0.51	0.46	0.10	4721121
Tannins & Lignins	mg/L	-	-	1.0	0.2	4720895	1.5	0.2	<0.2	0.6	0.2	4720895
Turbidity	NTU	-	5	**16**	0.1	4721104	**1000**	1	**8.7**	**77**	0.1	4721104

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

RESULTS OF ANALYSES OF WATER

Maxxam ID				DIC262		DIC263	DIC263		DIC264		
Sampling Date				2016/10/25 12:45		2016/10/25 11:30	2016/10/25 11:30		2016/10/25 11:45		
COC Number				583844-02-01		583844-02-01	583844-02-01		583844-02-01		
	UNITS	MAC	A/O	OW7-2	QC Batch	OW8-1	OW8-1 Lab-Dup	QC Batch	OW8-2	RDL	QC Batch
Inorganics											
Colour	TCU	-	5	<2	4721212	<2	<2	4724943	<2	2	4724943
Fluoride (F-)	mg/L	1.5	-	0.49	4721121	1.3		4721430	1.2	0.10	4721121
Tannins & Lignins	mg/L	-	-	<0.2	4720895	0.5		4720895	0.4	0.2	4720895
Turbidity	NTU	-	5	**27**	4721104	**600**		4721848	**400**	0.1	4721848

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

Maxxam ID				DIC265			DIC266			DIC267		
Sampling Date				2016/10/25 08:15			2016/10/25 08:45			2016/10/25 14:45		
COC Number				583844-02-01			583844-02-01			583844-02-01		
	UNITS	MAC	A/O	OW9-1	RDL	QC Batch	OW9-2	RDL	QC Batch	OW5-2-D	RDL	QC Batch
Inorganics												
Colour	TCU	-	5	**87**	2	4721212	4	2	4724943	**100**	4	4721212
Fluoride (F-)	mg/L	1.5	-	<0.10	0.10	4721430	0.11	0.10	4721430	0.45	0.10	4721430
Tannins & Lignins	mg/L	-	-	2.9	0.2	4720895	0.4	0.2	4720895	1.1	0.2	4720895
Turbidity	NTU	-	5	**180**	0.1	4721848	**490**	0.5	4721104	**16**	0.1	4721104

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC], Interim Maximum Acceptable Concentration [IMC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC225
Sample ID: DW1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721517	N/A	2016/10/29	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC225 Dup
Sample ID: DW1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding

Maxxam ID: DIC226
Sample ID: DW2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4722687	N/A	2016/10/28	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC226
Sample ID: DW2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721559	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720916	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC227
Sample ID: DW3
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4721117	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721559	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

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Report Date: 2016/11/04

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Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC228
Sample ID: OW4-2-D
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721559	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC228 Dup
Sample ID: OW4-2-D
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC229
Sample ID: AM1B
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4721400	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC229
Sample ID: AM1B
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721517	N/A	2016/10/29	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC229 Dup
Sample ID: AM1B
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4721400	N/A	2016/10/27	Anastasia Hamanov

Maxxam ID: DIC230
Sample ID: TW1-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4722687	N/A	2016/10/28	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4723061	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding

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Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC230
Sample ID: TW1-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC231
Sample ID: BORED
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4723061	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC232
Sample ID: OW4-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC232
Sample ID: OW4-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721559	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC233
Sample ID: OW4-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721517	N/A	2016/10/29	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC234
Sample ID: OW5-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721559	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC258
Sample ID: OW5-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721423	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721429	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721430	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4724761	N/A	2016/11/03	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/03	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/03	Automated Statchk
Total Ammonia-N	LACH/NH4	4723405	N/A	2016/11/01	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4721513	N/A	2016/11/01	Chandra Nandlal
pH	AT	4721432	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/03	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/03	Automated Statchk

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC258
Sample ID: OW5-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/03	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC258 Dup
Sample ID: OW5-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Total Ammonia-N	LACH/NH4	4723405	N/A	2016/11/01	Charles Opoku-Ware

Maxxam ID: DIC259
Sample ID: OW5-3
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721559	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC260
Sample ID: OW6-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4723500	N/A	2016/10/28	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4723061	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC260 Dup
Sample ID: OW6-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	4723061	N/A	2016/10/31	Charles Opoku-Ware

Maxxam ID: DIC261
Sample ID: OW7-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC261
Sample ID: OW7-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721517	N/A	2016/10/29	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720916	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC262
Sample ID: OW7-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4721117	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/01	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4722597	N/A	2016/11/01	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/01	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/01	Automated Statchk
Total Ammonia-N	LACH/NH4	4721559	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4720902	N/A	2016/10/31	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/01	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/01	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/01	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC263
Sample ID: OW8-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721423	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721326	N/A	2016/11/02	Deonarine Ramnarine
Colour	SPEC	4724943	N/A	2016/10/31	Viorica Rotaru
Conductivity	AT	4721429	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4722687	N/A	2016/10/28	Anastasia Hamanov
Fluoride	ISE	4721430	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4724761	N/A	2016/11/02	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/03	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/03	Automated Statchk
Total Ammonia-N	LACH/NH4	4723405	N/A	2016/11/01	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4721498	N/A	2016/11/01	Chandra Nandlal
pH	AT	4721432	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721353	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/03	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/03	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721352	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/03	Automated Statchk
Turbidity	AT	4721848	N/A	2016/10/28	Neil Dassanayake

Maxxam ID: DIC263 Dup
Sample ID: OW8-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	4724943	N/A	2016/10/31	Viorica Rotaru

Maxxam ID: DIC264
Sample ID: OW8-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721115	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721326	N/A	2016/11/02	Deonarine Ramnarine
Colour	SPEC	4724943	N/A	2016/10/31	Viorica Rotaru
Conductivity	AT	4721120	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721121	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4724761	N/A	2016/11/03	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/03	Automated Statchk

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC264
Sample ID: OW8-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Anion and Cation Sum	CALC	4719275	N/A	2016/11/03	Automated Statchk
Total Ammonia-N	LACH/NH4	4723405	N/A	2016/11/01	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4721498	N/A	2016/11/01	Chandra Nandlal
pH	AT	4721122	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721353	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/03	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/03	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721352	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/03	Automated Statchk
Turbidity	AT	4721848	N/A	2016/10/28	Neil Dassanayake

Maxxam ID: DIC264 Dup
Sample ID: OW8-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	4724761	N/A	2016/11/03	John Bowman

Maxxam ID: DIC265
Sample ID: OW9-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721423	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721326	N/A	2016/11/02	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721429	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721430	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4724761	N/A	2016/11/03	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/03	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/03	Automated Statchk
Total Ammonia-N	LACH/NH4	4723405	N/A	2016/11/01	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4721498	N/A	2016/11/01	Chandra Nandlal
pH	AT	4721432	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721353	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/03	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/03	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721352	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/03	Automated Statchk

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC265
Sample ID: OW9-1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Turbidity	AT	4721848	N/A	2016/10/28	Neil Dassanayake

Maxxam ID: DIC266
Sample ID: OW9-2
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721423	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4724943	N/A	2016/10/31	Viorica Rotaru
Conductivity	AT	4721429	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4722687	N/A	2016/10/28	Anastasia Hamanov
Fluoride	ISE	4721430	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4724761	N/A	2016/11/03	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/03	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/03	Automated Statchk
Total Ammonia-N	LACH/NH4	4723405	N/A	2016/11/01	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4721513	N/A	2016/11/01	Chandra Nandlal
pH	AT	4721432	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/03	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/03	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/03	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

Maxxam ID: DIC267
Sample ID: OW5-2-D
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4721423	N/A	2016/10/28	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721309	N/A	2016/10/31	Deonarine Ramnarine
Colour	SPEC	4721212	N/A	2016/10/28	Viorica Rotaru
Conductivity	AT	4721429	N/A	2016/10/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4719546	N/A	2016/10/27	Anastasia Hamanov
Fluoride	ISE	4721430	2016/10/27	2016/10/28	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	4724761	N/A	2016/11/03	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/03	Automated Statchk

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

TEST SUMMARY

Maxxam ID: DIC267
Sample ID: OW5-2-D
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Anion and Cation Sum	CALC	4719275	N/A	2016/11/03	Automated Statchk
Total Ammonia-N	LACH/NH4	4722953	N/A	2016/11/01	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4721513	N/A	2016/11/01	Chandra Nandlal
pH	AT	4721432	N/A	2016/10/28	Surinder Rai
Orthophosphate	KONE	4721316	N/A	2016/10/28	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4719375	N/A	2016/11/03	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4719376	N/A	2016/11/03	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4721315	N/A	2016/10/28	Alina Dobreanu
Tannins & Lignins	SPEC	4720895	N/A	2016/10/27	Louise Harding
Total Dissolved Solids (TDS calc)	CALC	4719377	N/A	2016/11/03	Automated Statchk
Turbidity	AT	4721104	N/A	2016/10/27	Neil Dassanayake

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
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GENERAL COMMENTS

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

Package 1	5.0°C
Package 2	4.7°C
Package 3	4.3°C

Sample DIC258-01 : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample DIC259-01 : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample DIC265-01 : Nitrite+Nitrate: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.
Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample DIC266-01 : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample DIC267-01 : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4719546	AHA	Matrix Spike [DIC258-04]	Dissolved Organic Carbon	2016/10/27		104	%	80 - 120
4719546	AHA	Spiked Blank	Dissolved Organic Carbon	2016/10/27		105	%	80 - 120
4719546	AHA	Method Blank	Dissolved Organic Carbon	2016/10/27	<0.20		mg/L	
4719546	AHA	RPD [DIC258-04]	Dissolved Organic Carbon	2016/10/27	NC		%	20
4720895	LHA	Matrix Spike [DIC225-01]	Tannins & Lignins	2016/10/27		93	%	80 - 120
4720895	LHA	Spiked Blank	Tannins & Lignins	2016/10/27		97	%	80 - 120
4720895	LHA	Method Blank	Tannins & Lignins	2016/10/27	<0.2		mg/L	
4720895	LHA	RPD [DIC225-01]	Tannins & Lignins	2016/10/27	NC		%	25
4720902	C_N	Matrix Spike [DIC228-01]	Nitrite (N)	2016/10/31		99	%	80 - 120
			Nitrate (N)	2016/10/31		93	%	80 - 120
4720902	C_N	Spiked Blank	Nitrite (N)	2016/10/31		101	%	80 - 120
			Nitrate (N)	2016/10/31		96	%	80 - 120
4720902	C_N	Method Blank	Nitrite (N)	2016/10/31	<0.010		mg/L	
			Nitrate (N)	2016/10/31	<0.10		mg/L	
4720902	C_N	RPD [DIC228-01]	Nitrite (N)	2016/10/31	NC		%	20
			Nitrate (N)	2016/10/31	NC		%	20
4720916	C_N	Matrix Spike	Nitrite (N)	2016/10/31		NC	%	80 - 120
			Nitrate (N)	2016/10/31		NC	%	80 - 120
4720916	C_N	Spiked Blank	Nitrite (N)	2016/10/31		102	%	80 - 120
			Nitrate (N)	2016/10/31		96	%	80 - 120
4720916	C_N	Method Blank	Nitrite (N)	2016/10/31	<0.010		mg/L	
			Nitrate (N)	2016/10/31	<0.10		mg/L	
4720916	C_N	RPD	Nitrite (N)	2016/10/31	0.32		%	20
			Nitrate (N)	2016/10/31	0.32		%	20
4721104	NYS	Spiked Blank	Turbidity	2016/10/27		101	%	85 - 115
4721104	NYS	Method Blank	Turbidity	2016/10/27	<0.1		NTU	
4721104	NYS	RPD [DIC228-01]	Turbidity	2016/10/27	9.1		%	20
4721115	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2016/10/28		96	%	85 - 115
4721115	SAU	Method Blank	Alkalinity (Total as CaCO3)	2016/10/28	<1.0		mg/L	
4721115	SAU	RPD	Alkalinity (Total as CaCO3)	2016/10/28	1.4		%	20
4721117	AHA	Matrix Spike	Dissolved Organic Carbon	2016/10/27		NC	%	80 - 120
4721117	AHA	Spiked Blank	Dissolved Organic Carbon	2016/10/27		102	%	80 - 120
4721117	AHA	Method Blank	Dissolved Organic Carbon	2016/10/27	0.31, RDL=0.20		mg/L	
4721117	AHA	RPD	Dissolved Organic Carbon	2016/10/27	2.6		%	20
4721120	SAU	Spiked Blank	Conductivity	2016/10/28		100	%	85 - 115
4721120	SAU	Method Blank	Conductivity	2016/10/28	<1.0		umho/c	
4721120	SAU	RPD	Conductivity	2016/10/28	0.32		%	25
4721121	SAU	Matrix Spike	Fluoride (F-)	2016/10/28		102	%	80 - 120
4721121	SAU	Spiked Blank	Fluoride (F-)	2016/10/28		103	%	80 - 120
4721121	SAU	Method Blank	Fluoride (F-)	2016/10/28	<0.10		mg/L	
4721121	SAU	RPD	Fluoride (F-)	2016/10/28	3.3		%	20
4721122	SAU	Spiked Blank	pH	2016/10/28		102	%	98 - 103
4721122	SAU	RPD	pH	2016/10/28	0.59		%	N/A
4721212	VRO	Spiked Blank	Colour	2016/10/28		98	%	80 - 120
4721212	VRO	Method Blank	Colour	2016/10/28	<2		TCU	
4721212	VRO	RPD	Colour	2016/10/28	NC		%	25
4721309	DRM	Matrix Spike	Dissolved Chloride (Cl)	2016/10/31		117	%	80 - 120
4721309	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/10/31		101	%	80 - 120
4721309	DRM	Method Blank	Dissolved Chloride (Cl)	2016/10/31	<1.0		mg/L	
4721309	DRM	RPD	Dissolved Chloride (Cl)	2016/10/31	NC		%	20
4721315	ADB	Matrix Spike	Dissolved Sulphate (SO4)	2016/10/28		112	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4721315	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2016/10/28		103	%	80 - 120
4721315	ADB	Method Blank	Dissolved Sulphate (SO4)	2016/10/28	<1.0		mg/L	
4721315	ADB	RPD	Dissolved Sulphate (SO4)	2016/10/28	NC		%	20
4721316	ADB	Matrix Spike	Orthophosphate (P)	2016/10/28		115	%	75 - 125
4721316	ADB	Spiked Blank	Orthophosphate (P)	2016/10/28		100	%	80 - 120
4721316	ADB	Method Blank	Orthophosphate (P)	2016/10/28	<0.010		mg/L	
4721316	ADB	RPD	Orthophosphate (P)	2016/10/28	NC		%	25
4721326	DRM	Matrix Spike	Dissolved Chloride (Cl)	2016/11/02		NC	%	80 - 120
4721326	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/11/02		103	%	80 - 120
4721326	DRM	Method Blank	Dissolved Chloride (Cl)	2016/11/02	<1.0		mg/L	
4721326	DRM	RPD	Dissolved Chloride (Cl)	2016/11/02	1.4		%	20
4721352	ADB	Matrix Spike	Dissolved Sulphate (SO4)	2016/10/28		NC	%	75 - 125
4721352	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2016/10/28		105	%	80 - 120
4721352	ADB	Method Blank	Dissolved Sulphate (SO4)	2016/10/28	<1.0		mg/L	
4721352	ADB	RPD	Dissolved Sulphate (SO4)	2016/10/28	2.4		%	20
4721353	ADB	Matrix Spike	Orthophosphate (P)	2016/10/28		85	%	75 - 125
4721353	ADB	Spiked Blank	Orthophosphate (P)	2016/10/28		100	%	80 - 120
4721353	ADB	Method Blank	Orthophosphate (P)	2016/10/28	<0.010		mg/L	
4721353	ADB	RPD	Orthophosphate (P)	2016/10/28	NC		%	25
4721400	AHA	Matrix Spike [DIC229-04]	Dissolved Organic Carbon	2016/10/27		102	%	80 - 120
4721400	AHA	Spiked Blank	Dissolved Organic Carbon	2016/10/27		104	%	80 - 120
4721400	AHA	Method Blank	Dissolved Organic Carbon	2016/10/27	<0.20		mg/L	
4721400	AHA	RPD [DIC229-04]	Dissolved Organic Carbon	2016/10/27	NC		%	20
4721423	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2016/10/28		99	%	85 - 115
4721423	SAU	Method Blank	Alkalinity (Total as CaCO3)	2016/10/28	<1.0		mg/L	
4721423	SAU	RPD	Alkalinity (Total as CaCO3)	2016/10/28	1.6		%	20
4721429	SAU	Spiked Blank	Conductivity	2016/10/28		101	%	85 - 115
4721429	SAU	Method Blank	Conductivity	2016/10/28	<1.0		umho/c	
4721429	SAU	RPD	Conductivity	2016/10/28	0.38		%	25
4721430	SAU	Matrix Spike	Fluoride (F-)	2016/10/28		105	%	80 - 120
4721430	SAU	Spiked Blank	Fluoride (F-)	2016/10/28		103	%	80 - 120
4721430	SAU	Method Blank	Fluoride (F-)	2016/10/28	<0.10		mg/L	
4721430	SAU	RPD	Fluoride (F-)	2016/10/28	NC		%	20
4721432	SAU	Spiked Blank	pH	2016/10/28		102	%	98 - 103
4721432	SAU	RPD	pH	2016/10/28	1.2		%	N/A
4721498	C_N	Matrix Spike	Nitrite (N)	2016/11/01		100	%	80 - 120
			Nitrate (N)	2016/11/01		NC	%	80 - 120
4721498	C_N	Spiked Blank	Nitrite (N)	2016/11/01		104	%	80 - 120
			Nitrate (N)	2016/11/01		96	%	80 - 120
4721498	C_N	Method Blank	Nitrite (N)	2016/11/01	<0.010		mg/L	
			Nitrate (N)	2016/11/01	<0.10		mg/L	
4721498	C_N	RPD	Nitrite (N)	2016/11/01	NC		%	20
			Nitrate (N)	2016/11/01	0.93		%	20
4721513	C_N	Matrix Spike [DIC267-01]	Nitrite (N)	2016/11/01		NC	%	80 - 120
			Nitrate (N)	2016/11/01		86	%	80 - 120
4721513	C_N	Spiked Blank	Nitrite (N)	2016/11/01		102	%	80 - 120
			Nitrate (N)	2016/11/01		93	%	80 - 120
4721513	C_N	Method Blank	Nitrite (N)	2016/11/01	<0.010		mg/L	
			Nitrate (N)	2016/11/01	<0.10		mg/L	
4721513	C_N	RPD	Nitrite (N)	2016/11/01	NC		%	20
			Nitrate (N)	2016/11/01	NC		%	20
4721517	COP	Matrix Spike	Total Ammonia-N	2016/10/29		96	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4721517	COP	Spiked Blank	Total Ammonia-N	2016/10/29		98	%	85 - 115
4721517	COP	Method Blank	Total Ammonia-N	2016/10/29	<0.050		mg/L	
4721517	COP	RPD	Total Ammonia-N	2016/10/29	NC		%	20
4721559	COP	Matrix Spike	Total Ammonia-N	2016/10/31		95	%	80 - 120
4721559	COP	Spiked Blank	Total Ammonia-N	2016/10/31		97	%	85 - 115
4721559	COP	Method Blank	Total Ammonia-N	2016/10/31	<0.050		mg/L	
4721559	COP	RPD	Total Ammonia-N	2016/10/31	NC		%	20
4721848	NYS	Spiked Blank	Turbidity	2016/10/28		99	%	85 - 115
4721848	NYS	Method Blank	Turbidity	2016/10/28	<0.1		NTU	
4721848	NYS	RPD	Turbidity	2016/10/28	NC		%	20
4722597	JBW	Matrix Spike	Dissolved Aluminum (Al)	2016/11/01		109	%	80 - 120
			Dissolved Antimony (Sb)	2016/11/01		108	%	80 - 120
			Dissolved Arsenic (As)	2016/11/01		105	%	80 - 120
			Dissolved Barium (Ba)	2016/11/01		106	%	80 - 120
			Dissolved Beryllium (Be)	2016/11/01		101	%	80 - 120
			Dissolved Boron (B)	2016/11/01		98	%	80 - 120
			Dissolved Cadmium (Cd)	2016/11/01		107	%	80 - 120
			Dissolved Calcium (Ca)	2016/11/01		NC	%	80 - 120
			Dissolved Chromium (Cr)	2016/11/01		102	%	80 - 120
			Dissolved Cobalt (Co)	2016/11/01		102	%	80 - 120
			Dissolved Copper (Cu)	2016/11/01		104	%	80 - 120
			Dissolved Iron (Fe)	2016/11/01		102	%	80 - 120
			Dissolved Lead (Pb)	2016/11/01		102	%	80 - 120
			Dissolved Magnesium (Mg)	2016/11/01		NC	%	80 - 120
			Dissolved Manganese (Mn)	2016/11/01		106	%	80 - 120
			Dissolved Molybdenum (Mo)	2016/11/01		109	%	80 - 120
			Dissolved Nickel (Ni)	2016/11/01		97	%	80 - 120
			Dissolved Phosphorus (P)	2016/11/01		103	%	80 - 120
			Dissolved Potassium (K)	2016/11/01		105	%	80 - 120
			Dissolved Selenium (Se)	2016/11/01		105	%	80 - 120
			Dissolved Silicon (Si)	2016/11/01		103	%	80 - 120
			Dissolved Silver (Ag)	2016/11/01		104	%	80 - 120
			Dissolved Sodium (Na)	2016/11/01		106	%	80 - 120
			Dissolved Strontium (Sr)	2016/11/01		NC	%	80 - 120
			Dissolved Thallium (Tl)	2016/11/01		103	%	80 - 120
			Dissolved Titanium (Ti)	2016/11/01		105	%	80 - 120
			Dissolved Uranium (U)	2016/11/01		104	%	80 - 120
			Dissolved Vanadium (V)	2016/11/01		104	%	80 - 120
			Dissolved Zinc (Zn)	2016/11/01		103	%	80 - 120
4722597	JBW	Spiked Blank	Dissolved Aluminum (Al)	2016/11/01		101	%	80 - 120
			Dissolved Antimony (Sb)	2016/11/01		101	%	80 - 120
			Dissolved Arsenic (As)	2016/11/01		98	%	80 - 120
			Dissolved Barium (Ba)	2016/11/01		95	%	80 - 120
			Dissolved Beryllium (Be)	2016/11/01		96	%	80 - 120
			Dissolved Boron (B)	2016/11/01		94	%	80 - 120
			Dissolved Cadmium (Cd)	2016/11/01		100	%	80 - 120
			Dissolved Calcium (Ca)	2016/11/01		96	%	80 - 120
			Dissolved Chromium (Cr)	2016/11/01		98	%	80 - 120
			Dissolved Cobalt (Co)	2016/11/01		97	%	80 - 120
			Dissolved Copper (Cu)	2016/11/01		98	%	80 - 120
			Dissolved Iron (Fe)	2016/11/01		96	%	80 - 120
			Dissolved Lead (Pb)	2016/11/01		98	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Magnesium (Mg)	2016/11/01		98	%	80 - 120
			Dissolved Manganese (Mn)	2016/11/01		94	%	80 - 120
			Dissolved Molybdenum (Mo)	2016/11/01		102	%	80 - 120
			Dissolved Nickel (Ni)	2016/11/01		93	%	80 - 120
			Dissolved Phosphorus (P)	2016/11/01		96	%	80 - 120
			Dissolved Potassium (K)	2016/11/01		98	%	80 - 120
			Dissolved Selenium (Se)	2016/11/01		98	%	80 - 120
			Dissolved Silicon (Si)	2016/11/01		97	%	80 - 120
			Dissolved Silver (Ag)	2016/11/01		99	%	80 - 120
			Dissolved Sodium (Na)	2016/11/01		98	%	80 - 120
			Dissolved Strontium (Sr)	2016/11/01		97	%	80 - 120
			Dissolved Thallium (Tl)	2016/11/01		96	%	80 - 120
			Dissolved Titanium (Ti)	2016/11/01		98	%	80 - 120
			Dissolved Uranium (U)	2016/11/01		98	%	80 - 120
			Dissolved Vanadium (V)	2016/11/01		97	%	80 - 120
			Dissolved Zinc (Zn)	2016/11/01		96	%	80 - 120
4722597	JBW	Method Blank	Dissolved Aluminum (Al)	2016/11/01	<5.0		ug/L	
			Dissolved Antimony (Sb)	2016/11/01	<0.50		ug/L	
			Dissolved Arsenic (As)	2016/11/01	<1.0		ug/L	
			Dissolved Barium (Ba)	2016/11/01	<2.0		ug/L	
			Dissolved Beryllium (Be)	2016/11/01	<0.50		ug/L	
			Dissolved Boron (B)	2016/11/01	<10		ug/L	
			Dissolved Cadmium (Cd)	2016/11/01	<0.10		ug/L	
			Dissolved Calcium (Ca)	2016/11/01	<200		ug/L	
			Dissolved Chromium (Cr)	2016/11/01	<5.0		ug/L	
			Dissolved Cobalt (Co)	2016/11/01	<0.50		ug/L	
			Dissolved Copper (Cu)	2016/11/01	<1.0		ug/L	
			Dissolved Iron (Fe)	2016/11/01	<100		ug/L	
			Dissolved Lead (Pb)	2016/11/01	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2016/11/01	<50		ug/L	
			Dissolved Manganese (Mn)	2016/11/01	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2016/11/01	<0.50		ug/L	
			Dissolved Nickel (Ni)	2016/11/01	<1.0		ug/L	
			Dissolved Phosphorus (P)	2016/11/01	<100		ug/L	
			Dissolved Potassium (K)	2016/11/01	<200		ug/L	
			Dissolved Selenium (Se)	2016/11/01	<2.0		ug/L	
			Dissolved Silicon (Si)	2016/11/01	<50		ug/L	
			Dissolved Silver (Ag)	2016/11/01	<0.10		ug/L	
			Dissolved Sodium (Na)	2016/11/01	<100		ug/L	
			Dissolved Strontium (Sr)	2016/11/01	<1.0		ug/L	
			Dissolved Thallium (Tl)	2016/11/01	<0.050		ug/L	
			Dissolved Titanium (Ti)	2016/11/01	<5.0		ug/L	
			Dissolved Uranium (U)	2016/11/01	<0.10		ug/L	
			Dissolved Vanadium (V)	2016/11/01	<0.50		ug/L	
			Dissolved Zinc (Zn)	2016/11/01	<5.0		ug/L	
4722597	JBW	RPD	Dissolved Arsenic (As)	2016/11/01	NC		%	20
			Dissolved Barium (Ba)	2016/11/01	1.1		%	20
			Dissolved Boron (B)	2016/11/01	NC		%	20
			Dissolved Cadmium (Cd)	2016/11/01	NC		%	20
			Dissolved Calcium (Ca)	2016/11/01	2.2		%	20
			Dissolved Chromium (Cr)	2016/11/01	NC		%	20
			Dissolved Copper (Cu)	2016/11/01	NC		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Iron (Fe)	2016/11/01	2.3		%	20
			Dissolved Lead (Pb)	2016/11/01	NC		%	20
			Dissolved Magnesium (Mg)	2016/11/01	0.40		%	20
			Dissolved Manganese (Mn)	2016/11/01	0.84		%	20
			Dissolved Potassium (K)	2016/11/01	NC		%	20
			Dissolved Sodium (Na)	2016/11/01	0.98		%	20
			Dissolved Zinc (Zn)	2016/11/01	NC		%	20
4722687	AHA	Matrix Spike	Dissolved Organic Carbon	2016/10/28		100	%	80 - 120
4722687	AHA	Spiked Blank	Dissolved Organic Carbon	2016/10/28		101	%	80 - 120
4722687	AHA	Method Blank	Dissolved Organic Carbon	2016/10/28	0.29, RDL=0.20		mg/L	
4722687	AHA	RPD	Dissolved Organic Carbon	2016/10/28	5.9		%	20
4722953	COP	Matrix Spike	Total Ammonia-N	2016/11/01		99	%	80 - 120
4722953	COP	Spiked Blank	Total Ammonia-N	2016/11/01		98	%	85 - 115
4722953	COP	Method Blank	Total Ammonia-N	2016/11/01	<0.050		mg/L	
4722953	COP	RPD	Total Ammonia-N	2016/11/01	NC		%	20
4723061	COP	Matrix Spike [DIC260-02]	Total Ammonia-N	2016/10/31		NC	%	80 - 120
4723061	COP	Spiked Blank	Total Ammonia-N	2016/10/31		97	%	85 - 115
4723061	COP	Method Blank	Total Ammonia-N	2016/10/31	<0.050		mg/L	
4723061	COP	RPD [DIC260-02]	Total Ammonia-N	2016/10/31	0.14		%	20
4723405	COP	Matrix Spike [DIC258-02]	Total Ammonia-N	2016/11/01		NC	%	80 - 120
4723405	COP	Spiked Blank	Total Ammonia-N	2016/11/01		98	%	85 - 115
4723405	COP	Method Blank	Total Ammonia-N	2016/11/01	<0.050		mg/L	
4723405	COP	RPD [DIC258-02]	Total Ammonia-N	2016/11/01	0.54		%	20
4723500	AHA	Matrix Spike	Dissolved Organic Carbon	2016/10/28		105	%	80 - 120
4723500	AHA	Spiked Blank	Dissolved Organic Carbon	2016/10/28		106	%	80 - 120
4723500	AHA	Method Blank	Dissolved Organic Carbon	2016/10/28	<0.20		mg/L	
4723500	AHA	RPD	Dissolved Organic Carbon	2016/10/28	1.0		%	20
4724761	JBW	Matrix Spike [DIC264-03]	Dissolved Aluminum (Al)	2016/11/02		108	%	80 - 120
			Dissolved Antimony (Sb)	2016/11/02		109	%	80 - 120
			Dissolved Arsenic (As)	2016/11/02		106	%	80 - 120
			Dissolved Barium (Ba)	2016/11/02		NC	%	80 - 120
			Dissolved Beryllium (Be)	2016/11/02		106	%	80 - 120
			Dissolved Boron (B)	2016/11/02		NC	%	80 - 120
			Dissolved Cadmium (Cd)	2016/11/02		109	%	80 - 120
			Dissolved Calcium (Ca)	2016/11/02		NC	%	80 - 120
			Dissolved Chromium (Cr)	2016/11/02		106	%	80 - 120
			Dissolved Cobalt (Co)	2016/11/02		104	%	80 - 120
			Dissolved Copper (Cu)	2016/11/02		105	%	80 - 120
			Dissolved Iron (Fe)	2016/11/02		105	%	80 - 120
			Dissolved Lead (Pb)	2016/11/02		101	%	80 - 120
			Dissolved Magnesium (Mg)	2016/11/02		NC	%	80 - 120
			Dissolved Manganese (Mn)	2016/11/02		109	%	80 - 120
			Dissolved Molybdenum (Mo)	2016/11/02		114	%	80 - 120
			Dissolved Nickel (Ni)	2016/11/02		97	%	80 - 120
			Dissolved Phosphorus (P)	2016/11/02		114	%	80 - 120
			Dissolved Potassium (K)	2016/11/02		NC	%	80 - 120
			Dissolved Selenium (Se)	2016/11/02		97	%	80 - 120
			Dissolved Silicon (Si)	2016/11/02		106	%	80 - 120
			Dissolved Silver (Ag)	2016/11/02		87	%	80 - 120
			Dissolved Sodium (Na)	2016/11/02		NC	%	80 - 120
			Dissolved Strontium (Sr)	2016/11/02		NC	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Thallium (Tl)	2016/11/02		99	%	80 - 120
			Dissolved Titanium (Ti)	2016/11/02		110	%	80 - 120
			Dissolved Uranium (U)	2016/11/02		103	%	80 - 120
			Dissolved Vanadium (V)	2016/11/02		109	%	80 - 120
			Dissolved Zinc (Zn)	2016/11/02		98	%	80 - 120
4724761	JBW	Spiked Blank	Dissolved Aluminum (Al)	2016/11/02		101	%	80 - 120
			Dissolved Antimony (Sb)	2016/11/02		99	%	80 - 120
			Dissolved Arsenic (As)	2016/11/02		97	%	80 - 120
			Dissolved Barium (Ba)	2016/11/02		102	%	80 - 120
			Dissolved Beryllium (Be)	2016/11/02		102	%	80 - 120
			Dissolved Boron (B)	2016/11/02		98	%	80 - 120
			Dissolved Cadmium (Cd)	2016/11/02		100	%	80 - 120
			Dissolved Calcium (Ca)	2016/11/02		96	%	80 - 120
			Dissolved Chromium (Cr)	2016/11/02		98	%	80 - 120
			Dissolved Cobalt (Co)	2016/11/02		98	%	80 - 120
			Dissolved Copper (Cu)	2016/11/02		98	%	80 - 120
			Dissolved Iron (Fe)	2016/11/02		98	%	80 - 120
			Dissolved Lead (Pb)	2016/11/02		96	%	80 - 120
			Dissolved Magnesium (Mg)	2016/11/02		97	%	80 - 120
			Dissolved Manganese (Mn)	2016/11/02		95	%	80 - 120
			Dissolved Molybdenum (Mo)	2016/11/02		101	%	80 - 120
			Dissolved Nickel (Ni)	2016/11/02		92	%	80 - 120
			Dissolved Phosphorus (P)	2016/11/02		104	%	80 - 120
			Dissolved Potassium (K)	2016/11/02		98	%	80 - 120
			Dissolved Selenium (Se)	2016/11/02		97	%	80 - 120
			Dissolved Silicon (Si)	2016/11/02		100	%	80 - 120
			Dissolved Silver (Ag)	2016/11/02		93	%	80 - 120
			Dissolved Sodium (Na)	2016/11/02		96	%	80 - 120
			Dissolved Strontium (Sr)	2016/11/02		98	%	80 - 120
			Dissolved Thallium (Tl)	2016/11/02		95	%	80 - 120
			Dissolved Titanium (Ti)	2016/11/02		102	%	80 - 120
			Dissolved Uranium (U)	2016/11/02		99	%	80 - 120
			Dissolved Vanadium (V)	2016/11/02		96	%	80 - 120
			Dissolved Zinc (Zn)	2016/11/02		93	%	80 - 120
4724761	JBW	Method Blank	Dissolved Aluminum (Al)	2016/11/02	<5.0		ug/L	
			Dissolved Antimony (Sb)	2016/11/02	<0.50		ug/L	
			Dissolved Arsenic (As)	2016/11/02	<1.0		ug/L	
			Dissolved Barium (Ba)	2016/11/02	<2.0		ug/L	
			Dissolved Beryllium (Be)	2016/11/02	<0.50		ug/L	
			Dissolved Boron (B)	2016/11/02	<10		ug/L	
			Dissolved Cadmium (Cd)	2016/11/02	<0.10		ug/L	
			Dissolved Calcium (Ca)	2016/11/02	<200		ug/L	
			Dissolved Chromium (Cr)	2016/11/02	<5.0		ug/L	
			Dissolved Cobalt (Co)	2016/11/02	<0.50		ug/L	
			Dissolved Copper (Cu)	2016/11/02	<1.0		ug/L	
			Dissolved Iron (Fe)	2016/11/02	<100		ug/L	
			Dissolved Lead (Pb)	2016/11/02	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2016/11/02	<50		ug/L	
			Dissolved Manganese (Mn)	2016/11/02	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2016/11/02	<0.50		ug/L	
			Dissolved Nickel (Ni)	2016/11/02	<1.0		ug/L	
			Dissolved Phosphorus (P)	2016/11/02	<100		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Potassium (K)	2016/11/02	<200		ug/L	
			Dissolved Selenium (Se)	2016/11/02	<2.0		ug/L	
			Dissolved Silicon (Si)	2016/11/02	<50		ug/L	
			Dissolved Silver (Ag)	2016/11/02	<0.10		ug/L	
			Dissolved Sodium (Na)	2016/11/02	<100		ug/L	
			Dissolved Strontium (Sr)	2016/11/02	<1.0		ug/L	
			Dissolved Thallium (Tl)	2016/11/02	<0.050		ug/L	
			Dissolved Titanium (Ti)	2016/11/02	<5.0		ug/L	
			Dissolved Uranium (U)	2016/11/02	<0.10		ug/L	
			Dissolved Vanadium (V)	2016/11/02	<0.50		ug/L	
			Dissolved Zinc (Zn)	2016/11/02	<5.0		ug/L	
4724761	JBW	RPD [DIC264-03]	Dissolved Aluminum (Al)	2016/11/03	NC		%	20
			Dissolved Antimony (Sb)	2016/11/03	NC		%	20
			Dissolved Arsenic (As)	2016/11/03	NC		%	20
			Dissolved Barium (Ba)	2016/11/03	1.7		%	20
			Dissolved Beryllium (Be)	2016/11/03	NC		%	20
			Dissolved Boron (B)	2016/11/03	0.40		%	20
			Dissolved Cadmium (Cd)	2016/11/03	NC		%	20
			Dissolved Calcium (Ca)	2016/11/03	3.8		%	20
			Dissolved Chromium (Cr)	2016/11/03	NC		%	20
			Dissolved Cobalt (Co)	2016/11/03	NC		%	20
			Dissolved Copper (Cu)	2016/11/03	NC		%	20
			Dissolved Iron (Fe)	2016/11/03	NC		%	20
			Dissolved Lead (Pb)	2016/11/03	NC		%	20
			Dissolved Magnesium (Mg)	2016/11/03	1.7		%	20
			Dissolved Manganese (Mn)	2016/11/03	3.6		%	20
			Dissolved Molybdenum (Mo)	2016/11/03	NC		%	20
			Dissolved Nickel (Ni)	2016/11/03	NC		%	20
			Dissolved Phosphorus (P)	2016/11/03	NC		%	20
			Dissolved Potassium (K)	2016/11/03	1.4		%	20
			Dissolved Selenium (Se)	2016/11/03	NC		%	20
			Dissolved Silicon (Si)	2016/11/03	5.4		%	20
			Dissolved Silver (Ag)	2016/11/03	NC		%	20
			Dissolved Sodium (Na)	2016/11/03	2.4		%	20
			Dissolved Strontium (Sr)	2016/11/03	0.68		%	20
			Dissolved Thallium (Tl)	2016/11/03	NC		%	20
			Dissolved Titanium (Ti)	2016/11/03	NC		%	20
			Dissolved Uranium (U)	2016/11/03	NC		%	20
			Dissolved Vanadium (V)	2016/11/03	NC		%	20
			Dissolved Zinc (Zn)	2016/11/03	NC		%	20
4724943	VRO	Spiked Blank	Colour	2016/10/31		99	%	80 - 120
4724943	VRO	Method Blank	Colour	2016/10/31	<2		TCU	

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4724943	VRO	RPD [DIC263-01]	Colour	2016/10/31	NC		%	25

N/A = Not Applicable

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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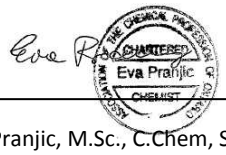
Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

VALIDATION SIGNATURE PAGE

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



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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

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Maxxam Job #: B6N1527
Report Date: 2016/11/04

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DEH

Exceedence Summary Table – ODWS (2002)

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
DW1	DIC225-03	Dissolved Sodium (Na)	20000	33000	100	ug/L
DW2	DIC226-03	Dissolved Sodium (Na)	20000	30000	100	ug/L
DW3	DIC227-03	Dissolved Sodium (Na)	20000	120000	100	ug/L
OW4-2-D	DIC228-03	Dissolved Sodium (Na)	20000	250000	100	ug/L
TW1-1	DIC230-03	Dissolved Sodium (Na)	20000	320000	100	ug/L
OW4-1	DIC232-03	Dissolved Sodium (Na)	20000	150000	100	ug/L
OW4-2	DIC233-03	Dissolved Sodium (Na)	20000	260000	100	ug/L
OW5-1	DIC234-03	Dissolved Sodium (Na)	20000	64000	100	ug/L
OW5-2	DIC258-03	Dissolved Sodium (Na)	20000	3900000	1000	ug/L
OW5-3	DIC259-03	Dissolved Sodium (Na)	20000	4300000	1000	ug/L
OW6-2	DIC260-03	Dissolved Sodium (Na)	20000	770000	500	ug/L
OW7-1	DIC261-03	Dissolved Sodium (Na)	20000	28000	100	ug/L
OW7-2	DIC262-03	Dissolved Sodium (Na)	20000	44000	100	ug/L
OW8-1	DIC263-03	Dissolved Sodium (Na)	20000	480000	100	ug/L
OW8-2	DIC264-03	Dissolved Sodium (Na)	20000	710000	500	ug/L
OW8-2	DIC264-03-Lab Dup	Dissolved Sodium (Na)	20000	730000	500	ug/L
OW9-1	DIC265-03	Dissolved Barium (Ba)	1000	2300	20	ug/L
OW9-1	DIC265-03	Dissolved Sodium (Na)	20000	11000000	10000	ug/L
OW9-2	DIC266-03	Dissolved Sodium (Na)	20000	2200000	500	ug/L
OW5-2-D	DIC267-03	Dissolved Sodium (Na)	20000	3800000	1000	ug/L

Detection Limit Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
OW5-2	DIC258-03	Dissolved Selenium (Se)	10	<20	20	ug/L
OW5-3	DIC259-03	Dissolved Selenium (Se)	10	<20	20	ug/L
OW9-1	DIC265-03	Dissolved Selenium (Se)	10	<20	20	ug/L
OW5-2-D	DIC267-03	Dissolved Selenium (Se)	10	<20	20	ug/L

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 583851-01-01

Attention:Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
L4N 8X1

Report Date: 2016/11/08
Report #: R4240138
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N1506
Received: 2016/10/26, 09:23

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/11/02	CAM SOP-00448	SM 22 2320 B m
Carbonate, Bicarbonate and Hydroxide	2	N/A	2016/11/02	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	2	N/A	2016/10/28	CAM SOP-00463	EPA 325.2 m
Conductivity	2	N/A	2016/11/02	CAM SOP-00414	SM 22 2510 m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2016/10/29	CAM SOP-00446	SM 22 5310 B m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2016/10/31	CAM SOP-00446	SM 22 5310 B m
Fluoride	2	2016/11/01	2016/11/02	CAM SOP-00449	SM 22 4500-F C m
Hardness (calculated as CaCO3)	2	N/A	2016/11/02	CAM SOP 00102/00408/00447	SM 2340 B
Total Metals Analysis by ICPMS	2	N/A	2016/11/08	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	2	N/A	2016/11/02		
Anion and Cation Sum	2	N/A	2016/11/02		
Total Ammonia-N	2	N/A	2016/10/31	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	1	N/A	2016/10/31	CAM SOP-00440	SM 22 4500-NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (2)	1	N/A	2016/11/01	CAM SOP-00440	SM 22 4500-NO3I/NO2B
Total Oil and Grease	2	2016/10/31	2016/10/31	CAM SOP-00326	EPA1664B m,SM5520A m
pH	2	N/A	2016/11/02	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/10/28	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/10/28	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	2	2016/10/28	2016/10/31	CAM SOP-00428	SM 22 2540C m
Total Kjeldahl Nitrogen in Water	2	2016/10/27	2016/11/01	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2016/10/28	2016/10/31	CAM SOP-00407	SM 22 4500 P B H m
Total Suspended Solids	2	2016/10/28	2016/10/31	CAM SOP-00428	SM 22 2540D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported:

Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 583851-01-01

Attention:Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
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L4N 8X1

Report Date: 2016/11/08
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Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N1506
Received: 2016/10/26, 09:23
unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6N1506
Report Date: 2016/11/08

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

Maxxam ID			DIC145		DIC146	DIC146		
Sampling Date			2016/10/25 09:30		2016/10/25 15:15	2016/10/25 15:15		
COC Number			583851-01-01		583851-01-01	583851-01-01		
	UNITS	Criteria	POND	QC Batch	SW1	SW1 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	-	22.9	4719275	22.7		N/A	4719275
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	88	4718410	86		1.0	4718410
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	<1.0	4718410	<1.0		1.0	4718410
Cation Sum	me/L	-	23.7	4719275	23.8		N/A	4719275
Hardness (CaCO3)	mg/L	-	460	4718406	460		1.0	4718406
Ion Balance (% Difference)	%	-	1.66	4718407	2.21		N/A	4718407
Inorganics								
Total Ammonia-N	mg/L	-	0.35	4723061	0.34		0.050	4723061
Conductivity	mS/cm	-	2.43	4728059	2.42	2.42	0.001	4728059
Total Dissolved Solids	mg/L	-	1460	4722839	1520		10	4722839
Fluoride (F-)	mg/L	-	0.90	4728060	0.85	0.86	0.10	4728060
Total Kjeldahl Nitrogen (TKN)	mg/L	-	0.73	4721972	0.60		0.10	4721854
Dissolved Organic Carbon	mg/L	-	6.4	4724532	6.3		0.20	4726407
pH	pH	6.5:8.5	7.98	4728058	7.86	7.98		4728058
Phenols-4AAP	mg/L	0.001	<0.0010	4722609	<0.0010		0.0010	4722609
Total Phosphorus	mg/L	0.01	**0.025**	4723277	**<0.020 (1)**		0.020	4723277
Total Suspended Solids	mg/L	-	11	4722829	13		10	4722829
Dissolved Sulphate (SO4)	mg/L	-	390	4721703	390		1.0	4721703
Alkalinity (Total as CaCO3)	mg/L	-	88	4727963	87	88	1.0	4727963
Dissolved Chloride (Cl)	mg/L	-	460	4721702	450		5.0	4721702
Nitrite (N)	mg/L	-	0.107	4724635	0.103		0.010	4724626
Nitrate (N)	mg/L	-	1.71	4724635	1.61		0.10	4724626
Nitrate + Nitrite (N)	mg/L	-	1.81	4724635	1.71		0.10	4724626
Petroleum Hydrocarbons								
Total Oil & Grease	mg/L	-	1.1	4725382	1.3		0.50	4725382

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
(1) RDL exceeds criteria

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Maxxam Job #: B6N1506
Report Date: 2016/11/08

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DH

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID			DIC145	DIC146		
Sampling Date			2016/10/25 09:30	2016/10/25 15:15		
COC Number			583851-01-01	583851-01-01		
	UNITS	Criteria	POND	SW1	RDL	QC Batch
Metals						
Total Arsenic (As)	ug/L	100	<1.0	<1.0	1.0	4738181
Total Cadmium (Cd)	ug/L	0.2	<0.10	<0.10	0.10	4738181
Total Calcium (Ca)	ug/L	-	84000	85000	200	4738181
Total Chromium (Cr)	ug/L	-	<5.0	<5.0	5.0	4738181
Total Copper (Cu)	ug/L	5	<1.0	<1.0	1.0	4738181
Total Iron (Fe)	ug/L	300	<100	<100	100	4738181
Total Lead (Pb)	ug/L	5	<0.50	<0.50	0.50	4738181
Total Magnesium (Mg)	ug/L	-	57000	58000	50	4738181
Total Manganese (Mn)	ug/L	-	3.2	6.8	2.0	4738181
Total Nickel (Ni)	ug/L	25	<1.0	1.0	1.0	4738181
Total Potassium (K)	ug/L	-	18000	18000	200	4738181
Total Sodium (Na)	ug/L	-	310000	310000	100	4738181
Total Zinc (Zn)	ug/L	30	<5.0	<5.0	5.0	4738181

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Maxxam Job #: B6N1506
Report Date: 2016/11/08

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DH

TEST SUMMARY

Maxxam ID: DIC145
Sample ID: POND
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4727963	N/A	2016/11/02	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/11/02	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721702	N/A	2016/10/28	Deonarine Ramnarine
Conductivity	AT	4728059	N/A	2016/11/02	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4724532	N/A	2016/10/29	Anastasia Hamanov
Fluoride	ISE	4728060	2016/11/01	2016/11/02	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/02	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	4738181	N/A	2016/11/08	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/02	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/02	Automated Statchk
Total Ammonia-N	LACH/NH4	4723061	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4724635	N/A	2016/10/31	Chandra Nandlal
Total Oil and Grease	BAL	4725382	2016/10/31	2016/10/31	Francis Afonso
pH	AT	4728058	N/A	2016/11/02	Surinder Rai
Phenols (4AAP)	TECH/PHEN	4722609	N/A	2016/10/28	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	4721703	N/A	2016/10/28	Deonarine Ramnarine
Total Dissolved Solids	BAL	4722839	2016/10/28	2016/10/31	Zahid Soikot
Total Kjeldahl Nitrogen in Water	SKAL	4721972	2016/10/27	2016/11/01	Amarinder Sawhney
Total Phosphorus (Colourimetric)	LACH/P	4723277	2016/10/28	2016/10/31	Sarabjit Raina
Total Suspended Solids	BAL	4722829	2016/10/28	2016/10/31	Zahid Soikot

Maxxam ID: DIC146
Sample ID: SW1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4727963	N/A	2016/11/02	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4718410	N/A	2016/11/02	Automated Statchk
Chloride by Automated Colourimetry	KONE	4721702	N/A	2016/10/28	Deonarine Ramnarine
Conductivity	AT	4728059	N/A	2016/11/02	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4726407	N/A	2016/10/31	Anastasia Hamanov
Fluoride	ISE	4728060	2016/11/01	2016/11/02	Surinder Rai
Hardness (calculated as CaCO3)		4718406	N/A	2016/11/02	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	4738181	N/A	2016/11/08	John Bowman
Ion Balance (% Difference)	CALC	4718407	N/A	2016/11/02	Automated Statchk
Anion and Cation Sum	CALC	4719275	N/A	2016/11/02	Automated Statchk
Total Ammonia-N	LACH/NH4	4723061	N/A	2016/10/31	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4724626	N/A	2016/11/01	Chandra Nandlal
Total Oil and Grease	BAL	4725382	2016/10/31	2016/10/31	Francis Afonso
pH	AT	4728058	N/A	2016/11/02	Surinder Rai
Phenols (4AAP)	TECH/PHEN	4722609	N/A	2016/10/28	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	4721703	N/A	2016/10/28	Deonarine Ramnarine
Total Dissolved Solids	BAL	4722839	2016/10/28	2016/10/31	Zahid Soikot
Total Kjeldahl Nitrogen in Water	SKAL	4721854	2016/10/27	2016/11/01	Rajni Tyagi

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Maxxam Job #: B6N1506
Report Date: 2016/11/08

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DH

TEST SUMMARY

Maxxam ID: DIC146
Sample ID: SW1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	LACH/P	4723277	2016/10/28	2016/10/31	Sarabjit Raina
Total Suspended Solids	BAL	4722829	2016/10/28	2016/10/31	Zahid Soikot

Maxxam ID: DIC146 Dup
Sample ID: SW1
Matrix: Water

Collected: 2016/10/25
Shipped:
Received: 2016/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4727963	N/A	2016/11/02	Surinder Rai
Conductivity	AT	4728059	N/A	2016/11/02	Surinder Rai
Fluoride	ISE	4728060	2016/11/01	2016/11/02	Surinder Rai
pH	AT	4728058	N/A	2016/11/02	Surinder Rai

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Maxxam Job #: B6N1506
Report Date: 2016/11/08

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
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GENERAL COMMENTS

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

Package 1	4.0°C
Package 2	4.7°C
Package 3	4.3°C

Results relate only to the items tested.

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Maxxam Job #: B6N1506
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Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4721702	DRM	Matrix Spike	Dissolved Chloride (Cl)	2016/10/28		NC	%	80 - 120
4721702	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/10/28		103	%	80 - 120
4721702	DRM	Method Blank	Dissolved Chloride (Cl)	2016/10/28	<1.0		mg/L	
4721702	DRM	RPD	Dissolved Chloride (Cl)	2016/10/28	0.41		%	20
4721703	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2016/10/28		NC	%	75 - 125
4721703	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2016/10/28		102	%	80 - 120
4721703	DRM	Method Blank	Dissolved Sulphate (SO4)	2016/10/28	<1.0		mg/L	
4721703	DRM	RPD	Dissolved Sulphate (SO4)	2016/10/28	1.4		%	20
4721854	RTY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2016/11/01		105	%	80 - 120
4721854	RTY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2016/11/01		99	%	80 - 120
4721854	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2016/11/01		93	%	80 - 120
4721854	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2016/11/01	<0.10		mg/L	
4721854	RTY	RPD	Total Kjeldahl Nitrogen (TKN)	2016/11/01	NC		%	20
4721972	AAY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2016/11/02		NC	%	80 - 120
4721972	AAY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2016/11/01		95	%	80 - 120
4721972	AAY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2016/11/01		108	%	80 - 120
4721972	AAY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2016/11/01	<0.10		mg/L	
4721972	AAY	RPD	Total Kjeldahl Nitrogen (TKN)	2016/11/02	NC		%	20
4722609	BMO	Matrix Spike	Phenols-4AAP	2016/10/28		91	%	80 - 120
4722609	BMO	Spiked Blank	Phenols-4AAP	2016/10/28		100	%	85 - 115
4722609	BMO	Method Blank	Phenols-4AAP	2016/10/28	<0.0010		mg/L	
4722609	BMO	RPD	Phenols-4AAP	2016/10/28	NC		%	20
4722829	ZSK	QC Standard	Total Suspended Solids	2016/10/31		98	%	85 - 115
4722829	ZSK	Method Blank	Total Suspended Solids	2016/10/31	<10		mg/L	
4722829	ZSK	RPD	Total Suspended Solids	2016/10/31	NC		%	25
4722839	ZSK	QC Standard	Total Dissolved Solids	2016/10/31		101	%	90 - 110
4722839	ZSK	Method Blank	Total Dissolved Solids	2016/10/31	<10		mg/L	
4722839	ZSK	RPD	Total Dissolved Solids	2016/10/31	17		%	25
4723061	COP	Matrix Spike	Total Ammonia-N	2016/10/31		NC	%	80 - 120
4723061	COP	Spiked Blank	Total Ammonia-N	2016/10/31		97	%	85 - 115
4723061	COP	Method Blank	Total Ammonia-N	2016/10/31	<0.050		mg/L	
4723061	COP	RPD	Total Ammonia-N	2016/10/31	0.14		%	20
4723277	SNR	Matrix Spike	Total Phosphorus	2016/10/31		102	%	80 - 120
4723277	SNR	QC Standard	Total Phosphorus	2016/10/31		103	%	80 - 120
4723277	SNR	Spiked Blank	Total Phosphorus	2016/10/31		102	%	80 - 120
4723277	SNR	Method Blank	Total Phosphorus	2016/10/31	<0.020		mg/L	
4723277	SNR	RPD	Total Phosphorus	2016/10/31	NC		%	20
4724532	AHA	Matrix Spike	Dissolved Organic Carbon	2016/10/29		NC	%	80 - 120
4724532	AHA	Spiked Blank	Dissolved Organic Carbon	2016/10/29		101	%	80 - 120
4724532	AHA	Method Blank	Dissolved Organic Carbon	2016/10/29	0.20, RDL=0.20		mg/L	
4724532	AHA	RPD	Dissolved Organic Carbon	2016/10/29	2.2		%	20
4724626	C_N	Matrix Spike	Nitrite (N)	2016/11/01		100	%	80 - 120
			Nitrate (N)	2016/11/01		82	%	80 - 120
4724626	C_N	Spiked Blank	Nitrite (N)	2016/11/01		104	%	80 - 120
			Nitrate (N)	2016/11/01		93	%	80 - 120
4724626	C_N	Method Blank	Nitrite (N)	2016/11/01	<0.010		mg/L	
			Nitrate (N)	2016/11/01	<0.10		mg/L	
4724626	C_N	RPD	Nitrite (N)	2016/11/01	NC		%	20
			Nitrate (N)	2016/11/01	13		%	20
4724635	C_N	Matrix Spike	Nitrite (N)	2016/10/31		NC	%	80 - 120
			Nitrate (N)	2016/10/31		NC	%	80 - 120

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Maxxam Job #: B6N1506
Report Date: 2016/11/08

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: DH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4724635	C_N	Spiked Blank	Nitrite (N)	2016/10/31		100	%	80 - 120
			Nitrate (N)	2016/10/31		94	%	80 - 120
4724635	C_N	Method Blank	Nitrite (N)	2016/10/31	<0.010		mg/L	
			Nitrate (N)	2016/10/31	<0.10		mg/L	
4724635	C_N	RPD	Nitrite (N)	2016/10/31	1.2		%	20
			Nitrate (N)	2016/10/31	0.45		%	20
4725382	FA	Spiked Blank	Total Oil & Grease	2016/10/31		98	%	85 - 115
4725382	FA	RPD	Total Oil & Grease	2016/10/31	2.9		%	25
4725382	FA	Method Blank	Total Oil & Grease	2016/10/31	<0.50		mg/L	
4726407	AHA	Matrix Spike	Dissolved Organic Carbon	2016/10/31		103	%	80 - 120
4726407	AHA	Spiked Blank	Dissolved Organic Carbon	2016/10/31		103	%	80 - 120
4726407	AHA	Method Blank	Dissolved Organic Carbon	2016/10/31	<0.20		mg/L	
4726407	AHA	RPD	Dissolved Organic Carbon	2016/10/31	8.9		%	20
4727963	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2016/11/02		96	%	85 - 115
4727963	SAU	Method Blank	Alkalinity (Total as CaCO3)	2016/11/02	<1.0		mg/L	
4727963	SAU	RPD [DIC146-02]	Alkalinity (Total as CaCO3)	2016/11/02	2.2		%	20
4728058	SAU	Spiked Blank	pH	2016/11/02		102	%	98 - 103
4728058	SAU	RPD [DIC146-02]	pH	2016/11/02	1.5		%	N/A
4728059	SAU	Spiked Blank	Conductivity	2016/11/02		101	%	85 - 115
4728059	SAU	Method Blank	Conductivity	2016/11/02	<0.001		mS/cm	
4728059	SAU	RPD [DIC146-02]	Conductivity	2016/11/02	0		%	25
4728060	SAU	Matrix Spike [DIC146-02]	Fluoride (F-)	2016/11/02		106	%	80 - 120
4728060	SAU	Spiked Blank	Fluoride (F-)	2016/11/02		102	%	80 - 120
4728060	SAU	Method Blank	Fluoride (F-)	2016/11/02	<0.10		mg/L	
4728060	SAU	RPD [DIC146-02]	Fluoride (F-)	2016/11/02	0.47		%	20
4738181	JBW	Matrix Spike	Total Arsenic (As)	2016/11/08		98	%	80 - 120
			Total Cadmium (Cd)	2016/11/08		97	%	80 - 120
			Total Calcium (Ca)	2016/11/08		NC	%	80 - 120
			Total Chromium (Cr)	2016/11/08		99	%	80 - 120
			Total Copper (Cu)	2016/11/08		NC	%	80 - 120
			Total Iron (Fe)	2016/11/08		97	%	80 - 120
			Total Lead (Pb)	2016/11/08		96	%	80 - 120
			Total Magnesium (Mg)	2016/11/08		NC	%	80 - 120
			Total Manganese (Mn)	2016/11/08		92	%	80 - 120
			Total Nickel (Ni)	2016/11/08		95	%	80 - 120
			Total Potassium (K)	2016/11/08		NC	%	80 - 120
			Total Sodium (Na)	2016/11/08		NC	%	80 - 120
			Total Zinc (Zn)	2016/11/08		NC	%	80 - 120
4738181	JBW	Spiked Blank	Total Arsenic (As)	2016/11/08		99	%	80 - 120
			Total Cadmium (Cd)	2016/11/08		96	%	80 - 120
			Total Calcium (Ca)	2016/11/08		95	%	80 - 120
			Total Chromium (Cr)	2016/11/08		98	%	80 - 120
			Total Copper (Cu)	2016/11/08		96	%	80 - 120
			Total Iron (Fe)	2016/11/08		99	%	80 - 120
			Total Lead (Pb)	2016/11/08		98	%	80 - 120
			Total Magnesium (Mg)	2016/11/08		98	%	80 - 120
			Total Manganese (Mn)	2016/11/08		93	%	80 - 120
			Total Nickel (Ni)	2016/11/08		98	%	80 - 120
			Total Potassium (K)	2016/11/08		95	%	80 - 120
			Total Sodium (Na)	2016/11/08		98	%	80 - 120
			Total Zinc (Zn)	2016/11/08		101	%	80 - 120
4738181	JBW	Method Blank	Total Arsenic (As)	2016/11/08	<1.0		ug/L	

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Maxxam Job #: B6N1506
Report Date: 2016/11/08

Golder Associates Ltd
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cadmium (Cd)	2016/11/08	<0.10		ug/L	
			Total Calcium (Ca)	2016/11/08	<200		ug/L	
			Total Chromium (Cr)	2016/11/08	<5.0		ug/L	
			Total Copper (Cu)	2016/11/08	<1.0		ug/L	
			Total Iron (Fe)	2016/11/08	<100		ug/L	
			Total Lead (Pb)	2016/11/08	<0.50		ug/L	
			Total Magnesium (Mg)	2016/11/08	<50		ug/L	
			Total Manganese (Mn)	2016/11/08	<2.0		ug/L	
			Total Nickel (Ni)	2016/11/08	<1.0		ug/L	
			Total Potassium (K)	2016/11/08	<200		ug/L	
			Total Sodium (Na)	2016/11/08	<100		ug/L	
			Total Zinc (Zn)	2016/11/08	<5.0		ug/L	
4738181	JBW	RPD	Total Arsenic (As)	2016/11/08	NC		%	20
			Total Cadmium (Cd)	2016/11/08	NC		%	20
			Total Chromium (Cr)	2016/11/08	NC		%	20
			Total Copper (Cu)	2016/11/08	1.7		%	20
			Total Lead (Pb)	2016/11/08	NC		%	20
			Total Manganese (Mn)	2016/11/08	2.5		%	20
			Total Nickel (Ni)	2016/11/08	0.80		%	20
			Total Zinc (Zn)	2016/11/08	0.57		%	20

N/A = Not Applicable

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

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6N1506
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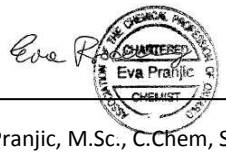
VALIDATION SIGNATURE PAGE

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



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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

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Exceedence Summary Table – Prov. Water Quality Obj.

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
POND	DIC145-04	Total Phosphorus	0.01	0.025	0.020	mg/L

Detection Limit Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
SW1	DIC146-04	Total Phosphorus	0.01	<0.020	0.020	mg/L

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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